APPENDIX V-A

TRAFFIC COUNT DATA



ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-001 Greenly Drive-Keller Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Greenly Drive Southbound					Keller Avenue Westbound					Greenly Drive Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	21	0	0	0	21	2	0	7	0	9	0	0	12	0	12	0	0	0	0	0	42	0
07:15	16	0	0	0	16	4	0	7	0	11	0	0	7	0	7	0	0	0	0	0	34	0
07:30	28	1	0	0	29	5	0	12	0	17	0	2	17	0	19	0	0	0	0	0	65	0
07:45	29	1	0	0	30	6	0	12	0	18	0	5	14	0	19	0	0	0	0	0	67	0
Total	94	2	0	0	96	17	0	38	0	55	0	7	50	0	57	0	0	0	0	0	208	0
08:00	30	0	0	0	30	2	0	20	0	22	0	3	12	0	15	0	0	0	0	0	67	0
08:15	31	0	0	0	31	4	0	19	0	23	0	2	0	0	2	0	0	0	0	0	56	0
08:30	22	0	0	0	22	5	0	14	0	19	0	2	6	0	8	0	0	0	0	0	49	0
08:45	21	0	0	0	21	7	0	14	0	21	0	3	10	0	13	0	0	0	0	0	55	0
Total	104	0	0	0	104	18	0	67	0	85	0	10	28	0	38	0	0	0	0	0	227	0
16:00	28	2	0	0	30	10	0	20	1	31	0	1	3	0	4	0	0	0	0	0	65	1
16:15	14	1	0	0	15	11	0	15	1	27	0	1	4	0	5	0	0	0	0	0	47	1
16:30	14	3	0	0	17	5	0	17	0	22	0	0	3	0	3	0	0	0	0	0	42	0
16:45	24	1	0	0	25	13	0	23	0	36	0	2	5	0	7	0	0	0	0	0	68	0
Total	80	7	0	0	87	39	0	75	2	116	0	4	15	0	19	0	0	0	0	0	222	2
17:00	21	4	0	0	25	11	0	25	0	36	0	1	3	0	4	0	0	0	0	0	65	0
17:15	29	2	0	0	31	22	0	26	0	48	0	0	1	0	1	0	0	0	0	0	80	0
17:30	23	1	0	0	24	6	0	18	0	24	0	0	8	0	8	0	0	0	0	0	56	0
17:45	15	3	0	0	18	10	0	17	0	27	0	1	7	0	8	0	0	0	0	0	53	0
Total	88	10	0	0	98	49	0	86	0	135	0	2	19	0	21	0	0	0	0	0	254	0
Grand Total	366	19	0	0	385	123	0	266	2	391	0	23	112	0	135	0	0	0	0	0	911	2
Apprch %	95.1%	4.9%	0.0%	0.0%		31.5%	0.0%	68.0%	0.5%		0.0%	17.0%	83.0%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	40.2%	2.1%	0.0%	0.0%	42.3%	13.5%	0.0%	29.2%	0.2%	42.9%	0.0%	2.5%	12.3%	0.0%	14.8%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-001 Greenly Drive-Keller Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Greenly Drive Southbound					Keller Avenue Westbound					Greenly Drive Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	28	1	0	0	29	5	0	12	0	17	0	2	17	0	19	0	0	0	0	0	65
07:45	29	1	0	0	30	6	0	12	0	18	0	5	14	0	19	0	0	0	0	0	67
08:00	30	0	0	0	30	2	0	20	0	22	0	3	12	0	15	0	0	0	0	0	67
08:15	31	0	0	0	31	4	0	19	0	23	0	2	0	0	2	0	0	0	0	0	56
Total Volume	118	2	0	0	120	17	0	63	0	80	0	12	43	0	55	0	0	0	0	0	255
% App Total	98.3%	1.7%	0.0%	0.0%		21.3%	0.0%	78.8%	0.0%		0.0%	21.8%	78.2%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.952	.500	.000	.000	.968	.708	.000	.788	.000	.870	.000	.600	.632	.000	.724	.000	.000	.000	.000	.000	.951

PM PEAK HOUR	Greenly Drive Southbound					Keller Avenue Westbound					Greenly Drive Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	24	1	0	0	25	13	0	23	0	36	0	2	5	0	7	0	0	0	0	0	68
17:00	21	4	0	0	25	11	0	25	0	36	0	1	3	0	4	0	0	0	0	0	65
17:15	29	2	0	0	31	22	0	26	0	48	0	0	1	0	1	0	0	0	0	0	80
17:30	23	1	0	0	24	6	0	18	0	24	0	0	8	0	8	0	0	0	0	0	56
Total Volume	97	8	0	0	105	52	0	92	0	144	0	3	17	0	20	0	0	0	0	0	269
% App Total	92.4%	7.6%	0.0%	0.0%		36.1%	0.0%	63.9%	0.0%		0.0%	15.0%	85.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.836	.500	.000	.000	.847	.591	.000	.885	.000	.750	.000	.375	.531	.000	.625	.000	.000	.000	.000	.000	.841

ALL TRAFFIC DATA

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File Name : 15-7302-001 Greenly Drive-Keller Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Greenly Drive Southbound					Keller Avenue Westbound					Greenly Drive Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-001 Greenly Drive-Keller Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Greenly Drive Southbound					Keller Avenue Westbound					Greenly Drive Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	Greenly Drive Southbound					Keller Avenue Westbound					Greenly Drive Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-002 I-580 EB Off-Ramp-Fontaine Street-Keller Ave
Date : 4/14/2015

Unshifted Count = All Vehicles

	I-580 EB Off-Ramp Southbound					Keller Avenue Westbound					Fontaine Street Northbound					Keller Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	18	20	3	0	41	59	5	0	0	64	0	0	0	0	0	0	23	23	0	46	151	0
07:15	13	25	7	0	45	65	8	0	0	73	0	0	0	0	0	0	18	21	0	39	157	0
07:30	29	32	7	0	68	73	10	0	0	83	0	0	0	0	0	0	46	26	0	72	223	0
07:45	28	47	9	0	84	73	15	0	0	88	0	0	0	0	0	0	33	32	0	65	237	0
Total	88	124	26	0	238	270	38	0	0	308	0	0	0	0	0	0	120	102	0	222	768	0
08:00	31	70	13	0	114	91	8	0	0	99	0	0	0	0	0	0	31	30	0	61	274	0
08:15	51	56	8	0	115	83	16	0	0	99	0	0	0	0	0	0	20	29	0	49	263	0
08:30	30	41	14	0	85	60	9	0	0	69	0	0	0	0	0	0	29	25	0	54	208	0
08:45	39	34	13	0	86	71	10	0	0	81	0	0	0	0	0	0	23	19	0	42	209	0
Total	151	201	48	0	400	305	43	0	0	348	0	0	0	0	0	0	103	103	0	206	954	0
16:00	47	42	9	0	98	57	22	0	0	79	0	0	0	0	0	0	14	29	0	43	220	0
16:15	44	31	14	0	89	61	20	0	0	81	0	0	0	0	0	0	12	11	0	23	193	0
16:30	55	34	9	0	98	78	16	0	0	94	0	0	0	0	0	0	15	16	0	31	223	0
16:45	54	37	19	0	110	60	27	0	0	87	0	0	1	0	1	0	20	22	0	42	240	0
Total	200	144	51	0	395	256	85	0	0	341	0	0	1	0	1	0	61	78	0	139	876	0
17:00	55	41	19	0	115	91	21	0	0	112	0	0	0	0	0	0	17	22	0	39	266	0
17:15	55	42	17	0	114	77	36	0	0	113	0	0	0	0	0	0	17	26	0	43	270	0
17:30	57	40	4	0	101	74	22	0	0	96	0	0	0	0	0	0	28	23	0	51	248	0
17:45	50	40	10	0	100	83	25	0	0	108	0	0	0	0	0	0	13	18	0	31	239	0
Total	217	163	50	0	430	325	104	0	0	429	0	0	0	0	0	0	75	89	0	164	1023	0
Grand Total	656	632	175	0	1463	1156	270	0	0	1426	0	0	1	0	1	0	359	372	0	731	3621	0
Apprch %	44.8%	43.2%	12.0%	0.0%		81.1%	18.9%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		0.0%	49.1%	50.9%	0.0%			
Total %	18.1%	17.5%	4.8%	0.0%	40.4%	31.9%	7.5%	0.0%	0.0%	39.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.9%	10.3%	0.0%	20.2%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-002 I-580 EB Off-Ramp-Fontaine Street-Keller Ave
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	I-580 EB Off-Ramp Southbound					Keller Avenue Westbound					Fontaine Street Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	29	32	7	0	68	73	10	0	0	83	0	0	0	0	0	0	46	26	0	72	223
07:45	28	47	9	0	84	73	15	0	0	88	0	0	0	0	0	0	33	32	0	65	237
08:00	31	70	13	0	114	91	8	0	0	99	0	0	0	0	0	0	31	30	0	61	274
08:15	51	56	8	0	115	83	16	0	0	99	0	0	0	0	0	0	20	29	0	49	263
Total Volume	139	205	37	0	381	320	49	0	0	369	0	0	0	0	0	0	130	117	0	247	997
% App Total	36.5%	53.8%	9.7%	0.0%		86.7%	13.3%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	52.6%	47.4%	0.0%		
PHF	.681	.732	.712	.000	.828	.879	.766	.000	.000	.932	.000	.000	.000	.000	.000	.000	.707	.914	.000	.858	.910

PM PEAK HOUR	I-580 EB Off-Ramp Southbound					Keller Avenue Westbound					Fontaine Street Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	54	37	19	0	110	60	27	0	0	87	0	0	1	0	1	0	20	22	0	42	240
17:00	55	41	19	0	115	91	21	0	0	112	0	0	0	0	0	0	17	22	0	39	266
17:15	55	42	17	0	114	77	36	0	0	113	0	0	0	0	0	0	17	26	0	43	270
17:30	57	40	4	0	101	74	22	0	0	96	0	0	0	0	0	0	28	23	0	51	248
Total Volume	221	160	59	0	440	302	106	0	0	408	0	0	1	0	1	0	82	93	0	175	1024
% App Total	50.2%	36.4%	13.4%	0.0%		74.0%	26.0%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		0.0%	46.9%	53.1%	0.0%		
PHF	.969	.952	.776	.000	.957	.830	.736	.000	.000	.903	.000	.000	.250	.000	.250	.000	.732	.894	.000	.858	.948

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

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File Name : 15-7302-002 I-580 EB Off-Ramp-Fontaine Street-Keller Ave
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	I-580 EB Off-Ramp Southbound					Keller Avenue Westbound					Fontaine Street Northbound					Keller Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2
16:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	3
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	5
Grand Total	0	0	0	1	0	0	0	0	0	0	0	0	0	12	0	0	0	0	1	0	0	14
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-002 I-580 EB Off-Ramp-Fontaine Street-Keller Ave
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	I-580 EB Off-Ramp Southbound					Keller Avenue Westbound					Fontaine Street Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	I-580 EB Off-Ramp Southbound					Keller Avenue Westbound					Fontaine Street Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-003 Mountain Boulevard-Keller Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Mountain Boulevard Southbound					Keller Avenue Westbound					Mountain Boulevard Northbound					Keller Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	3	1	20	0	24	0	37	57	0	94	11	55	15	0	81	23	11	7	0	41	240	0
07:15	4	4	23	0	31	1	34	74	0	109	19	73	20	0	112	18	6	7	0	31	283	0
07:30	6	0	24	0	30	3	41	84	0	128	11	129	29	0	169	43	19	13	0	75	402	0
07:45	3	0	21	0	24	3	53	91	0	147	19	201	39	0	259	25	21	12	0	58	488	0
Total	16	5	88	0	109	7	165	306	0	478	60	458	103	0	621	109	57	39	0	205	1413	0
08:00	5	6	28	0	39	3	55	63	0	121	17	229	37	0	283	32	19	13	0	64	507	0
08:15	9	4	25	0	38	3	47	64	0	114	19	214	40	0	273	15	35	20	0	70	495	0
08:30	15	5	20	0	40	2	38	50	0	90	14	191	35	0	240	25	27	7	0	59	429	0
08:45	1	5	18	0	24	2	37	42	0	81	24	105	44	0	173	19	36	8	0	63	341	0
Total	30	20	91	0	141	10	177	219	0	406	74	739	156	0	969	91	117	48	0	256	1772	0
16:00	9	5	25	0	39	4	22	23	0	49	30	80	23	0	133	13	29	20	0	62	283	0
16:15	6	7	27	0	40	1	32	36	0	69	28	87	43	0	158	13	29	13	0	55	322	0
16:30	10	4	33	0	47	2	35	35	0	72	21	64	36	0	121	12	42	18	0	72	312	0
16:45	16	7	30	0	53	2	33	32	0	67	23	63	45	0	131	16	44	14	0	74	325	0
Total	41	23	115	0	179	9	122	126	0	257	102	294	147	0	543	54	144	65	0	263	1242	0
17:00	17	10	47	0	74	2	38	36	0	76	30	83	41	0	154	16	39	16	0	71	375	0
17:15	21	11	34	0	66	4	40	36	0	80	38	77	38	0	153	14	42	17	0	73	372	0
17:30	12	12	32	0	56	6	33	36	0	75	32	88	47	0	167	21	46	16	0	83	381	0
17:45	19	8	38	0	65	5	42	45	0	92	25	69	48	0	142	15	38	12	0	65	364	0
Total	69	41	151	0	261	17	153	153	0	323	125	317	174	0	616	66	165	61	0	292	1492	0
Grand Total	156	89	445	0	690	43	617	804	0	1464	361	1808	580	0	2749	320	483	213	0	1016	5919	0
Apprch %	22.6%	12.9%	64.5%	0.0%		2.9%	42.1%	54.9%	0.0%		13.1%	65.8%	21.1%	0.0%		31.5%	47.5%	21.0%	0.0%			
Total %	2.6%	1.5%	7.5%	0.0%	11.7%	0.7%	10.4%	13.6%	0.0%	24.7%	6.1%	30.5%	9.8%	0.0%	46.4%	5.4%	8.2%	3.6%	0.0%	17.2%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-003 Mountain Boulevard-Keller Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Mountain Boulevard Southbound					Keller Avenue Westbound					Mountain Boulevard Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	3	0	21	0	24	3	53	91	0	147	19	201	39	0	259	25	21	12	0	58	488
08:00	5	6	28	0	39	3	55	63	0	121	17	229	37	0	283	32	19	13	0	64	507
08:15	9	4	25	0	38	3	47	64	0	114	19	214	40	0	273	15	35	20	0	70	495
08:30	15	5	20	0	40	2	38	50	0	90	14	191	35	0	240	25	27	7	0	59	429
Total Volume	32	15	94	0	141	11	193	268	0	472	69	835	151	0	1055	97	102	52	0	251	1919
% App Total	22.7%	10.6%	66.7%	0.0%		2.3%	40.9%	56.8%	0.0%		6.5%	79.1%	14.3%	0.0%		38.6%	40.6%	20.7%	0.0%		
PHF	.533	.625	.839	.000	.881	.917	.877	.736	.000	.803	.908	.912	.944	.000	.932	.758	.729	.650	.000	.896	.946

PM PEAK HOUR	Mountain Boulevard Southbound					Keller Avenue Westbound					Mountain Boulevard Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	17	10	47	0	74	2	38	36	0	76	30	83	41	0	154	16	39	16	0	71	375
17:15	21	11	34	0	66	4	40	36	0	80	38	77	38	0	153	14	42	17	0	73	372
17:30	12	12	32	0	56	6	33	36	0	75	32	88	47	0	167	21	46	16	0	83	381
17:45	19	8	38	0	65	5	42	45	0	92	25	69	48	0	142	15	38	12	0	65	364
Total Volume	69	41	151	0	261	17	153	153	0	323	125	317	174	0	616	66	165	61	0	292	1492
% App Total	26.4%	15.7%	57.9%	0.0%		5.3%	47.4%	47.4%	0.0%		20.3%	51.5%	28.2%	0.0%		22.6%	56.5%	20.9%	0.0%		
PHF	.821	.854	.803	.000	.882	.708	.911	.850	.000	.878	.822	.901	.906	.000	.922	.786	.897	.897	.000	.880	.979

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-003 Mountain Boulevard-Keller Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Mountain Boulevard Southbound					Keller Avenue Westbound					Mountain Boulevard Northbound					Keller Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	5	0	0	0	0	0	0	0	6
08:00	0	1	0	0	1	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	1	4
08:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
08:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	0	0	0	6	0	0	0	0	2	0	0	0	0	0	0	1	8
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
16:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	1	0	0	1	0	0	1	0	0	0	1	0	1	3
17:00	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	2
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
17:30	0	0	0	0	0	0	0	1	1	1	0	0	0	2	0	0	0	0	0	0	1	3
17:45	0	0	0	0	0	0	0	0	1	0	0	1	0	2	1	0	0	0	0	0	1	3
Total	0	0	0	1	0	0	0	1	2	1	0	2	0	6	2	0	0	0	1	0	3	10
Grand Total	0	1	0	2	1	0	0	1	10	1	0	3	0	13	3	0	0	0	2	0	5	27
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	20.0%	0.0%		20.0%	0.0%	0.0%	20.0%		20.0%	0.0%	60.0%	0.0%		60.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-003 Mountain Boulevard-Keller Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Mountain Boulevard Southbound					Keller Avenue Westbound					Mountain Boulevard Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
08:00	0	1	0	0	1	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Total Volume	0	1	0	0	1	0	0	0	5	0	0	0	0	4	0	0	0	0	0	0	1
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.250

PM PEAK HOUR	Mountain Boulevard Southbound					Keller Avenue Westbound					Mountain Boulevard Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	1	1	1	0	0	0	2	0	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	1	0	0	1	0	2	1	0	0	0	0	0	1
Total Volume	0	0	0	1	0	0	0	1	2	1	0	2	0	6	2	0	0	0	1	0	3
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.250		.250	.000	.500	.000		.500	.000	.000	.000		.000	.750

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-004 Mountain Boulevard-I-580 Westbound On-Rar
Date : 4/14/2015

Unshifted Count = All Vehicles

	Mountain Boulevard Southbound					Maynard Avenue Westbound					Mountain Boulevard Northbound					I-580 Westbound On-Ramp Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	1	23	0	0	24	1	0	1	0	2	98	32	1	0	131	0	0	0	0	0	157	0
07:15	0	29	0	0	29	0	2	0	0	2	122	44	0	0	166	0	0	0	0	0	197	0
07:30	0	30	0	0	30	0	1	2	0	3	183	71	0	0	254	0	0	0	0	0	287	0
07:45	0	22	1	0	23	0	1	2	0	3	163	148	0	0	311	0	0	0	0	0	337	0
Total	1	104	1	0	106	1	4	5	0	10	566	295	1	0	862	0	0	0	0	0	978	0
08:00	0	41	0	0	41	0	1	0	0	1	175	152	0	0	327	0	0	0	0	0	369	0
08:15	0	38	0	0	38	0	0	0	0	0	146	146	1	0	293	0	0	0	0	0	331	0
08:30	0	39	0	0	39	2	0	2	0	4	103	164	2	0	269	0	0	0	0	0	312	0
08:45	1	24	0	0	25	0	0	1	0	1	71	97	1	0	169	0	0	0	0	0	195	0
Total	1	142	0	0	143	2	1	3	0	6	495	559	4	0	1058	0	0	0	0	0	1207	0
16:00	0	39	1	0	40	0	1	1	0	2	71	47	1	1	120	0	0	0	0	0	162	1
16:15	0	40	1	1	42	0	0	1	0	1	75	59	2	0	136	0	0	0	0	0	179	1
16:30	0	46	0	0	46	1	1	0	0	2	70	41	0	0	111	0	0	0	0	0	159	0
16:45	1	54	0	0	55	0	0	0	0	0	64	44	0	1	109	0	0	0	0	0	164	1
Total	1	179	2	1	183	1	2	2	0	5	280	191	3	2	476	0	0	0	0	0	664	3
17:00	0	74	0	0	74	0	0	0	0	0	92	42	2	0	136	0	0	0	0	0	210	0
17:15	0	65	0	0	65	0	0	1	0	1	73	53	0	0	126	0	0	0	0	0	192	0
17:30	0	57	0	0	57	0	0	0	0	0	94	52	0	0	146	0	0	0	0	0	203	0
17:45	0	67	0	0	67	0	1	0	0	1	76	53	1	0	130	0	0	0	0	0	198	0
Total	0	263	0	0	263	0	1	1	0	2	335	200	3	0	538	0	0	0	0	0	803	0
Grand Total	3	688	3	1	695	4	8	11	0	23	1676	1245	11	2	2934	0	0	0	0	0	3652	3
Apprch %	0.4%	99.0%	0.4%	0.1%		17.4%	34.8%	47.8%	0.0%		57.1%	42.4%	0.4%	0.1%		0.0%	0.0%	0.0%	0.0%			
Total %	0.1%	18.8%	0.1%	0.0%	19.0%	0.1%	0.2%	0.3%	0.0%	0.6%	45.9%	34.1%	0.3%	0.1%	80.3%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
(916) 771-8700
orders@atdtraffic.com

All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

File Name : 15-7302-004 Mountain Boulevard-I-580 Westbound On-Rar
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Mountain Boulevard Southbound					Maynard Avenue Westbound					Mountain Boulevard Northbound					I-580 Westbound On-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	22	1	0	23	0	1	2	0	3	163	148	0	0	311	0	0	0	0	0	337
08:00	0	41	0	0	41	0	1	0	0	1	175	152	0	0	327	0	0	0	0	0	369
08:15	0	38	0	0	38	0	0	0	0	0	146	146	1	0	293	0	0	0	0	0	331
08:30	0	39	0	0	39	2	0	2	0	4	103	164	2	0	269	0	0	0	0	0	312
Total Volume	0	140	1	0	141	2	2	4	0	8	587	610	3	0	1200	0	0	0	0	0	1349
% App Total	0.0%	99.3%	0.7%	0.0%		25.0%	25.0%	50.0%	0.0%		48.9%	50.8%	0.3%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.854	.250	.000	.860	.250	.500	.500	.000	.500	.839	.930	.375	.000	.917	.000	.000	.000	.000	.000	.914

PM PEAK HOUR	Mountain Boulevard Southbound					Maynard Avenue Westbound					Mountain Boulevard Northbound					I-580 Westbound On-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	74	0	0	74	0	0	0	0	0	92	42	2	0	136	0	0	0	0	0	210
17:15	0	65	0	0	65	0	0	1	0	1	73	53	0	0	126	0	0	0	0	0	192
17:30	0	57	0	0	57	0	0	0	0	0	94	52	0	0	146	0	0	0	0	0	203
17:45	0	67	0	0	67	0	1	0	0	1	76	53	1	0	130	0	0	0	0	0	198
Total Volume	0	263	0	0	263	0	1	1	0	2	335	200	3	0	538	0	0	0	0	0	803
% App Total	0.0%	100.0%	0.0%	0.0%		0.0%	50.0%	50.0%	0.0%		62.3%	37.2%	0.6%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.889	.000	.000	.889	.000	.250	.250	.000	.500	.891	.943	.375	.000	.921	.000	.000	.000	.000	.000	.956

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-004 Mountain Boulevard-I-580 Westbound On-Rar
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Mountain Boulevard Southbound					Maynard Avenue Westbound					Mountain Boulevard Northbound					I-580 Westbound On-Ramp Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
08:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
16:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	0	0	1	0	1	3
17:00	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	1	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	1	2
17:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
Total	0	0	0	0	0	0	0	0	3	0	0	3	0	0	3	0	0	0	0	0	3	3
Grand Total	0	1	0	0	1	0	0	0	7	0	0	4	0	0	4	0	0	0	1	0	5	8
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	20.0%	0.0%		20.0%	0.0%	0.0%	0.0%		0.0%	0.0%	80.0%	0.0%		80.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-004 Mountain Boulevard-I-580 Westbound On-Rar
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Mountain Boulevard Southbound					Maynard Avenue Westbound					Mountain Boulevard Northbound					I-580 Westbound On-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.250

PM PEAK HOUR	Mountain Boulevard Southbound					Maynard Avenue Westbound					Mountain Boulevard Northbound					I-580 Westbound On-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	3	0	0	3	0	0	3	0	0	0	0	0	3
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.750	.000		.750	.000	.000	.000		.000	.750

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-005 Mountain Boulevard-I-580 WB Off-Ramp-Shor
Date : 4/14/2015

Unshifted Count = All Vehicles

	Mountain Boulevard Southbound					Shone Avenue Westbound					Mountain Boulevard Northbound					I-580 WB Off-Ramp Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	7	0	0	7	0	0	1	0	1	0	39	0	0	39	42	0	1	0	43	90	0
07:15	0	10	0	0	10	0	0	3	0	3	0	63	0	0	63	45	0	2	0	47	123	0
07:30	0	17	0	0	17	0	0	1	0	1	0	141	0	0	141	31	0	1	0	32	191	0
07:45	0	15	0	0	15	0	0	2	0	2	0	230	0	0	230	38	0	2	0	40	287	0
Total	0	49	0	0	49	0	0	7	0	7	0	473	0	0	473	156	0	6	0	162	691	0
08:00	0	21	0	0	21	1	0	3	0	4	0	246	0	0	246	36	0	2	0	38	309	0
08:15	0	29	0	0	29	0	0	5	0	5	0	220	0	0	220	39	0	3	0	42	296	0
08:30	0	14	0	0	14	1	0	7	0	8	0	180	0	0	180	53	0	1	0	54	256	0
08:45	0	13	0	0	13	1	0	4	0	5	0	70	0	0	70	96	0	2	0	98	186	0
Total	0	77	0	0	77	3	0	19	0	22	0	716	0	0	716	224	0	8	0	232	1047	0
16:00	0	28	0	0	28	1	0	5	0	6	0	58	0	0	58	67	0	5	0	72	164	0
16:15	0	23	0	0	23	0	0	6	0	6	0	66	0	0	66	87	0	5	0	92	187	0
16:30	0	24	0	0	24	0	0	4	0	4	0	43	1	0	44	71	0	5	0	76	148	0
16:45	0	25	0	0	25	1	0	4	0	5	0	38	0	0	38	90	0	2	0	92	160	0
Total	0	100	0	0	100	2	0	19	0	21	0	205	1	0	206	315	0	17	0	332	659	0
17:00	1	26	0	0	27	1	0	4	0	5	0	58	0	0	58	91	0	12	0	103	193	0
17:15	0	31	0	0	31	0	0	7	0	7	0	46	0	0	46	97	0	5	0	102	186	0
17:30	1	34	0	0	35	0	0	8	0	8	0	68	0	0	68	90	0	9	0	99	210	0
17:45	0	24	0	1	25	2	0	4	0	6	0	43	0	0	43	96	0	3	0	99	173	1
Total	2	115	0	1	118	3	0	23	0	26	0	215	0	0	215	374	0	29	0	403	762	1
Grand Total	2	341	0	1	344	8	0	68	0	76	0	1609	1	0	1610	1069	0	60	0	1129	3159	1
Apprch %	0.6%	99.1%	0.0%	0.3%		10.5%	0.0%	89.5%	0.0%		0.0%	99.9%	0.1%	0.0%		94.7%	0.0%	5.3%	0.0%			
Total %	0.1%	10.8%	0.0%	0.0%	10.9%	0.3%	0.0%	2.2%	0.0%	2.4%	0.0%	50.9%	0.0%	0.0%	51.0%	33.8%	0.0%	1.9%	0.0%	35.7%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-005 Mountain Boulevard-I-580 WB Off-Ramp-Shor
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Mountain Boulevard Southbound					Shone Avenue Westbound					Mountain Boulevard Northbound					I-580 WB Off-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	15	0	0	15	0	0	2	0	2	0	230	0	0	230	38	0	2	0	40	287
08:00	0	21	0	0	21	1	0	3	0	4	0	246	0	0	246	36	0	2	0	38	309
08:15	0	29	0	0	29	0	0	5	0	5	0	220	0	0	220	39	0	3	0	42	296
08:30	0	14	0	0	14	1	0	7	0	8	0	180	0	0	180	53	0	1	0	54	256
Total Volume	0	79	0	0	79	2	0	17	0	19	0	876	0	0	876	166	0	8	0	174	1148
% App Total	0.0%	100.0%	0.0%	0.0%		10.5%	0.0%	89.5%	0.0%		0.0%	100.0%	0.0%	0.0%		95.4%	0.0%	4.6%	0.0%		
PHF	.000	.681	.000	.000	.681	.500	.000	.607	.000	.594	.000	.890	.000	.000	.890	.783	.000	.667	.000	.806	.929

PM PEAK HOUR	Mountain Boulevard Southbound					Shone Avenue Westbound					Mountain Boulevard Northbound					I-580 WB Off-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	1	26	0	0	27	1	0	4	0	5	0	58	0	0	58	91	0	12	0	103	193
17:15	0	31	0	0	31	0	0	7	0	7	0	46	0	0	46	97	0	5	0	102	186
17:30	1	34	0	0	35	0	0	8	0	8	0	68	0	0	68	90	0	9	0	99	210
17:45	0	24	0	1	25	2	0	4	0	6	0	43	0	0	43	96	0	3	0	99	173
Total Volume	2	115	0	1	118	3	0	23	0	26	0	215	0	0	215	374	0	29	0	403	762
% App Total	1.7%	97.5%	0.0%	0.8%		11.5%	0.0%	88.5%	0.0%		0.0%	100.0%	0.0%	0.0%		92.8%	0.0%	7.2%	0.0%		
PHF	.500	.846	.000	.250	.843	.375	.000	.719	.000	.813	.000	.790	.000	.000	.790	.964	.000	.604	.000	.978	.907

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-005 Mountain Boulevard-I-580 WB Off-Ramp-Shor
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Mountain Boulevard Southbound					Shone Avenue Westbound					Mountain Boulevard Northbound					I-580 WB Off-Ramp Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:30	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	7
08:00	0	1	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	1	4
08:15	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
08:30	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
08:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Total	0	2	0	0	2	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	2	12
16:00	0	0	0	0	0	0	0	0	3	0	0	1	0	0	1	0	0	0	0	0	1	3
16:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	5	0	0	1	0	0	1	0	0	0	0	0	1	5
17:00	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	1	2
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	1	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	5
17:45	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	1	2
Total	0	0	0	1	0	0	0	0	7	0	0	2	0	1	2	0	0	0	0	0	2	9
Grand Total	0	2	0	1	2	0	0	0	31	0	0	3	0	1	3	0	0	0	0	0	5	33
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	40.0%	0.0%		40.0%	0.0%	0.0%	0.0%		0.0%	0.0%	60.0%	0.0%		60.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-005 Mountain Boulevard-I-580 WB Off-Ramp-Shor
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Mountain Boulevard Southbound					Shone Avenue Westbound					Mountain Boulevard Northbound					I-580 WB Off-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	1	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	1	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	1
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.250

PM PEAK HOUR	Mountain Boulevard Southbound					Shone Avenue Westbound					Mountain Boulevard Northbound					I-580 WB Off-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	1	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	0	0	1	0	0	0	0	7	0	0	2	0	1	2	0	0	0	0	0	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.500

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-006 Williams Street-Project Site Access-Keller Ave
Date : 4/14/2015

Unshifted Count = All Vehicles

	Williams Street Southbound					Keller Avenue Westbound					Project Site Access Northbound					Keller Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	0	17	0	17	0	64	0	1	65	0	0	0	0	0	1	23	0	0	24	106	1
07:15	1	0	17	0	18	0	68	0	0	68	0	0	0	0	0	2	24	0	0	26	112	0
07:30	1	0	14	0	15	0	103	2	0	105	0	0	0	0	0	5	38	0	0	43	163	0
07:45	0	0	23	0	23	0	98	1	0	99	0	0	0	0	0	3	59	0	2	64	186	2
Total	2	0	71	0	73	0	333	3	1	337	0	0	0	0	0	11	144	0	2	157	567	3
08:00	1	0	16	0	17	0	88	0	0	88	0	0	0	0	0	4	52	0	0	56	161	0
08:15	1	0	6	0	7	0	83	0	1	84	0	0	0	0	0	7	59	0	1	67	158	2
08:30	0	0	8	0	8	0	68	0	0	68	0	0	0	0	0	6	59	0	1	66	142	1
08:45	1	0	8	0	9	0	53	0	0	53	0	0	0	0	0	2	64	0	0	66	128	0
Total	3	0	38	0	41	0	292	0	1	293	0	0	0	0	0	19	234	0	2	255	589	3
16:00	0	0	8	0	8	0	37	0	0	37	0	0	0	0	0	3	42	0	0	45	90	0
16:15	0	0	7	0	7	0	47	0	1	48	0	0	0	0	0	5	49	0	1	55	110	2
16:30	0	0	3	0	3	0	60	0	0	60	0	0	0	0	0	7	63	0	0	70	133	0
16:45	0	0	5	0	5	0	52	0	0	52	0	0	0	0	0	10	69	1	2	82	139	2
Total	0	0	23	0	23	0	196	0	1	197	0	0	0	0	0	25	223	1	3	252	472	4
17:00	0	0	4	0	4	0	62	3	1	66	0	0	0	0	0	13	70	0	0	83	153	1
17:15	2	0	7	0	9	0	67	3	0	70	0	0	0	0	0	7	67	0	0	74	153	0
17:30	0	0	5	0	5	0	60	1	0	61	0	0	0	0	0	7	69	0	0	76	142	0
17:45	1	0	4	1	6	0	68	1	0	69	0	0	0	0	0	9	77	0	1	87	162	2
Total	3	0	20	1	24	0	257	8	1	266	0	0	0	0	0	36	283	0	1	320	610	3
Grand Total	8	0	152	1	161	0	1078	11	4	1093	0	0	0	0	0	91	884	1	8	984	2238	13
Apprch %	5.0%	0.0%	94.4%	0.6%		0.0%	98.6%	1.0%	0.4%		0.0%	0.0%	0.0%	0.0%		9.2%	89.8%	0.1%	0.8%			
Total %	0.4%	0.0%	6.8%	0.0%	7.2%	0.0%	48.2%	0.5%	0.2%	48.8%	0.0%	0.0%	0.0%	0.0%	0.0%	4.1%	39.5%	0.0%	0.4%	44.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-006 Williams Street-Project Site Access-Keller Ave
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Williams Street Southbound					Keller Avenue Westbound					Project Site Access Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	1	0	14	0	15	0	103	2	0	105	0	0	0	0	0	5	38	0	0	43	163
07:45	0	0	23	0	23	0	98	1	0	99	0	0	0	0	0	3	59	0	2	64	186
08:00	1	0	16	0	17	0	88	0	0	88	0	0	0	0	0	4	52	0	0	56	161
08:15	1	0	6	0	7	0	83	0	1	84	0	0	0	0	0	7	59	0	1	67	158
Total Volume	3	0	59	0	62	0	372	3	1	376	0	0	0	0	0	19	208	0	3	230	668
% App Total	4.8%	0.0%	95.2%	0.0%		0.0%	98.9%	0.8%	0.3%		0.0%	0.0%	0.0%	0.0%		8.3%	90.4%	0.0%	1.3%		
PHF	.750	.000	.641	.000	.674	.000	.903	.375	.250	.895	.000	.000	.000	.000	.000	.679	.881	.000	.375	.858	.898

PM PEAK HOUR	Williams Street Southbound					Keller Avenue Westbound					Project Site Access Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	4	0	4	0	62	3	1	66	0	0	0	0	0	13	70	0	0	83	153
17:15	2	0	7	0	9	0	67	3	0	70	0	0	0	0	0	7	67	0	0	74	153
17:30	0	0	5	0	5	0	60	1	0	61	0	0	0	0	0	7	69	0	0	76	142
17:45	1	0	4	1	6	0	68	1	0	69	0	0	0	0	0	9	77	0	1	87	162
Total Volume	3	0	20	1	24	0	257	8	1	266	0	0	0	0	0	36	283	0	1	320	610
% App Total	12.5%	0.0%	83.3%	4.2%		0.0%	96.6%	3.0%	0.4%		0.0%	0.0%	0.0%	0.0%		11.3%	88.4%	0.0%	0.3%		
PHF	.375	.000	.714	.250	.667	.000	.945	.667	.250	.950	.000	.000	.000	.000	.000	.692	.919	.000	.250	.920	.941

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-006 Williams Street-Project Site Access-Keller Ave
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Williams Street Southbound					Keller Avenue Westbound					Project Site Access Northbound					Keller Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
08:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:30	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	2	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	5
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Grand Total	0	0	0	3	0	0	1	0	1	1	0	0	0	4	0	0	0	0	0	0	1	8
Apprch %	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		100.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-006 Williams Street-Project Site Access-Keller Ave
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Williams Street Southbound					Keller Avenue Westbound					Project Site Access Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	Williams Street Southbound					Keller Avenue Westbound					Project Site Access Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.250

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-007 Campus Drive-Keller Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Campus Drive Southbound					Keller Avenue Westbound					Campus Drive Northbound					Keller Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	0	24	0	24	0	40	2	0	42	0	0	0	0	0	11	11	1	0	23	89	0
07:15	3	0	18	0	21	0	49	2	0	51	0	0	0	0	0	4	15	0	1	20	92	1
07:30	2	0	28	0	30	0	77	1	0	78	0	0	1	0	1	13	25	0	1	39	148	1
07:45	4	0	20	0	24	1	76	4	0	81	1	0	0	0	1	18	39	0	1	58	164	1
Total	9	0	90	0	99	1	242	9	0	252	1	0	1	0	2	46	90	1	3	140	493	3
08:00	1	0	18	0	19	0	69	3	0	72	0	0	0	0	0	24	31	0	1	56	147	1
08:15	0	1	19	0	20	0	63	10	0	73	1	0	0	0	1	29	29	0	1	59	153	1
08:30	1	0	22	0	23	1	45	5	0	51	0	0	0	0	0	35	23	1	1	60	134	1
08:45	0	0	17	0	17	1	37	3	0	41	0	0	1	0	1	22	39	0	1	62	121	1
Total	2	1	76	0	79	2	214	21	0	237	1	0	1	0	2	110	122	1	4	237	555	4
16:00	5	1	11	0	17	1	19	1	0	21	2	0	1	0	3	8	34	1	3	46	87	3
16:15	2	1	16	0	19	1	30	1	0	32	1	0	2	0	3	12	38	0	3	53	107	3
16:30	2	1	14	0	17	3	34	2	0	39	4	0	0	0	4	12	41	1	8	62	122	8
16:45	4	1	21	0	26	1	21	0	0	22	5	0	1	0	6	21	45	0	7	73	127	7
Total	13	4	62	0	79	6	104	4	0	114	12	0	4	0	16	53	158	2	21	234	443	21
17:00	4	3	25	0	32	1	31	1	0	33	4	1	0	0	5	17	43	2	7	69	139	7
17:15	6	0	29	0	35	3	34	4	0	41	1	2	1	0	4	21	44	0	5	70	150	5
17:30	6	3	21	0	30	2	36	3	0	41	1	0	1	0	2	16	40	1	4	61	134	4
17:45	7	0	26	0	33	2	35	2	0	39	3	1	2	0	6	19	58	2	4	83	161	4
Total	23	6	101	0	130	8	136	10	0	154	9	4	4	0	17	73	185	5	20	283	584	20
Grand Total	47	11	329	0	387	17	696	44	0	757	23	4	10	0	37	282	555	9	48	894	2075	48
Apprch %	12.1%	2.8%	85.0%	0.0%		2.2%	91.9%	5.8%	0.0%		62.2%	10.8%	27.0%	0.0%		31.5%	62.1%	1.0%	5.4%			
Total %	2.3%	0.5%	15.9%	0.0%	18.7%	0.8%	33.5%	2.1%	0.0%	36.5%	1.1%	0.2%	0.5%	0.0%	1.8%	13.6%	26.7%	0.4%	2.3%	43.1%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-007 Campus Drive-Keller Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Campus Drive Southbound					Keller Avenue Westbound					Campus Drive Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	2	0	28	0	30	0	77	1	0	78	0	0	1	0	1	13	25	0	1	39	148
07:45	4	0	20	0	24	1	76	4	0	81	1	0	0	0	1	18	39	0	1	58	164
08:00	1	0	18	0	19	0	69	3	0	72	0	0	0	0	0	24	31	0	1	56	147
08:15	0	1	19	0	20	0	63	10	0	73	1	0	0	0	1	29	29	0	1	59	153
Total Volume	7	1	85	0	93	1	285	18	0	304	2	0	1	0	3	84	124	0	4	212	612
% App Total	7.5%	1.1%	91.4%	0.0%		0.3%	93.8%	5.9%	0.0%		66.7%	0.0%	33.3%	0.0%		39.6%	58.5%	0.0%	1.9%		
PHF	.438	.250	.759	.000	.775	.250	.925	.450	.000	.938	.500	.000	.250	.000	.750	.724	.795	.000	1.000	.898	.933

PM PEAK HOUR	Campus Drive Southbound					Keller Avenue Westbound					Campus Drive Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	4	3	25	0	32	1	31	1	0	33	4	1	0	0	5	17	43	2	7	69	139
17:15	6	0	29	0	35	3	34	4	0	41	1	2	1	0	4	21	44	0	5	70	150
17:30	6	3	21	0	30	2	36	3	0	41	1	0	1	0	2	16	40	1	4	61	134
17:45	7	0	26	0	33	2	35	2	0	39	3	1	2	0	6	19	58	2	4	83	161
Total Volume	23	6	101	0	130	8	136	10	0	154	9	4	4	0	17	73	185	5	20	283	584
% App Total	17.7%	4.6%	77.7%	0.0%		5.2%	88.3%	6.5%	0.0%		52.9%	23.5%	23.5%	0.0%		25.8%	65.4%	1.8%	7.1%		
PHF	.821	.500	.871	.000	.929	.667	.944	.625	.000	.939	.563	.500	.500	.000	.708	.869	.797	.625	.714	.852	.907

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-007 Campus Drive-Keller Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Campus Drive Southbound					Keller Avenue Westbound					Campus Drive Northbound					Keller Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
07:15	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
07:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	4
08:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
08:45	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3
Total	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	6
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
16:15	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	3
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	4
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
17:15	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
17:30	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	3	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	1	5
Grand Total	0	0	0	10	0	0	1	0	0	1	0	0	0	3	0	0	0	0	6	0	1	19
Apprch %	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		100.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-007 Campus Drive-Keller Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Campus Drive Southbound					Keller Avenue Westbound					Campus Drive Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	Campus Drive Southbound					Keller Avenue Westbound					Campus Drive Northbound					Keller Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
17:15	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	3	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.250

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-008 Mountain Boulevard-I-580 Overcrossing.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Mountain Boulevard Southbound					I-580 Overcrossing Westbound					Mountain Boulevard Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	7	0	0	7	1	0	14	0	15	0	23	1	0	24	0	0	0	0	0	46	0
07:15	1	9	0	0	10	0	0	22	0	22	0	43	3	0	46	0	0	0	0	0	78	0
07:30	1	14	0	0	15	2	0	33	0	35	0	113	3	0	116	0	0	0	0	0	166	0
07:45	2	15	0	0	17	1	0	42	0	43	0	182	10	0	192	0	0	0	0	0	252	0
Total	4	45	0	0	49	4	0	111	0	115	0	361	17	0	378	0	0	0	0	0	542	0
08:00	2	22	0	0	24	5	0	54	0	59	0	197	15	0	212	0	0	0	0	0	295	0
08:15	3	24	0	0	27	6	0	47	0	53	0	167	14	0	181	0	0	0	0	0	261	0
08:30	2	13	0	0	15	4	0	34	0	38	0	134	12	0	146	0	0	0	0	0	199	0
08:45	2	13	0	0	15	2	0	21	0	23	0	43	6	0	49	0	0	0	0	0	87	0
Total	9	72	0	0	81	17	0	156	0	173	0	541	47	0	588	0	0	0	0	0	842	0
16:00	2	27	0	0	29	2	0	33	0	35	0	23	2	0	25	0	0	0	0	0	89	0
16:15	4	18	0	0	22	1	0	24	0	25	0	36	1	0	37	0	0	0	0	0	84	0
16:30	3	22	0	0	25	3	0	31	0	34	0	13	2	0	15	0	0	0	0	0	74	0
16:45	2	22	0	0	24	1	0	14	0	15	0	21	1	0	22	0	0	0	0	0	61	0
Total	11	89	0	0	100	7	0	102	0	109	0	93	6	0	99	0	0	0	0	0	308	0
17:00	8	24	0	0	32	1	0	18	0	19	0	37	0	0	37	0	0	0	0	0	88	0
17:15	5	28	0	0	33	0	0	20	0	20	0	22	0	0	22	0	0	0	0	0	75	0
17:30	6	33	0	0	39	3	0	32	0	35	0	34	2	0	36	0	0	0	0	0	110	0
17:45	4	22	0	0	26	2	0	24	0	26	0	21	3	0	24	0	0	0	0	0	76	0
Total	23	107	0	0	130	6	0	94	0	100	0	114	5	0	119	0	0	0	0	0	349	0
Grand Total	47	313	0	0	360	34	0	463	0	497	0	1109	75	0	1184	0	0	0	0	0	2041	0
Apprch %	13.1%	86.9%	0.0%	0.0%		6.8%	0.0%	93.2%	0.0%		0.0%	93.7%	6.3%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	2.3%	15.3%	0.0%	0.0%	17.6%	1.7%	0.0%	22.7%	0.0%	24.4%	0.0%	54.3%	3.7%	0.0%	58.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-008 Mountain Boulevard-I-580 Overcrossing.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Mountain Boulevard Southbound					I-580 Overcrossing Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	2	15	0	0	17	1	0	42	0	43	0	182	10	0	192	0	0	0	0	0	252
08:00	2	22	0	0	24	5	0	54	0	59	0	197	15	0	212	0	0	0	0	0	295
08:15	3	24	0	0	27	6	0	47	0	53	0	167	14	0	181	0	0	0	0	0	261
08:30	2	13	0	0	15	4	0	34	0	38	0	134	12	0	146	0	0	0	0	0	199
Total Volume	9	74	0	0	83	16	0	177	0	193	0	680	51	0	731	0	0	0	0	0	1007
% App Total	10.8%	89.2%	0.0%	0.0%		8.3%	0.0%	91.7%	0.0%		0.0%	93.0%	7.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.750	.771	.000	.000	.769	.667	.000	.819	.000	.818	.000	.863	.850	.000	.862	.000	.000	.000	.000	.000	.853

PM PEAK HOUR	Mountain Boulevard Southbound					I-580 Overcrossing Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	8	24	0	0	32	1	0	18	0	19	0	37	0	0	37	0	0	0	0	0	88
17:15	5	28	0	0	33	0	0	20	0	20	0	22	0	0	22	0	0	0	0	0	75
17:30	6	33	0	0	39	3	0	32	0	35	0	34	2	0	36	0	0	0	0	0	110
17:45	4	22	0	0	26	2	0	24	0	26	0	21	3	0	24	0	0	0	0	0	76
Total Volume	23	107	0	0	130	6	0	94	0	100	0	114	5	0	119	0	0	0	0	0	349
% App Total	17.7%	82.3%	0.0%	0.0%		6.0%	0.0%	94.0%	0.0%		0.0%	95.8%	4.2%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.719	.811	.000	.000	.833	.500	.000	.734	.000	.714	.000	.770	.417	.000	.804	.000	.000	.000	.000	.000	.793

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-008 Mountain Boulevard-I-580 Overcrossing.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Mountain Boulevard Southbound					I-580 Overcrossing Westbound					Mountain Boulevard Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
08:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Total	0	2	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	0
Grand Total	0	2	0	0	2	1	0	0	5	1	0	3	0	0	3	0	0	0	0	0	6	5
Apprch %	0.0%	100.0%	0.0%			100.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	33.3%	0.0%		33.3%	16.7%	0.0%	0.0%		16.7%	0.0%	50.0%	0.0%		50.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-008 Mountain Boulevard-I-580 Overcrossing.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Mountain Boulevard Southbound					I-580 Overcrossing Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.250

PM PEAK HOUR	Mountain Boulevard Southbound					I-580 Overcrossing Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.500

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-009 Mountain Boulevard-Project Site Access.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Mountain Boulevard Southbound					Project Site Access Westbound					Mountain Boulevard Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	8	0	0	8	0	0	0	0	0	0	24	0	0	24	0	0	0	0	0	32	0
07:15	0	10	0	0	10	0	0	0	0	0	0	46	0	0	46	0	0	0	0	0	56	0
07:30	1	15	0	0	16	0	0	0	0	0	0	116	2	0	118	0	0	0	0	0	134	0
07:45	1	14	0	0	15	0	0	0	0	0	0	190	4	0	194	0	0	0	0	0	209	0
Total	2	47	0	0	49	0	0	0	0	0	0	376	6	0	382	0	0	0	0	0	431	0
08:00	2	23	0	0	25	0	0	0	0	0	0	211	6	0	217	0	0	0	0	0	242	0
08:15	4	26	0	0	30	0	0	1	0	1	0	181	3	0	184	0	0	0	0	0	215	0
08:30	1	17	0	0	18	1	0	1	0	2	0	144	3	0	147	0	0	0	0	0	167	0
08:45	3	10	0	0	13	0	0	0	0	0	0	48	0	0	48	0	0	0	0	0	61	0
Total	10	76	0	0	86	1	0	2	0	3	0	584	12	0	596	0	0	0	0	0	685	0
16:00	2	25	0	0	27	3	0	3	0	6	0	25	1	0	26	0	0	0	0	0	59	0
16:15	1	13	0	0	14	5	0	4	0	9	0	30	0	0	30	0	0	0	0	0	53	0
16:30	2	25	0	0	27	5	0	2	0	7	0	14	1	0	15	0	0	0	0	0	49	0
16:45	1	21	0	0	22	4	0	3	0	7	0	19	0	0	19	0	0	0	0	0	48	0
Total	6	84	0	0	90	17	0	12	0	29	0	88	2	0	90	0	0	0	0	0	209	0
17:00	0	23	0	0	23	7	0	8	0	15	0	30	0	0	30	0	0	0	0	0	68	0
17:15	0	27	0	0	27	0	0	2	0	2	0	20	0	0	20	0	0	0	0	0	49	0
17:30	0	32	0	0	32	3	0	2	0	5	0	36	0	0	36	0	0	0	0	0	73	0
17:45	0	24	0	0	24	0	0	3	0	3	0	24	1	0	25	0	0	0	0	0	52	0
Total	0	106	0	0	106	10	0	15	0	25	0	110	1	0	111	0	0	0	0	0	242	0
Grand Total	18	313	0	0	331	28	0	29	0	57	0	1158	21	0	1179	0	0	0	0	0	1567	0
Apprch %	5.4%	94.6%	0.0%	0.0%		49.1%	0.0%	50.9%	0.0%		0.0%	98.2%	1.8%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	1.1%	20.0%	0.0%	0.0%	21.1%	1.8%	0.0%	1.9%	0.0%	3.6%	0.0%	73.9%	1.3%	0.0%	75.2%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
(916) 771-8700
orders@atdtraffic.com

All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

File Name : 15-7302-009 Mountain Boulevard-Project Site Access.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Mountain Boulevard Southbound					Project Site Access Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	1	14	0	0	15	0	0	0	0	0	0	190	4	0	194	0	0	0	0	0	209
08:00	2	23	0	0	25	0	0	0	0	0	0	211	6	0	217	0	0	0	0	0	242
08:15	4	26	0	0	30	0	0	1	0	1	0	181	3	0	184	0	0	0	0	0	215
08:30	1	17	0	0	18	1	0	1	0	2	0	144	3	0	147	0	0	0	0	0	167
Total Volume	8	80	0	0	88	1	0	2	0	3	0	726	16	0	742	0	0	0	0	0	833
% App Total	9.1%	90.9%	0.0%	0.0%		33.3%	0.0%	66.7%	0.0%		0.0%	97.8%	2.2%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.500	.769	.000	.000	.733	.250	.000	.500	.000	.375	.000	.860	.667	.000	.855	.000	.000	.000	.000	.000	.861

PM PEAK HOUR	Mountain Boulevard Southbound					Project Site Access Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	23	0	0	23	7	0	8	0	15	0	30	0	0	30	0	0	0	0	0	68
17:15	0	27	0	0	27	0	0	2	0	2	0	20	0	0	20	0	0	0	0	0	49
17:30	0	32	0	0	32	3	0	2	0	5	0	36	0	0	36	0	0	0	0	0	73
17:45	0	24	0	0	24	0	0	3	0	3	0	24	1	0	25	0	0	0	0	0	52
Total Volume	0	106	0	0	106	10	0	15	0	25	0	110	1	0	111	0	0	0	0	0	242
% App Total	0.0%	100.0%	0.0%	0.0%		40.0%	0.0%	60.0%	0.0%		0.0%	99.1%	0.9%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.828	.000	.000	.828	.357	.000	.469	.000	.417	.000	.764	.250	.000	.771	.000	.000	.000	.000	.000	.829

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-009 Mountain Boulevard-Project Site Access.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Mountain Boulevard Southbound					Project Site Access Westbound					Mountain Boulevard Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Total	0	2	0	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	2
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	0
Grand Total	0	2	0	2	2	0	0	0	1	0	0	3	0	0	3	0	0	0	0	0	5	3
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	40.0%	0.0%		40.0%	0.0%	0.0%	0.0%		0.0%	0.0%	60.0%	0.0%		60.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-009 Mountain Boulevard-Project Site Access.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Mountain Boulevard Southbound					Project Site Access Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.250

PM PEAK HOUR	Mountain Boulevard Southbound					Project Site Access Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.500

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-010 Mountain Boulevard-Sequoyah Road.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Mountain Boulevard Southbound					Sequoyah Road Westbound					Mountain Boulevard Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	4	4	0	0	8	8	0	10	0	18	0	11	4	0	15	0	0	0	0	0	41	0
07:15	4	7	0	0	11	5	0	17	0	22	0	27	6	0	33	0	0	0	0	0	66	0
07:30	8	10	0	0	18	12	0	19	0	31	0	97	10	0	107	0	0	0	0	0	156	0
07:45	7	9	0	0	16	9	0	30	0	39	0	167	7	0	174	0	0	0	0	0	229	0
Total	23	30	0	0	53	34	0	76	0	110	0	302	27	0	329	0	0	0	0	0	492	0
08:00	8	16	0	0	24	9	0	15	0	24	0	203	10	0	213	0	0	0	0	0	261	0
08:15	6	19	0	0	25	8	0	15	0	23	0	163	11	0	174	0	0	0	0	0	222	0
08:30	7	13	0	0	20	8	0	15	0	23	0	132	4	0	136	0	0	0	0	0	179	0
08:45	6	6	0	0	12	7	0	7	0	14	0	41	5	0	46	0	0	0	0	0	72	0
Total	27	54	0	0	81	32	0	52	0	84	0	539	30	0	569	0	0	0	0	0	734	0
16:00	15	14	0	0	29	4	0	12	0	16	0	14	16	0	30	0	0	0	0	0	75	0
16:15	6	12	0	0	18	5	0	16	0	21	0	13	8	0	21	0	0	0	0	0	60	0
16:30	14	16	0	0	30	13	0	5	0	18	0	9	11	0	20	0	0	0	0	0	68	0
16:45	7	17	0	0	24	4	0	9	0	13	0	11	6	0	17	0	0	0	0	0	54	0
Total	42	59	0	0	101	26	0	42	0	68	0	47	41	0	88	0	0	0	0	0	257	0
17:00	11	23	0	0	34	5	0	19	0	24	0	10	15	0	25	0	0	0	0	0	83	0
17:15	16	11	0	0	27	4	0	7	0	11	0	12	16	0	28	0	0	0	0	0	66	0
17:30	11	24	0	0	35	9	0	16	0	25	0	19	12	0	31	0	0	0	0	0	91	0
17:45	15	9	0	0	24	4	0	13	0	17	0	12	14	0	26	0	0	0	0	0	67	0
Total	53	67	0	0	120	22	0	55	0	77	0	53	57	0	110	0	0	0	0	0	307	0
Grand Total	145	210	0	0	355	114	0	225	0	339	0	941	155	0	1096	0	0	0	0	0	1790	0
Apprch %	40.8%	59.2%	0.0%	0.0%		33.6%	0.0%	66.4%	0.0%		0.0%	85.9%	14.1%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	8.1%	11.7%	0.0%	0.0%	19.8%	6.4%	0.0%	12.6%	0.0%	18.9%	0.0%	52.6%	8.7%	0.0%	61.2%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-010 Mountain Boulevard-Sequoyah Road.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Mountain Boulevard Southbound					Sequoyah Road Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	7	9	0	0	16	9	0	30	0	39	0	167	7	0	174	0	0	0	0	0	229
08:00	8	16	0	0	24	9	0	15	0	24	0	203	10	0	213	0	0	0	0	0	261
08:15	6	19	0	0	25	8	0	15	0	23	0	163	11	0	174	0	0	0	0	0	222
08:30	7	13	0	0	20	8	0	15	0	23	0	132	4	0	136	0	0	0	0	0	179
Total Volume	28	57	0	0	85	34	0	75	0	109	0	665	32	0	697	0	0	0	0	0	891
% App Total	32.9%	67.1%	0.0%	0.0%		31.2%	0.0%	68.8%	0.0%		0.0%	95.4%	4.6%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.875	.750	.000	.000	.850	.944	.000	.625	.000	.699	.000	.819	.727	.000	.818	.000	.000	.000	.000	.000	.853

PM PEAK HOUR	Mountain Boulevard Southbound					Sequoyah Road Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	11	23	0	0	34	5	0	19	0	24	0	10	15	0	25	0	0	0	0	0	83
17:15	16	11	0	0	27	4	0	7	0	11	0	12	16	0	28	0	0	0	0	0	66
17:30	11	24	0	0	35	9	0	16	0	25	0	19	12	0	31	0	0	0	0	0	91
17:45	15	9	0	0	24	4	0	13	0	17	0	12	14	0	26	0	0	0	0	0	67
Total Volume	53	67	0	0	120	22	0	55	0	77	0	53	57	0	110	0	0	0	0	0	307
% App Total	44.2%	55.8%	0.0%	0.0%		28.6%	0.0%	71.4%	0.0%		0.0%	48.2%	51.8%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.828	.698	.000	.000	.857	.611	.000	.724	.000	.770	.000	.697	.891	.000	.887	.000	.000	.000	.000	.000	.843

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-010 Mountain Boulevard-Sequoyah Road.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Mountain Boulevard Southbound					Sequoyah Road Westbound					Mountain Boulevard Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
08:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Total	0	1	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	2
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2	0
Grand Total	0	1	0	0	1	0	0	1	4	1	0	2	0	0	2	0	0	0	0	0	4	4
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	25.0%	0.0%		25.0%	0.0%	0.0%	25.0%		25.0%	0.0%	50.0%	0.0%		50.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-010 Mountain Boulevard-Sequoyah Road.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Mountain Boulevard Southbound					Sequoyah Road Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	Mountain Boulevard Southbound					Sequoyah Road Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.250		.250	.000	.250	.000		.250	.000	.000	.000		.000	.500

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-011 Mountain Boulevard-Calafia Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Mountain Boulevard Southbound					Calafia Avenue Westbound					Mountain Boulevard Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	1	12	0	0	13	0	0	1	0	1	0	12	1	0	13	0	0	0	0	0	27	0
07:15	1	12	0	0	13	0	0	5	0	5	0	28	2	0	30	0	0	0	0	0	48	0
07:30	5	17	0	0	22	1	0	8	0	9	0	102	1	1	104	0	0	0	0	0	135	1
07:45	3	17	0	0	20	3	0	7	0	10	0	164	0	0	164	0	0	0	0	0	194	0
Total	10	58	0	0	68	4	0	21	0	25	0	306	4	1	311	0	0	0	0	0	404	1
08:00	7	21	0	0	28	4	0	16	0	20	0	197	2	0	199	0	0	0	0	0	247	0
08:15	8	20	0	0	28	4	0	27	0	31	0	148	1	0	149	0	0	0	0	0	208	0
08:30	3	18	0	0	21	1	0	9	0	10	0	126	1	0	127	0	0	0	0	0	158	0
08:45	1	13	0	0	14	0	0	6	0	6	0	35	0	0	35	0	0	0	0	0	55	0
Total	19	72	0	0	91	9	0	58	0	67	0	506	4	0	510	0	0	0	0	0	668	0
16:00	0	19	0	0	19	0	0	0	0	0	0	30	1	0	31	0	0	0	0	0	50	0
16:15	2	15	0	0	17	1	0	2	0	3	0	20	1	1	22	0	0	0	0	0	42	1
16:30	1	29	0	0	30	0	0	1	0	1	0	16	0	0	16	0	0	0	0	0	47	0
16:45	1	20	0	0	21	0	0	2	0	2	0	17	1	0	18	0	0	0	0	0	41	0
Total	4	83	0	0	87	1	0	5	0	6	0	83	3	1	87	0	0	0	0	0	180	1
17:00	3	25	0	0	28	0	0	3	0	3	0	23	1	0	24	0	0	0	0	0	55	0
17:15	5	11	0	0	16	0	0	1	0	1	0	27	0	1	28	0	0	0	0	0	45	1
17:30	10	23	0	0	33	0	0	6	0	6	0	25	0	0	25	0	0	0	0	0	64	0
17:45	4	9	0	0	13	0	0	2	0	2	0	28	2	0	30	0	0	0	0	0	45	0
Total	22	68	0	0	90	0	0	12	0	12	0	103	3	1	107	0	0	0	0	0	209	1
Grand Total	55	281	0	0	336	14	0	96	0	110	0	998	14	3	1015	0	0	0	0	0	1461	3
Apprch %	16.4%	83.6%	0.0%	0.0%		12.7%	0.0%	87.3%	0.0%		0.0%	98.3%	1.4%	0.3%		0.0%	0.0%	0.0%	0.0%			
Total %	3.8%	19.2%	0.0%	0.0%	23.0%	1.0%	0.0%	6.6%	0.0%	7.5%	0.0%	68.3%	1.0%	0.2%	69.5%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-011 Mountain Boulevard-Calafia Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Mountain Boulevard Southbound					Calafia Avenue Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	3	17	0	0	20	3	0	7	0	10	0	164	0	0	164	0	0	0	0	0	194
08:00	7	21	0	0	28	4	0	16	0	20	0	197	2	0	199	0	0	0	0	0	247
08:15	8	20	0	0	28	4	0	27	0	31	0	148	1	0	149	0	0	0	0	0	208
08:30	3	18	0	0	21	1	0	9	0	10	0	126	1	0	127	0	0	0	0	0	158
Total Volume	21	76	0	0	97	12	0	59	0	71	0	635	4	0	639	0	0	0	0	0	807
% App Total	21.6%	78.4%	0.0%	0.0%		16.9%	0.0%	83.1%	0.0%		0.0%	99.4%	0.6%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.656	.905	.000	.000	.866	.750	.000	.546	.000	.573	.000	.806	.500	.000	.803	.000	.000	.000	.000	.000	.817

PM PEAK HOUR	Mountain Boulevard Southbound					Calafia Avenue Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	3	25	0	0	28	0	0	3	0	3	0	23	1	0	24	0	0	0	0	0	55
17:15	5	11	0	0	16	0	0	1	0	1	0	27	0	1	28	0	0	0	0	0	45
17:30	10	23	0	0	33	0	0	6	0	6	0	25	0	0	25	0	0	0	0	0	64
17:45	4	9	0	0	13	0	0	2	0	2	0	28	2	0	30	0	0	0	0	0	45
Total Volume	22	68	0	0	90	0	0	12	0	12	0	103	3	1	107	0	0	0	0	0	209
% App Total	24.4%	75.6%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		0.0%	96.3%	2.8%	0.9%		0.0%	0.0%	0.0%	0.0%		
PHF	.550	.680	.000	.000	.682	.000	.000	.500	.000	.500	.000	.920	.375	.250	.892	.000	.000	.000	.000	.000	.816

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-011 Mountain Boulevard-Calafia Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Mountain Boulevard Southbound					Calafia Avenue Westbound					Mountain Boulevard Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	0	1	0	0	0	2	0	0	2	0	0	2	0	0	0	0	0	3	2
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	33.3%	0.0%		33.3%	0.0%	0.0%	0.0%		0.0%	0.0%	66.7%	0.0%		66.7%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-011 Mountain Boulevard-Calafia Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Mountain Boulevard Southbound					Calafia Avenue Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	Mountain Boulevard Southbound					Calafia Avenue Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-012 Mountain Boulevard-Golf Links Road.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Mountain Boulevard Southbound					Golf Links Road Westbound					Mountain Boulevard Northbound					Golf Links Road Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	1	11	0	12	0	73	0	0	73	0	0	0	1	1	15	22	3	4	44	130	5
07:15	2	1	18	0	21	0	56	2	0	58	0	2	0	0	2	35	44	6	14	99	180	14
07:30	2	1	16	0	19	0	67	3	0	70	0	0	0	0	0	96	50	9	12	167	256	12
07:45	3	1	21	0	25	0	61	15	0	76	2	0	0	0	2	141	50	16	3	210	313	3
Total	7	4	66	0	77	0	257	20	0	277	2	2	0	1	5	287	166	34	33	520	879	34
08:00	2	2	32	0	36	1	59	9	0	69	1	0	0	0	1	195	68	11	9	283	389	9
08:15	3	0	22	0	25	0	84	6	0	90	3	2	0	0	5	140	132	16	7	295	415	7
08:30	5	0	23	0	28	0	86	13	0	99	2	0	0	0	2	116	57	13	2	188	317	2
08:45	2	2	20	0	24	0	62	6	0	68	3	1	0	0	4	34	46	15	6	101	197	6
Total	12	4	97	0	113	1	291	34	0	326	9	3	0	0	12	485	303	55	24	867	1318	24
16:00	2	2	19	0	23	0	40	1	0	41	16	0	0	0	16	32	55	3	4	94	174	4
16:15	3	1	17	0	21	0	47	5	0	52	12	2	0	0	14	17	51	1	8	77	164	8
16:30	5	0	24	0	29	0	61	1	0	62	16	0	0	0	16	20	71	2	5	98	205	5
16:45	3	0	23	0	26	0	63	4	0	67	12	0	0	0	12	24	60	2	4	90	195	4
Total	13	3	83	0	99	0	211	11	0	222	56	2	0	0	58	93	237	8	21	359	738	21
17:00	4	0	25	1	30	0	50	0	0	50	17	0	1	0	18	30	71	0	5	106	204	6
17:15	1	1	9	0	11	2	56	2	0	60	6	2	1	0	9	23	88	1	5	117	197	5
17:30	3	0	21	0	24	0	80	1	0	81	5	0	0	0	5	28	76	1	8	113	223	8
17:45	4	0	12	0	16	0	87	5	0	92	1	0	0	0	1	28	77	0	8	113	222	8
Total	12	1	67	1	81	2	273	8	0	283	29	2	2	0	33	109	312	2	26	449	846	27
Grand Total	44	12	313	1	370	3	1032	73	0	1108	96	9	2	1	108	974	1018	99	104	2195	3781	106
Apprch %	11.9%	3.2%	84.6%	0.3%		0.3%	93.1%	6.6%	0.0%		88.9%	8.3%	1.9%	0.9%		44.4%	46.4%	4.5%	4.7%			
Total %	1.2%	0.3%	8.3%	0.0%	9.8%	0.1%	27.3%	1.9%	0.0%	29.3%	2.5%	0.2%	0.1%	0.0%	2.9%	25.8%	26.9%	2.6%	2.8%	58.1%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-012 Mountain Boulevard-Golf Links Road.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Mountain Boulevard Southbound					Golf Links Road Westbound					Mountain Boulevard Northbound					Golf Links Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	3	1	21	0	25	0	61	15	0	76	2	0	0	0	2	141	50	16	3	210	313
08:00	2	2	32	0	36	1	59	9	0	69	1	0	0	0	1	195	68	11	9	283	389
08:15	3	0	22	0	25	0	84	6	0	90	3	2	0	0	5	140	132	16	7	295	415
08:30	5	0	23	0	28	0	86	13	0	99	2	0	0	0	2	116	57	13	2	188	317
Total Volume	13	3	98	0	114	1	290	43	0	334	8	2	0	0	10	592	307	56	21	976	1434
% App Total	11.4%	2.6%	86.0%	0.0%		0.3%	86.8%	12.9%	0.0%		80.0%	20.0%	0.0%	0.0%		60.7%	31.5%	5.7%	2.2%		
PHF	.650	.375	.766	.000	.792	.250	.843	.717	.000	.843	.667	.250	.000	.000	.500	.759	.581	.875	.583	.827	.864

PM PEAK HOUR	Mountain Boulevard Southbound					Golf Links Road Westbound					Mountain Boulevard Northbound					Golf Links Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	4	0	25	1	30	0	50	0	0	50	17	0	1	0	18	30	71	0	5	106	204
17:15	1	1	9	0	11	2	56	2	0	60	6	2	1	0	9	23	88	1	5	117	197
17:30	3	0	21	0	24	0	80	1	0	81	5	0	0	0	5	28	76	1	8	113	223
17:45	4	0	12	0	16	0	87	5	0	92	1	0	0	0	1	28	77	0	8	113	222
Total Volume	12	1	67	1	81	2	273	8	0	283	29	2	2	0	33	109	312	2	26	449	846
% App Total	14.8%	1.2%	82.7%	1.2%		0.7%	96.5%	2.8%	0.0%		87.9%	6.1%	6.1%	0.0%		24.3%	69.5%	0.4%	5.8%		
PHF	.750	.250	.670	.250	.675	.250	.784	.400	.000	.769	.426	.250	.500	.000	.458	.908	.886	.500	.813	.959	.948

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-012 Mountain Boulevard-Golf Links Road.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Mountain Boulevard Southbound					Golf Links Road Westbound					Mountain Boulevard Northbound					Golf Links Road Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	5
07:30	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
07:45	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	13
08:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
08:15	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
08:45	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	0	1	1	8	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	9
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0
16:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	2
16:30	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	2	2	1
Total	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	2	1	0	1	3	4	3
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
17:15	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
17:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	2	0	0	0	0	1	0	0	0	0	1	0	0	0	1	1	1	1	5
Grand Total	0	1	1	22	2	0	1	0	2	1	0	0	0	3	0	2	1	1	3	4	7	30
Apprch %	0.0%	50.0%	50.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			50.0%	25.0%	25.0%				
Total %	0.0%	14.3%	14.3%		28.6%	0.0%	14.3%	0.0%		14.3%	0.0%	0.0%	0.0%		0.0%	28.6%	14.3%	14.3%		57.1%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-012 Mountain Boulevard-Golf Links Road.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Mountain Boulevard Southbound					Golf Links Road Westbound					Mountain Boulevard Northbound					Golf Links Road Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Total Volume	0	1	0	9	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.250

PM PEAK HOUR	Mountain Boulevard Southbound					Golf Links Road Westbound					Mountain Boulevard Northbound					Golf Links Road Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
17:15	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Total Volume	0	0	0	2	0	0	0	0	1	0	0	0	0	1	0	0	0	1	1	1	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.250		.250	.250

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-013 I-580 WB Ramps-Golf Links Road.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	I-580 WB On-Ramp Southbound					Golf Links Road Westbound					I-580 WB Off-Ramp Northbound					Golf Links Road Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	0	0	0	0	0	49	40	0	89	56	0	15	0	71	134	31	0	0	165	325	0
07:15	0	0	0	0	0	0	37	47	0	84	84	0	28	0	112	144	70	0	0	214	410	0
07:30	0	0	0	0	0	0	48	45	0	93	51	0	55	0	106	185	112	0	0	297	496	0
07:45	0	0	0	0	0	0	63	23	0	86	77	0	93	0	170	129	124	0	0	253	509	0
Total	0	0	0	0	0	0	197	155	0	352	268	0	191	0	459	592	337	0	0	929	1740	0
08:00	0	0	0	0	0	0	75	19	0	94	91	2	121	0	214	113	167	0	0	280	588	0
08:15	0	0	0	0	0	0	100	23	0	123	91	0	103	0	194	110	191	0	0	301	618	0
08:30	0	0	0	0	0	0	90	29	0	119	111	0	97	0	208	76	89	0	0	165	492	0
08:45	0	0	0	0	0	0	63	22	0	85	78	1	44	0	123	72	57	0	0	129	337	0
Total	0	0	0	0	0	0	328	93	0	421	371	3	365	0	739	371	504	0	0	875	2035	0
16:00	0	0	0	0	0	0	60	25	0	85	90	0	56	0	146	120	42	0	1	163	394	1
16:15	0	0	0	0	0	0	48	30	0	78	116	0	37	0	153	132	43	0	0	175	406	0
16:30	0	0	0	0	0	0	67	40	0	107	99	0	39	0	138	120	61	0	0	181	426	0
16:45	0	0	0	0	0	0	78	29	0	107	83	0	37	0	120	118	46	0	0	164	391	0
Total	0	0	0	0	0	0	253	124	0	377	388	0	169	0	557	490	192	0	1	683	1617	1
17:00	0	0	0	0	0	0	61	37	0	98	93	2	46	0	141	122	52	0	0	174	413	0
17:15	0	0	0	0	0	0	50	23	0	73	109	0	62	0	171	120	64	0	0	184	428	0
17:30	0	0	0	0	0	0	70	43	0	113	100	0	48	0	148	113	64	0	1	178	439	1
17:45	0	0	0	0	0	0	58	42	1	101	107	0	53	0	160	108	68	0	0	176	437	1
Total	0	0	0	0	0	0	239	145	1	385	409	2	209	0	620	463	248	0	1	712	1717	2
Grand Total	0	0	0	0	0	0	1017	517	1	1535	1436	5	934	0	2375	1916	1281	0	2	3199	7109	3
Apprch %	0.0%	0.0%	0.0%	0.0%		0.0%	66.3%	33.7%	0.1%		60.5%	0.2%	39.3%	0.0%		59.9%	40.0%	0.0%	0.1%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	7.3%	0.0%	21.6%	20.2%	0.1%	13.1%	0.0%	33.4%	27.0%	18.0%	0.0%	0.0%	45.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
(916) 771-8700
orders@atdtraffic.com

All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

File Name : 15-7302-013 I-580 WB Ramps-Golf Links Road.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	I-580 WB On-Ramp Southbound					Golf Links Road Westbound					I-580 WB Off-Ramp Northbound					Golf Links Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	0	0	0	48	45	0	93	51	0	55	0	106	185	112	0	0	297	496
07:45	0	0	0	0	0	0	63	23	0	86	77	0	93	0	170	129	124	0	0	253	509
08:00	0	0	0	0	0	0	75	19	0	94	91	2	121	0	214	113	167	0	0	280	588
08:15	0	0	0	0	0	0	100	23	0	123	91	0	103	0	194	110	191	0	0	301	618
Total Volume	0	0	0	0	0	0	286	110	0	396	310	2	372	0	684	537	594	0	0	1131	2211
% App Total	0.0%	0.0%	0.0%	0.0%		0.0%	72.2%	27.8%	0.0%		45.3%	0.3%	54.4%	0.0%		47.5%	52.5%	0.0%	0.0%		
PHF	.000	.000	.000	.000	.000	.000	.715	.611	.000	.805	.852	.250	.769	.000	.799	.726	.777	.000	.000	.939	.894

PM PEAK HOUR	I-580 WB On-Ramp Southbound					Golf Links Road Westbound					I-580 WB Off-Ramp Northbound					Golf Links Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	61	37	0	98	93	2	46	0	141	122	52	0	0	174	413
17:15	0	0	0	0	0	0	50	23	0	73	109	0	62	0	171	120	64	0	0	184	428
17:30	0	0	0	0	0	0	70	43	0	113	100	0	48	0	148	113	64	0	1	178	439
17:45	0	0	0	0	0	0	58	42	1	101	107	0	53	0	160	108	68	0	0	176	437
Total Volume	0	0	0	0	0	0	239	145	1	385	409	2	209	0	620	463	248	0	1	712	1717
% App Total	0.0%	0.0%	0.0%	0.0%		0.0%	62.1%	37.7%	0.3%		66.0%	0.3%	33.7%	0.0%		65.0%	34.8%	0.0%	0.1%		
PHF	.000	.000	.000	.000	.000	.000	.854	.843	.250	.852	.938	.250	.843	.000	.906	.949	.912	.000	.250	.967	.978

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-013 I-580 WB Ramps-Golf Links Road.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	I-580 WB On-Ramp Southbound					Golf Links Road Westbound					I-580 WB Off-Ramp Northbound					Golf Links Road Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
07:15	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	5
08:00	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
08:15	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	4
08:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	1	2
Total	0	0	0	4	0	0	1	0	1	1	0	0	0	4	0	0	0	0	0	0	1	9
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
16:15	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
16:30	0	0	0	4	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	4
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	0
Total	0	0	0	7	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4	7
17:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
17:15	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	3
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
Total	0	0	0	2	0	0	0	0	1	0	0	0	0	2	0	0	2	0	0	2	2	5
Grand Total	0	0	0	16	0	0	2	0	2	2	0	0	0	8	0	0	5	0	0	5	7	26
Apprch %	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	28.6%	0.0%		28.6%	0.0%	0.0%	0.0%		0.0%	0.0%	71.4%	0.0%		71.4%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-013 I-580 WB Ramps-Golf Links Road.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	I-580 WB On-Ramp Southbound					Golf Links Road Westbound					I-580 WB Off-Ramp Northbound					Golf Links Road Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
Total Volume	0	0	0	5	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	I-580 WB On-Ramp Southbound					Golf Links Road Westbound					I-580 WB Off-Ramp Northbound					Golf Links Road Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
17:15	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total Volume	0	0	0	2	0	0	0	0	1	0	0	0	0	2	0	0	2	0	0	2	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.500	.000		.500	.500

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-014 98th Avenue-I-580 EB Off-Ramp-Golf Links R
Date : 4/14/2015

Unshifted Count = All Vehicles

	I-580 EB Off-Ramp Southbound					Golf Links Road Westbound					98th Avenue Northbound					Golf Links Road Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	15	73	5	0	93	90	18	0	0	108	3	0	139	2	144	0	14	24	0	38	383	2
07:15	24	91	6	0	121	91	28	0	0	119	2	0	181	0	183	0	17	42	0	59	482	0
07:30	25	127	4	0	156	79	21	0	0	100	6	0	250	0	256	0	14	44	0	58	570	0
07:45	27	190	7	0	224	102	32	0	0	134	6	0	222	0	228	0	12	55	0	67	653	0
Total	91	481	22	0	594	362	99	0	0	461	17	0	792	2	811	0	57	165	0	222	2088	2
08:00	33	219	3	0	255	127	32	0	0	159	19	0	233	1	253	0	14	39	0	53	720	1
08:15	52	188	5	0	245	146	52	0	0	198	18	0	241	0	259	0	21	47	0	68	770	0
08:30	21	105	7	0	133	138	64	0	0	202	10	0	117	2	129	0	12	54	0	66	530	2
08:45	30	87	3	0	120	101	39	0	0	140	4	0	86	0	90	0	12	35	0	47	397	0
Total	136	599	18	0	753	512	187	0	0	699	51	0	677	3	731	0	59	175	0	234	2417	3
16:00	24	116	5	0	145	117	29	0	0	146	9	0	138	1	148	0	9	50	0	59	498	1
16:15	24	125	13	0	162	117	47	0	0	164	9	0	136	0	145	0	10	35	0	45	516	0
16:30	30	119	11	0	160	131	42	0	0	173	4	0	139	2	145	0	13	39	0	52	530	2
16:45	18	134	5	0	157	125	37	0	0	162	15	0	123	2	140	0	19	39	0	58	517	2
Total	96	494	34	0	624	490	155	0	0	645	37	0	536	5	578	0	51	163	0	214	2061	5
17:00	32	137	9	0	178	110	38	0	0	148	10	0	134	1	145	0	11	44	0	55	526	1
17:15	35	124	11	0	170	116	42	0	0	158	12	0	135	3	150	0	10	47	0	57	535	3
17:30	33	119	6	0	158	123	51	0	0	174	9	0	127	2	138	0	22	34	0	56	526	2
17:45	32	110	6	0	148	119	40	0	0	159	10	0	125	0	135	0	21	38	0	59	501	0
Total	132	490	32	0	654	468	171	0	0	639	41	0	521	6	568	0	64	163	0	227	2088	6
Grand Total	455	2064	106	0	2625	1832	612	0	0	2444	146	0	2526	16	2688	0	231	666	0	897	8654	16
Apprch %	17.3%	78.6%	4.0%	0.0%		75.0%	25.0%	0.0%	0.0%		5.4%	0.0%	94.0%	0.6%		0.0%	25.8%	74.2%	0.0%			
Total %	5.3%	23.9%	1.2%	0.0%	30.3%	21.2%	7.1%	0.0%	0.0%	28.2%	1.7%	0.0%	29.2%	0.2%	31.1%	0.0%	2.7%	7.7%	0.0%	10.4%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-014 98th Avenue-I-580 EB Off-Ramp-Golf Links R
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	I-580 EB Off-Ramp Southbound					Golf Links Road Westbound					98th Avenue Northbound					Golf Links Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	25	127	4	0	156	79	21	0	0	100	6	0	250	0	256	0	14	44	0	58	570
07:45	27	190	7	0	224	102	32	0	0	134	6	0	222	0	228	0	12	55	0	67	653
08:00	33	219	3	0	255	127	32	0	0	159	19	0	233	1	253	0	14	39	0	53	720
08:15	52	188	5	0	245	146	52	0	0	198	18	0	241	0	259	0	21	47	0	68	770
Total Volume	137	724	19	0	880	454	137	0	0	591	49	0	946	1	996	0	61	185	0	246	2713
% App Total	15.6%	82.3%	2.2%	0.0%		76.8%	23.2%	0.0%	0.0%		4.9%	0.0%	95.0%	0.1%		0.0%	24.8%	75.2%	0.0%		
PHF	.659	.826	.679	.000	.863	.777	.659	.000	.000	.746	.645	.000	.946	.250	.961	.000	.726	.841	.000	.904	.881

PM PEAK HOUR	I-580 EB Off-Ramp Southbound					Golf Links Road Westbound					98th Avenue Northbound					Golf Links Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	30	119	11	0	160	131	42	0	0	173	4	0	139	2	145	0	13	39	0	52	530
16:45	18	134	5	0	157	125	37	0	0	162	15	0	123	2	140	0	19	39	0	58	517
17:00	32	137	9	0	178	110	38	0	0	148	10	0	134	1	145	0	11	44	0	55	526
17:15	35	124	11	0	170	116	42	0	0	158	12	0	135	3	150	0	10	47	0	57	535
Total Volume	115	514	36	0	665	482	159	0	0	641	41	0	531	8	580	0	53	169	0	222	2108
% App Total	17.3%	77.3%	5.4%	0.0%		75.2%	24.8%	0.0%	0.0%		7.1%	0.0%	91.6%	1.4%		0.0%	23.9%	76.1%	0.0%		
PHF	.821	.938	.818	.000	.934	.920	.946	.000	.000	.926	.683	.000	.955	.667	.967	.000	.697	.899	.000	.957	.985

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-014 98th Avenue-I-580 EB Off-Ramp-Golf Links R
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	I-580 EB Off-Ramp Southbound					Golf Links Road Westbound					98th Avenue Northbound					Golf Links Road Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	5
08:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1
Total	0	0	0	2	0	1	0	0	0	1	0	0	0	4	0	0	0	0	1	0	1	7
16:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	1
16:15	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	5
16:30	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0
Total	0	0	0	4	0	0	1	0	0	1	0	0	3	0	3	0	0	0	3	0	4	7
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	2	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	0	2	3	0
Grand Total	0	0	0	7	0	1	1	0	0	2	0	0	4	5	4	0	1	1	4	2	8	16
Apprch %	0.0%	0.0%	0.0%			50.0%	50.0%	0.0%			0.0%	0.0%	100.0%			0.0%	50.0%	50.0%				
Total %	0.0%	0.0%	0.0%		0.0%	12.5%	12.5%	0.0%		25.0%	0.0%	0.0%	50.0%		50.0%	0.0%	12.5%	12.5%		25.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-014 98th Avenue-I-580 EB Off-Ramp-Golf Links R
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	I-580 EB Off-Ramp Southbound					Golf Links Road Westbound					98th Avenue Northbound					Golf Links Road Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0
Total Volume	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0	0	0	0	1	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	I-580 EB Off-Ramp Southbound					Golf Links Road Westbound					98th Avenue Northbound					Golf Links Road Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	0	1	0	0	1	0	0	2	0	2	0	0	0	0	0	3
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.250		.250	.000	.000	.000		.000	.375

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-015 98th Avenue-I-580 EB On-Ramp.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	98th Avenue Southbound					I-580 EB On-Ramp Westbound					98th Avenue Northbound					Driveway Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	56	129	1	1	187	0	0	0	0	0	0	141	74	0	215	0	0	0	0	0	402	1
07:15	60	168	2	0	230	0	0	0	0	0	0	183	103	0	286	0	0	0	0	0	516	0
07:30	62	174	9	1	246	0	0	0	0	0	0	254	94	0	348	0	0	0	0	0	594	1
07:45	76	243	20	0	339	0	0	0	0	0	0	235	116	0	351	0	0	0	0	0	690	0
Total	254	714	32	2	1002	0	0	0	0	0	0	813	387	0	1200	0	0	0	0	0	2202	2
08:00	52	302	38	0	392	0	0	0	0	0	0	255	123	0	378	0	0	0	0	0	770	0
08:15	70	286	30	1	387	0	0	0	0	0	0	256	115	0	371	0	0	0	0	0	758	1
08:30	77	223	0	1	301	0	0	0	0	0	0	124	86	0	210	0	0	0	0	0	511	1
08:45	56	164	0	1	221	0	0	0	0	0	0	90	58	0	148	0	0	0	0	0	369	1
Total	255	975	68	3	1301	0	0	0	0	0	0	725	382	0	1107	0	0	0	0	0	2408	3
16:00	75	209	0	1	285	0	0	0	0	0	0	147	69	0	216	0	0	0	0	0	501	1
16:15	70	205	0	0	275	0	0	0	0	0	0	147	96	0	243	0	0	0	0	0	518	0
16:30	78	209	0	0	287	0	0	0	0	0	0	147	74	0	221	0	0	0	0	0	508	0
16:45	85	217	0	1	303	0	0	0	0	0	0	137	66	0	203	0	0	0	0	0	506	1
Total	308	840	0	2	1150	0	0	0	0	0	0	578	305	0	883	0	0	0	0	0	2033	2
17:00	73	210	0	1	284	0	0	0	0	0	0	143	76	0	219	0	0	0	0	0	503	1
17:15	83	214	0	2	299	0	0	0	0	0	0	153	89	0	242	0	0	0	0	0	541	2
17:30	74	205	0	2	281	0	0	0	0	0	0	134	111	0	245	0	0	0	0	0	526	2
17:45	77	188	0	1	266	0	0	0	0	0	0	126	74	0	200	0	0	0	0	0	466	1
Total	307	817	0	6	1130	0	0	0	0	0	0	556	350	0	906	0	0	0	0	0	2036	6
Grand Total	1124	3346	100	13	4583	0	0	0	0	0	0	2672	1424	0	4096	0	0	0	0	0	8679	13
Apprch %	24.5%	73.0%	2.2%	0.3%		0.0%	0.0%	0.0%	0.0%		0.0%	65.2%	34.8%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	13.0%	38.6%	1.2%	0.1%	52.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	30.8%	16.4%	0.0%	47.2%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
(916) 771-8700
orders@atdtraffic.com

All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

File Name : 15-7302-015 98th Avenue-I-580 EB On-Ramp.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	98th Avenue Southbound					I-580 EB On-Ramp Westbound					98th Avenue Northbound					Driveway Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	62	174	9	1	246	0	0	0	0	0	0	254	94	0	348	0	0	0	0	0	594
07:45	76	243	20	0	339	0	0	0	0	0	0	235	116	0	351	0	0	0	0	0	690
08:00	52	302	38	0	392	0	0	0	0	0	0	255	123	0	378	0	0	0	0	0	770
08:15	70	286	30	1	387	0	0	0	0	0	0	256	115	0	371	0	0	0	0	0	758
Total Volume	260	1005	97	2	1364	0	0	0	0	0	0	1000	448	0	1448	0	0	0	0	0	2812
% App Total	19.1%	73.7%	7.1%	0.1%		0.0%	0.0%	0.0%	0.0%		0.0%	69.1%	30.9%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.855	.832	.638	.500	.870	.000	.000	.000	.000	.000	.000	.977	.911	.000	.958	.000	.000	.000	.000	.000	.913

PM PEAK HOUR	98th Avenue Southbound					I-580 EB On-Ramp Westbound					98th Avenue Northbound					Driveway Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	85	217	0	1	303	0	0	0	0	0	0	137	66	0	203	0	0	0	0	0	506
17:00	73	210	0	1	284	0	0	0	0	0	0	143	76	0	219	0	0	0	0	0	503
17:15	83	214	0	2	299	0	0	0	0	0	0	153	89	0	242	0	0	0	0	0	541
17:30	74	205	0	2	281	0	0	0	0	0	0	134	111	0	245	0	0	0	0	0	526
Total Volume	315	846	0	6	1167	0	0	0	0	0	0	567	342	0	909	0	0	0	0	0	2076
% App Total	27.0%	72.5%	0.0%	0.5%		0.0%	0.0%	0.0%	0.0%		0.0%	62.4%	37.6%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.926	.975	.000	.750	.963	.000	.000	.000	.000	.000	.000	.926	.770	.000	.928	.000	.000	.000	.000	.000	.959

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-015 98th Avenue-I-580 EB On-Ramp.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	98th Avenue Southbound					I-580 EB On-Ramp Westbound					98th Avenue Northbound					Driveway Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
08:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Total	0	1	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	2
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
16:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
16:45	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	0
Total	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	2	0	4	2
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	1	0	0	1	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	2	2
Total	0	1	0	0	1	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	2	2
Grand Total	0	3	0	0	3	0	0	0	5	0	0	4	0	1	4	0	0	0	3	0	7	9
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	42.9%	0.0%		42.9%	0.0%	0.0%	0.0%		0.0%	0.0%	57.1%	0.0%		57.1%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-015 98th Avenue-I-580 EB On-Ramp.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	98th Avenue Southbound					I-580 EB On-Ramp Westbound					98th Avenue Northbound					Driveway Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	98th Avenue Southbound					I-580 EB On-Ramp Westbound					98th Avenue Northbound					Driveway Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000	.250

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-016 98th Avenue-Stanley Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	98th Avenue Southbound					Stanley Avenue Westbound					98th Avenue Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	2	127	0	1	130	2	0	8	0	10	0	204	2	0	206	0	0	0	0	0	346	1
07:15	6	157	0	0	163	6	0	17	0	23	0	271	1	0	272	0	0	0	0	0	458	0
07:30	4	169	0	10	183	5	0	27	0	32	0	306	5	0	311	0	0	0	0	0	526	10
07:45	4	235	0	24	263	7	0	57	0	64	0	262	0	1	263	0	0	0	0	0	590	25
Total	16	688	0	35	739	20	0	109	0	129	0	1043	8	1	1052	0	0	0	0	0	1920	36
08:00	12	298	0	28	338	14	0	61	0	75	0	296	3	0	299	0	0	0	0	0	712	28
08:15	11	275	0	36	322	18	0	62	0	80	0	260	3	0	263	0	0	0	0	0	665	36
08:30	16	210	0	2	228	5	0	23	0	28	0	186	3	1	190	0	0	0	0	0	446	3
08:45	4	160	0	0	164	0	0	4	0	4	0	148	0	0	148	0	0	0	0	0	316	0
Total	43	943	0	66	1052	37	0	150	0	187	0	890	9	1	900	0	0	0	0	0	2139	67
16:00	13	189	0	0	202	4	0	6	0	10	0	208	1	2	211	0	0	0	0	0	423	2
16:15	12	200	0	0	212	6	0	10	0	16	0	226	3	0	229	0	0	0	0	0	457	0
16:30	14	192	0	0	206	2	0	8	0	10	0	218	5	8	231	0	0	0	0	0	447	8
16:45	8	211	0	1	220	4	0	7	0	11	0	197	7	7	211	0	0	0	0	0	442	8
Total	47	792	0	1	840	16	0	31	0	47	0	849	16	17	882	0	0	0	0	0	1769	18
17:00	11	196	0	2	209	4	0	16	0	20	0	201	9	1	211	0	0	0	0	0	440	3
17:15	14	196	0	0	210	4	0	13	0	17	0	239	2	0	241	0	0	0	0	0	468	0
17:30	6	200	0	0	206	2	0	16	0	18	0	223	8	0	231	0	0	0	0	0	455	0
17:45	6	174	0	0	180	1	0	10	0	11	0	194	1	2	197	0	0	0	0	0	388	2
Total	37	766	0	2	805	11	0	55	0	66	0	857	20	3	880	0	0	0	0	0	1751	5
Grand Total	143	3189	0	104	3436	84	0	345	0	429	0	3639	53	22	3714	0	0	0	0	0	7579	126
Apprch %	4.2%	92.8%	0.0%	3.0%		19.6%	0.0%	80.4%	0.0%		0.0%	98.0%	1.4%	0.6%		0.0%	0.0%	0.0%	0.0%			
Total %	1.9%	42.1%	0.0%	1.4%	45.3%	1.1%	0.0%	4.6%	0.0%	5.7%	0.0%	48.0%	0.7%	0.3%	49.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-016 98th Avenue-Stanley Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	98th Avenue Southbound					Stanley Avenue Westbound					98th Avenue Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	4	169	0	10	183	5	0	27	0	32	0	306	5	0	311	0	0	0	0	0	526
07:45	4	235	0	24	263	7	0	57	0	64	0	262	0	1	263	0	0	0	0	0	590
08:00	12	298	0	28	338	14	0	61	0	75	0	296	3	0	299	0	0	0	0	0	712
08:15	11	275	0	36	322	18	0	62	0	80	0	260	3	0	263	0	0	0	0	0	665
Total Volume	31	977	0	98	1106	44	0	207	0	251	0	1124	11	1	1136	0	0	0	0	0	2493
% App Total	2.8%	88.3%	0.0%	8.9%		17.5%	0.0%	82.5%	0.0%		0.0%	98.9%	1.0%	0.1%		0.0%	0.0%	0.0%	0.0%		
PHF	.646	.820	.000	.681	.818	.611	.000	.835	.000	.784	.000	.918	.550	.250	.913	.000	.000	.000	.000	.000	.875

PM PEAK HOUR	98th Avenue Southbound					Stanley Avenue Westbound					98th Avenue Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	8	211	0	1	220	4	0	7	0	11	0	197	7	7	211	0	0	0	0	0	442
17:00	11	196	0	2	209	4	0	16	0	20	0	201	9	1	211	0	0	0	0	0	440
17:15	14	196	0	0	210	4	0	13	0	17	0	239	2	0	241	0	0	0	0	0	468
17:30	6	200	0	0	206	2	0	16	0	18	0	223	8	0	231	0	0	0	0	0	455
Total Volume	39	803	0	3	845	14	0	52	0	66	0	860	26	8	894	0	0	0	0	0	1805
% App Total	4.6%	95.0%	0.0%	0.4%		21.2%	0.0%	78.8%	0.0%		0.0%	96.2%	2.9%	0.9%		0.0%	0.0%	0.0%	0.0%		
PHF	.696	.951	.000	.375	.960	.875	.000	.813	.000	.825	.000	.900	.722	.286	.927	.000	.000	.000	.000	.000	.964

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-016 98th Avenue-Stanley Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	98th Avenue Southbound					Stanley Avenue Westbound					98th Avenue Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
07:45	1	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	1
Total	1	0	0	1	1	1	0	0	3	1	0	0	0	1	0	0	0	0	0	0	2	5
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
16:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:45	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2	0
Total	0	1	0	0	1	0	0	2	0	2	0	0	0	1	0	0	0	0	0	0	3	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	1	1
Total	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	1	1
Grand Total	1	2	0	1	3	1	0	3	3	4	0	0	0	4	0	0	0	0	0	0	7	8
Apprch %	33.3%	66.7%	0.0%			25.0%	0.0%	75.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	14.3%	28.6%	0.0%		42.9%	14.3%	0.0%	42.9%		57.1%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-016 98th Avenue-Stanley Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	98th Avenue Southbound					Stanley Avenue Westbound					98th Avenue Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
07:45	1	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Total Volume	1	0	0	1	1	1	0	0	2	1	0	0	0	1	0	0	0	0	0	0	2
% App Total	100.0%	0.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.250	.000	.000		.250	.250	.000	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.250

PM PEAK HOUR	98th Avenue Southbound					Stanley Avenue Westbound					98th Avenue Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.250		.250	.000	.000	.000		.000	.000	.000	.000		.000	.250

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-017 Stearns Avenue-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Stearns Avenue Southbound					98th Avenue Westbound					Stearns Avenue Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	26	0	7	0	33	0	91	40	0	131	0	0	2	0	2	6	177	0	0	183	349	0
07:15	24	0	1	0	25	0	104	56	1	161	0	2	3	0	5	4	236	1	0	241	432	1
07:30	32	0	8	0	40	1	109	70	0	180	1	10	5	0	16	13	274	0	0	287	523	0
07:45	9	0	2	0	11	0	142	93	1	236	0	27	4	0	31	16	254	0	0	270	548	1
Total	91	0	18	0	109	1	446	259	2	708	1	39	14	0	54	39	941	1	0	981	1852	2
08:00	8	0	0	0	8	0	197	114	0	311	0	34	3	0	37	21	277	0	0	298	654	0
08:15	25	0	5	0	30	0	172	126	1	299	1	27	4	0	32	24	242	0	0	266	627	1
08:30	17	0	4	0	21	0	191	21	2	214	0	1	1	0	2	2	162	0	0	164	401	2
08:45	4	0	1	0	5	0	160	8	0	168	0	0	0	0	0	0	143	0	0	143	316	0
Total	54	0	10	0	64	0	720	269	3	992	1	62	8	0	71	47	824	0	0	871	1998	3
16:00	27	0	0	0	27	1	174	25	1	201	1	0	1	0	2	2	174	1	0	177	407	1
16:15	17	0	4	0	21	1	166	33	2	202	1	0	3	0	4	5	210	0	0	215	442	2
16:30	29	0	1	0	30	3	158	42	1	204	1	0	0	0	1	13	192	1	0	206	441	1
16:45	24	0	2	0	26	3	151	58	0	212	0	0	1	0	1	13	174	0	0	187	426	0
Total	97	0	7	0	104	8	649	158	4	819	3	0	5	0	8	33	750	2	0	785	1716	4
17:00	32	0	5	0	37	1	168	43	0	212	0	1	5	0	6	7	183	1	0	191	446	0
17:15	33	0	1	0	34	4	157	37	1	199	0	0	3	0	3	6	197	0	0	203	439	1
17:30	19	0	4	0	23	3	173	19	1	196	0	0	1	0	1	6	213	1	0	220	440	1
17:45	8	0	1	0	9	0	162	18	0	180	0	0	2	0	2	3	184	0	0	187	378	0
Total	92	0	11	0	103	8	660	117	2	787	0	1	11	0	12	22	777	2	0	801	1703	2
Grand Total	334	0	46	0	380	17	2475	803	11	3306	5	102	38	0	145	141	3292	5	0	3438	7269	11
Apprch %	87.9%	0.0%	12.1%	0.0%		0.5%	74.9%	24.3%	0.3%		3.4%	70.3%	26.2%	0.0%		4.1%	95.8%	0.1%	0.0%			
Total %	4.6%	0.0%	0.6%	0.0%	5.2%	0.2%	34.0%	11.0%	0.2%	45.5%	0.1%	1.4%	0.5%	0.0%	2.0%	1.9%	45.3%	0.1%	0.0%	47.3%	100.0%	

ALL TRAFFIC DATA

City of Oakland
(916) 771-8700
orders@atdtraffic.com

All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

File Name : 15-7302-017 Stearns Avenue-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Stearns Avenue Southbound					98th Avenue Westbound					Stearns Avenue Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	32	0	8	0	40	1	109	70	0	180	1	10	5	0	16	13	274	0	0	287	523
07:45	9	0	2	0	11	0	142	93	1	236	0	27	4	0	31	16	254	0	0	270	548
08:00	8	0	0	0	8	0	197	114	0	311	0	34	3	0	37	21	277	0	0	298	654
08:15	25	0	5	0	30	0	172	126	1	299	1	27	4	0	32	24	242	0	0	266	627
Total Volume	74	0	15	0	89	1	620	403	2	1026	2	98	16	0	116	74	1047	0	0	1121	2352
% App Total	83.1%	0.0%	16.9%	0.0%		0.1%	60.4%	39.3%	0.2%		1.7%	84.5%	13.8%	0.0%		6.6%	93.4%	0.0%	0.0%		
PHF	.578	.000	.469	.000	.556	.250	.787	.800	.500	.825	.500	.721	.800	.000	.784	.771	.945	.000	.000	.940	.899

PM PEAK HOUR	Stearns Avenue Southbound					98th Avenue Westbound					Stearns Avenue Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	17	0	4	0	21	1	166	33	2	202	1	0	3	0	4	5	210	0	0	215	442
16:30	29	0	1	0	30	3	158	42	1	204	1	0	0	0	1	13	192	1	0	206	441
16:45	24	0	2	0	26	3	151	58	0	212	0	0	1	0	1	13	174	0	0	187	426
17:00	32	0	5	0	37	1	168	43	0	212	0	1	5	0	6	7	183	1	0	191	446
Total Volume	102	0	12	0	114	8	643	176	3	830	2	1	9	0	12	38	759	2	0	799	1755
% App Total	89.5%	0.0%	10.5%	0.0%		1.0%	77.5%	21.2%	0.4%		16.7%	8.3%	75.0%	0.0%		4.8%	95.0%	0.3%	0.0%		
PHF	.797	.000	.600	.000	.770	.667	.957	.759	.375	.979	.500	.250	.450	.000	.500	.731	.904	.500	.000	.929	.984

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-017 Stearns Avenue-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Stearns Avenue Southbound					98th Avenue Westbound					Stearns Avenue Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	6
07:45	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	3	0	1	5
Total	0	0	0	4	0	0	0	1	0	1	0	0	0	2	0	0	0	0	5	0	1	11
08:00	0	0	0	13	0	0	0	0	0	0	0	0	0	1	0	0	0	0	14	0	0	28
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	1	1
Total	0	0	0	13	0	0	0	1	0	1	0	0	0	2	0	0	0	0	14	0	1	29
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:30	0	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	1	3
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	1	1	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	2	3
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
17:45	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	4	0	0	8
Total	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	7	0	0	11
Grand Total	0	0	1	20	1	0	1	2	0	3	0	0	0	7	0	0	0	0	27	0	4	54
Apprch %	0.0%	0.0%	100.0%			0.0%	33.3%	66.7%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	25.0%		25.0%	0.0%	25.0%	50.0%		75.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-017 Stearns Avenue-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Stearns Avenue Southbound					98th Avenue Westbound					Stearns Avenue Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0
07:45	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	3	0	1
08:00	0	0	0	13	0	0	0	0	0	0	0	0	0	1	0	0	0	0	14	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	17	0	0	0	1	0	1	0	0	0	3	0	0	0	0	19	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.250		.250	.000	.000	.000		.000	.000	.000	.000		.000	.250

PM PEAK HOUR	Stearns Avenue Southbound					98th Avenue Westbound					Stearns Avenue Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:30	0	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	1	1	1	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	2
% App Total	0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.250		.250	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.500

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-018 Lawlor Street-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Lawlor Street Southbound					98th Avenue Westbound					Lawlor Street Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	20	0	2	0	22	1	93	0	0	94	0	0	7	0	7	1	154	0	0	155	278	0
07:15	36	0	0	0	36	1	98	1	0	100	0	0	6	0	6	1	208	0	0	209	351	0
07:30	36	1	1	0	38	1	101	3	0	105	2	0	6	0	8	1	228	0	2	231	382	2
07:45	63	0	2	0	65	1	133	1	0	135	1	0	4	0	5	0	206	1	0	207	412	0
Total	155	1	5	0	161	4	425	5	0	434	3	0	23	0	26	3	796	1	2	802	1423	2
08:00	76	0	10	0	86	0	171	2	0	173	0	0	7	0	7	6	207	0	0	213	479	0
08:15	76	0	7	0	83	0	153	3	0	156	1	2	6	0	9	1	175	0	0	176	424	0
08:30	27	0	1	0	28	0	187	0	0	187	0	0	3	0	3	4	139	0	0	143	361	0
08:45	23	0	1	0	24	2	146	3	0	151	0	0	1	0	1	4	114	1	0	119	295	0
Total	202	0	19	0	221	2	657	8	0	667	1	2	17	0	20	15	635	1	0	651	1559	0
16:00	22	1	0	0	23	0	154	3	0	157	1	0	2	0	3	0	155	1	0	156	339	0
16:15	17	0	0	0	17	0	154	0	0	154	1	0	2	0	3	2	193	1	1	197	371	1
16:30	20	1	1	0	22	0	134	1	0	135	2	0	2	0	4	6	181	2	1	190	351	1
16:45	21	0	2	0	23	3	138	2	0	143	0	0	4	0	4	1	171	1	0	173	343	0
Total	80	2	3	0	85	3	580	6	0	589	4	0	10	0	14	9	700	5	2	716	1404	2
17:00	23	1	3	0	27	3	150	1	0	154	0	0	1	0	1	3	159	1	0	163	345	0
17:15	23	0	1	0	24	1	143	1	0	145	1	0	1	0	2	5	178	3	0	186	357	0
17:30	22	0	0	0	22	0	160	4	0	164	1	0	2	0	3	3	196	0	0	199	388	0
17:45	19	1	1	0	21	2	135	3	0	140	3	0	2	0	5	3	168	2	0	173	339	0
Total	87	2	5	0	94	6	588	9	0	603	5	0	6	0	11	14	701	6	0	721	1429	0
Grand Total	524	5	32	0	561	15	2250	28	0	2293	13	2	56	0	71	41	2832	13	4	2890	5815	4
Apprch %	93.4%	0.9%	5.7%	0.0%		0.7%	98.1%	1.2%	0.0%		18.3%	2.8%	78.9%	0.0%		1.4%	98.0%	0.4%	0.1%			
Total %	9.0%	0.1%	0.6%	0.0%	9.6%	0.3%	38.7%	0.5%	0.0%	39.4%	0.2%	0.0%	1.0%	0.0%	1.2%	0.7%	48.7%	0.2%	0.1%	49.7%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-018 Lawlor Street-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Lawlor Street Southbound					98th Avenue Westbound					Lawlor Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	36	1	1	0	38	1	101	3	0	105	2	0	6	0	8	1	228	0	2	231	382
07:45	63	0	2	0	65	1	133	1	0	135	1	0	4	0	5	0	206	1	0	207	412
08:00	76	0	10	0	86	0	171	2	0	173	0	0	7	0	7	6	207	0	0	213	479
08:15	76	0	7	0	83	0	153	3	0	156	1	2	6	0	9	1	175	0	0	176	424
Total Volume	251	1	20	0	272	2	558	9	0	569	4	2	23	0	29	8	816	1	2	827	1697
% App Total	92.3%	0.4%	7.4%	0.0%		0.4%	98.1%	1.6%	0.0%		13.8%	6.9%	79.3%	0.0%		1.0%	98.7%	0.1%	0.2%		
PHF	.826	.250	.500	.000	.791	.500	.816	.750	.000	.822	.500	.250	.821	.000	.806	.333	.895	.250	.250	.895	.886

PM PEAK HOUR	Lawlor Street Southbound					98th Avenue Westbound					Lawlor Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	21	0	2	0	23	3	138	2	0	143	0	0	4	0	4	1	171	1	0	173	343
17:00	23	1	3	0	27	3	150	1	0	154	0	0	1	0	1	3	159	1	0	163	345
17:15	23	0	1	0	24	1	143	1	0	145	1	0	1	0	2	5	178	3	0	186	357
17:30	22	0	0	0	22	0	160	4	0	164	1	0	2	0	3	3	196	0	0	199	388
Total Volume	89	1	6	0	96	7	591	8	0	606	2	0	8	0	10	12	704	5	0	721	1433
% App Total	92.7%	1.0%	6.3%	0.0%		1.2%	97.5%	1.3%	0.0%		20.0%	0.0%	80.0%	0.0%		1.7%	97.6%	0.7%	0.0%		
PHF	.967	.250	.500	.000	.889	.583	.923	.500	.000	.924	.500	.000	.500	.000	.625	.600	.898	.417	.000	.906	.923

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-018 Lawlor Street-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Lawlor Street Southbound					98th Avenue Westbound					Lawlor Street Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
08:00	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
08:15	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
16:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	4	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	4
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	5	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	1	6
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	1	0	0	4
Grand Total	0	0	0	12	0	0	1	0	1	1	0	0	0	5	0	0	0	0	1	0	1	19
Apprch %	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		100.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-018 Lawlor Street-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Lawlor Street Southbound					98th Avenue Westbound					Lawlor Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	Lawlor Street Southbound					98th Avenue Westbound					Lawlor Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-019 Thermal Street-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Thermal Street Southbound					98th Avenue Westbound					Thermal Street Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	1	0	3	0	4	0	95	0	0	95	0	0	1	0	1	0	159	0	0	159	259	0
07:15	3	0	0	0	3	0	97	1	0	98	0	0	0	0	0	0	203	0	0	203	304	0
07:30	3	0	4	0	7	1	106	0	0	107	0	0	4	0	4	0	233	0	0	233	351	0
07:45	6	0	6	0	12	0	133	0	0	133	1	0	3	0	4	0	186	0	0	186	335	0
Total	13	0	13	0	26	1	431	1	0	433	1	0	8	0	9	0	781	0	0	781	1249	0
08:00	3	0	5	0	8	0	182	0	0	182	0	0	4	0	4	0	214	0	0	214	408	0
08:15	6	0	10	0	16	0	161	0	0	161	0	0	3	0	3	0	168	1	0	169	349	0
08:30	3	1	6	0	10	1	185	0	1	187	1	0	3	0	4	0	129	0	0	129	330	1
08:45	3	0	0	0	3	3	144	0	0	147	0	0	1	0	1	0	114	0	0	114	265	0
Total	15	1	21	0	37	4	672	0	1	677	1	0	11	0	12	0	625	1	0	626	1352	1
16:00	4	0	1	0	5	0	156	0	0	156	0	0	0	0	0	0	145	2	0	147	308	0
16:15	1	0	1	0	2	1	153	0	0	154	1	0	1	0	2	0	205	2	0	207	365	0
16:30	4	0	2	0	6	2	136	0	1	139	1	0	2	0	3	0	188	4	0	192	340	1
16:45	2	0	1	0	3	2	136	0	1	139	0	0	1	0	1	0	171	2	0	173	316	1
Total	11	0	5	0	16	5	581	0	2	588	2	0	4	0	6	0	709	10	0	719	1329	2
17:00	0	0	1	0	1	0	156	0	0	156	0	0	1	0	1	0	172	2	0	174	332	0
17:15	2	0	4	0	6	1	142	0	1	144	0	0	2	0	2	0	175	2	0	177	329	1
17:30	6	0	0	0	6	1	160	0	0	161	0	0	0	0	0	0	190	0	0	190	357	0
17:45	0	0	2	0	2	1	139	0	0	140	0	0	2	0	2	0	169	0	1	170	314	1
Total	8	0	7	0	15	3	597	0	1	601	0	0	5	0	5	0	706	4	1	711	1332	2
Grand Total	47	1	46	0	94	13	2281	1	4	2299	4	0	28	0	32	0	2821	15	1	2837	5262	5
Apprch %	50.0%	1.1%	48.9%	0.0%		0.6%	99.2%	0.0%	0.2%		12.5%	0.0%	87.5%	0.0%		0.0%	99.4%	0.5%	0.0%			
Total %	0.9%	0.0%	0.9%	0.0%	1.8%	0.2%	43.3%	0.0%	0.1%	43.7%	0.1%	0.0%	0.5%	0.0%	0.6%	0.0%	53.6%	0.3%	0.0%	53.9%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-019 Thermal Street-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Thermal Street Southbound					98th Avenue Westbound					Thermal Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	3	0	4	0	7	1	106	0	0	107	0	0	4	0	4	0	233	0	0	233	351
07:45	6	0	6	0	12	0	133	0	0	133	1	0	3	0	4	0	186	0	0	186	335
08:00	3	0	5	0	8	0	182	0	0	182	0	0	4	0	4	0	214	0	0	214	408
08:15	6	0	10	0	16	0	161	0	0	161	0	0	3	0	3	0	168	1	0	169	349
Total Volume	18	0	25	0	43	1	582	0	0	583	1	0	14	0	15	0	801	1	0	802	1443
% App Total	41.9%	0.0%	58.1%	0.0%		0.2%	99.8%	0.0%	0.0%		6.7%	0.0%	93.3%	0.0%		0.0%	99.9%	0.1%	0.0%		
PHF	.750	.000	.625	.000	.672	.250	.799	.000	.000	.801	.250	.000	.875	.000	.938	.000	.859	.250	.000	.861	.884

PM PEAK HOUR	Thermal Street Southbound					98th Avenue Westbound					Thermal Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	1	0	1	0	2	1	153	0	0	154	1	0	1	0	2	0	205	2	0	207	365
16:30	4	0	2	0	6	2	136	0	1	139	1	0	2	0	3	0	188	4	0	192	340
16:45	2	0	1	0	3	2	136	0	1	139	0	0	1	0	1	0	171	2	0	173	316
17:00	0	0	1	0	1	0	156	0	0	156	0	0	1	0	1	0	172	2	0	174	332
Total Volume	7	0	5	0	12	5	581	0	2	588	2	0	5	0	7	0	736	10	0	746	1353
% App Total	58.3%	0.0%	41.7%	0.0%		0.9%	98.8%	0.0%	0.3%		28.6%	0.0%	71.4%	0.0%		0.0%	98.7%	1.3%	0.0%		
PHF	.438	.000	.625	.000	.500	.625	.931	.000	.500	.942	.500	.000	.625	.000	.583	.000	.898	.625	.000	.901	.927

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-019 Thermal Street-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Thermal Street Southbound					98th Avenue Westbound					Thermal Street Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
07:45	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3
Total	0	0	0	2	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	6
08:00	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	4
08:45	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3
Total	0	0	0	6	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	9
16:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
16:45	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4
Total	0	0	0	6	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	8
17:00	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
17:30	0	0	0	1	0	0	0	0	2	0	0	0	0	1	0	0	0	0	1	0	0	5
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	0	1	0	2	1	0	0	0	1	0	0	1	0	1	1	2	6
Grand Total	0	0	0	16	0	0	1	0	3	1	0	0	0	8	0	0	1	0	2	1	2	29
Apprch %	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	50.0%	0.0%		50.0%	0.0%	0.0%	0.0%		0.0%	0.0%	50.0%	0.0%		50.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-019 Thermal Street-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Thermal Street Southbound					98th Avenue Westbound					Thermal Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
07:45	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
08:00	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	4	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	Thermal Street Southbound					98th Avenue Westbound					Thermal Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
17:00	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	6	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.250

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-020 MacArthur Boulevard-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	MacArthur Boulevard Southbound					98th Avenue Westbound					MacArthur Boulevard Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	31	18	6	1	56	5	85	9	0	99	13	15	5	0	33	1	116	8	1	126	314	2
07:15	37	19	6	0	62	3	86	10	0	99	12	23	3	0	38	3	170	4	0	177	376	0
07:30	30	20	13	0	63	4	86	19	0	109	13	39	11	0	63	10	196	7	0	213	448	0
07:45	35	30	33	0	98	3	116	23	0	142	24	67	6	1	98	15	142	11	0	168	506	1
Total	133	87	58	1	279	15	373	61	0	449	62	144	25	1	232	29	624	30	1	684	1644	3
08:00	28	32	20	0	80	5	156	15	0	176	31	86	13	0	130	22	174	12	0	208	594	0
08:15	33	40	28	0	101	6	149	30	0	185	37	89	11	0	137	13	128	10	2	153	576	2
08:30	19	35	14	0	68	9	147	30	1	187	17	47	5	0	69	11	98	18	0	127	451	1
08:45	12	32	12	0	56	5	119	24	0	148	20	31	5	0	56	8	97	11	1	117	377	1
Total	92	139	74	0	305	25	571	99	1	696	105	253	34	0	392	54	497	51	3	605	1998	4
16:00	16	60	13	0	89	6	134	23	0	163	25	45	7	0	77	10	117	16	0	143	472	0
16:15	27	62	11	0	100	4	119	21	0	144	16	40	8	0	64	13	168	19	0	200	508	0
16:30	32	58	10	0	100	2	118	20	0	140	20	44	8	0	72	18	155	18	2	193	505	2
16:45	22	52	19	0	93	7	118	21	0	146	15	48	8	0	71	11	137	19	0	167	477	0
Total	97	232	53	0	382	19	489	85	0	593	76	177	31	0	284	52	577	72	2	703	1962	2
17:00	30	54	14	0	98	5	122	18	0	145	28	49	9	0	86	11	134	20	1	166	495	1
17:15	31	65	21	0	117	10	117	21	0	148	18	62	8	0	88	5	143	15	2	165	518	2
17:30	28	53	9	0	90	5	126	29	0	160	18	55	5	0	78	18	153	21	0	192	520	0
17:45	28	55	21	0	104	5	111	28	0	144	18	44	8	0	70	9	135	23	1	168	486	1
Total	117	227	65	0	409	25	476	96	0	597	82	210	30	0	322	43	565	79	4	691	2019	4
Grand Total	439	685	250	1	1375	84	1909	341	1	2335	325	784	120	1	1230	178	2263	232	10	2683	7623	13
Apprch %	31.9%	49.8%	18.2%	0.1%		3.6%	81.8%	14.6%	0.0%		26.4%	63.7%	9.8%	0.1%		6.6%	84.3%	8.6%	0.4%			
Total %	5.8%	9.0%	3.3%	0.0%	18.0%	1.1%	25.0%	4.5%	0.0%	30.6%	4.3%	10.3%	1.6%	0.0%	16.1%	2.3%	29.7%	3.0%	0.1%	35.2%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-020 MacArthur Boulevard-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	MacArthur Boulevard Southbound					98th Avenue Westbound					MacArthur Boulevard Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	35	30	33	0	98	3	116	23	0	142	24	67	6	1	98	15	142	11	0	168	506
08:00	28	32	20	0	80	5	156	15	0	176	31	86	13	0	130	22	174	12	0	208	594
08:15	33	40	28	0	101	6	149	30	0	185	37	89	11	0	137	13	128	10	2	153	576
08:30	19	35	14	0	68	9	147	30	1	187	17	47	5	0	69	11	98	18	0	127	451
Total Volume	115	137	95	0	347	23	568	98	1	690	109	289	35	1	434	61	542	51	2	656	2127
% App Total	33.1%	39.5%	27.4%	0.0%		3.3%	82.3%	14.2%	0.1%		25.1%	66.6%	8.1%	0.2%		9.3%	82.6%	7.8%	0.3%		
PHF	.821	.856	.720	.000	.859	.639	.910	.817	.250	.922	.736	.812	.673	.250	.792	.693	.779	.708	.250	.788	.895

PM PEAK HOUR	MacArthur Boulevard Southbound					98th Avenue Westbound					MacArthur Boulevard Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	30	54	14	0	98	5	122	18	0	145	28	49	9	0	86	11	134	20	1	166	495
17:15	31	65	21	0	117	10	117	21	0	148	18	62	8	0	88	5	143	15	2	165	518
17:30	28	53	9	0	90	5	126	29	0	160	18	55	5	0	78	18	153	21	0	192	520
17:45	28	55	21	0	104	5	111	28	0	144	18	44	8	0	70	9	135	23	1	168	486
Total Volume	117	227	65	0	409	25	476	96	0	597	82	210	30	0	322	43	565	79	4	691	2019
% App Total	28.6%	55.5%	15.9%	0.0%		4.2%	79.7%	16.1%	0.0%		25.5%	65.2%	9.3%	0.0%		6.2%	81.8%	11.4%	0.6%		
PHF	.944	.873	.774	.000	.874	.625	.944	.828	.000	.933	.732	.847	.833	.000	.915	.597	.923	.859	.500	.900	.971

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-020 MacArthur Boulevard-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	MacArthur Boulevard Southbound					98th Avenue Westbound					MacArthur Boulevard Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	1	0	0	1	0	0	0	1	0	0	0	0	2	0	0	0	0	2	0	1	5
07:30	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
07:45	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	3	0	0	7
Total	0	1	0	2	1	0	0	0	5	0	0	0	0	3	0	0	0	0	5	0	1	15
08:00	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	6
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	4
08:30	0	0	0	3	0	0	0	0	2	0	0	1	0	2	1	1	0	0	2	1	2	9
08:45	0	0	1	1	1	0	0	0	4	0	0	1	0	3	1	0	0	0	3	0	2	11
Total	0	0	1	7	1	0	0	0	7	0	0	2	0	6	2	1	0	0	10	1	4	30
16:00	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	4
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5	0	0	6
16:30	0	0	0	6	0	0	1	0	2	1	0	0	0	1	0	0	0	0	5	0	1	14
16:45	0	0	0	4	0	0	0	0	1	0	0	0	0	2	0	0	0	0	3	0	0	10
Total	0	0	0	11	0	0	1	0	5	1	0	0	0	4	0	0	0	0	14	0	1	34
17:00	0	0	0	2	0	0	0	0	2	0	0	0	0	1	0	0	0	0	4	0	0	9
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
17:30	0	0	0	1	0	0	0	0	1	0	0	0	0	3	0	0	0	0	4	0	0	9
17:45	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	5
Total	0	0	0	4	0	0	0	0	3	0	0	0	0	5	0	0	0	0	15	0	0	27
Grand Total	0	1	1	24	2	0	1	0	20	1	0	2	0	18	2	1	0	0	44	1	6	106
Apprch %	0.0%	50.0%	50.0%			0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			100.0%	0.0%	0.0%				
Total %	0.0%	16.7%	16.7%		33.3%	0.0%	16.7%	0.0%		16.7%	0.0%	33.3%	0.0%		33.3%	16.7%	0.0%	0.0%		16.7%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-020 MacArthur Boulevard-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	MacArthur Boulevard Southbound					98th Avenue Westbound					MacArthur Boulevard Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	3	0	0
08:00	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0
08:30	0	0	0	3	0	0	0	0	2	0	0	1	0	2	1	1	0	0	2	1	2
Total Volume	0	0	0	6	0	0	0	0	6	0	0	1	0	4	1	1	0	0	10	1	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			100.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.250	.000		.250	.250	.000	.000		.250	.250

PM PEAK HOUR	MacArthur Boulevard Southbound					98th Avenue Westbound					MacArthur Boulevard Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	2	0	0	0	0	2	0	0	0	0	1	0	0	0	0	4	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
17:30	0	0	0	1	0	0	0	0	1	0	0	0	0	3	0	0	0	0	4	0	0
17:45	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0
Total Volume	0	0	0	4	0	0	0	0	3	0	0	0	0	5	0	0	0	0	15	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-021 Bancroft Avenue-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Bancroft Avenue Southbound					98th Avenue Westbound					Bancroft Avenue Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	29	25	9	0	63	2	84	15	0	101	7	33	5	1	46	10	89	4	0	103	313	1
07:15	43	25	22	0	90	8	87	14	0	109	16	44	4	0	64	9	133	8	0	150	413	0
07:30	44	58	30	0	132	9	86	20	1	116	11	51	14	2	78	20	142	7	0	169	495	3
07:45	28	90	37	0	155	14	135	27	0	176	14	68	13	3	98	42	143	23	0	208	637	3
Total	144	198	98	0	440	33	392	76	1	502	48	196	36	6	286	81	507	42	0	630	1858	7
08:00	40	73	29	1	143	19	174	29	0	222	13	76	11	14	114	31	140	34	0	205	684	15
08:15	34	81	22	0	137	22	149	34	0	205	25	90	10	8	133	38	111	32	0	181	656	8
08:30	27	58	10	1	96	14	150	23	1	188	14	78	11	4	107	22	99	23	0	144	535	6
08:45	26	56	12	1	95	9	122	26	1	158	10	47	6	1	64	20	82	14	1	117	434	4
Total	127	268	73	3	471	64	595	112	2	773	62	291	38	27	418	111	432	103	1	647	2309	33
16:00	28	79	24	2	133	10	124	35	0	169	8	69	8	1	86	25	125	11	0	161	549	3
16:15	36	73	28	1	138	9	111	35	0	155	10	71	19	1	101	28	141	14	0	183	577	2
16:30	31	75	30	1	137	8	104	37	1	150	16	83	10	1	110	23	156	9	0	188	585	3
16:45	29	94	26	0	149	8	112	29	0	149	17	69	8	1	95	26	134	17	0	177	570	1
Total	124	321	108	4	557	35	451	136	1	623	51	292	45	4	392	102	556	51	0	709	2281	9
17:00	37	86	34	1	158	8	116	44	0	168	13	69	8	4	94	37	128	20	0	185	605	5
17:15	25	94	24	4	147	11	105	40	1	157	21	80	11	3	115	27	128	12	0	167	586	8
17:30	33	85	35	0	153	15	103	36	0	154	11	95	7	1	114	37	163	21	0	221	642	1
17:45	28	91	27	2	148	16	106	29	0	151	7	72	9	1	89	30	131	30	0	191	579	3
Total	123	356	120	7	606	50	430	149	1	630	52	316	35	9	412	131	550	83	0	764	2412	17
Grand Total	518	1143	399	14	2074	182	1868	473	5	2528	213	1095	154	46	1508	425	2045	279	1	2750	8860	66
Apprch %	25.0%	55.1%	19.2%	0.7%		7.2%	73.9%	18.7%	0.2%		14.1%	72.6%	10.2%	3.1%		15.5%	74.4%	10.1%	0.0%			
Total %	5.8%	12.9%	4.5%	0.2%	23.4%	2.1%	21.1%	5.3%	0.1%	28.5%	2.4%	12.4%	1.7%	0.5%	17.0%	4.8%	23.1%	3.1%	0.0%	31.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-021 Bancroft Avenue-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Bancroft Avenue Southbound					98th Avenue Westbound					Bancroft Avenue Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	28	90	37	0	155	14	135	27	0	176	14	68	13	3	98	42	143	23	0	208	637
08:00	40	73	29	1	143	19	174	29	0	222	13	76	11	14	114	31	140	34	0	205	684
08:15	34	81	22	0	137	22	149	34	0	205	25	90	10	8	133	38	111	32	0	181	656
08:30	27	58	10	1	96	14	150	23	1	188	14	78	11	4	107	22	99	23	0	144	535
Total Volume	129	302	98	2	531	69	608	113	1	791	66	312	45	29	452	133	493	112	0	738	2512
% App Total	24.3%	56.9%	18.5%	0.4%		8.7%	76.9%	14.3%	0.1%		14.6%	69.0%	10.0%	6.4%		18.0%	66.8%	15.2%	0.0%		
PHF	.806	.839	.662	.500	.856	.784	.874	.831	.250	.891	.660	.867	.865	.518	.850	.792	.862	.824	.000	.887	.918

PM PEAK HOUR	Bancroft Avenue Southbound					98th Avenue Westbound					Bancroft Avenue Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	37	86	34	1	158	8	116	44	0	168	13	69	8	4	94	37	128	20	0	185	605
17:15	25	94	24	4	147	11	105	40	1	157	21	80	11	3	115	27	128	12	0	167	586
17:30	33	85	35	0	153	15	103	36	0	154	11	95	7	1	114	37	163	21	0	221	642
17:45	28	91	27	2	148	16	106	29	0	151	7	72	9	1	89	30	131	30	0	191	579
Total Volume	123	356	120	7	606	50	430	149	1	630	52	316	35	9	412	131	550	83	0	764	2412
% App Total	20.3%	58.7%	19.8%	1.2%		7.9%	68.3%	23.7%	0.2%		12.6%	76.7%	8.5%	2.2%		17.1%	72.0%	10.9%	0.0%		
PHF	.831	.947	.857	.438	.959	.781	.927	.847	.250	.938	.619	.832	.795	.563	.896	.885	.844	.692	.000	.864	.939

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-021 Bancroft Avenue-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Bancroft Avenue Southbound					98th Avenue Westbound					Bancroft Avenue Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
07:15	0	0	1	7	1	0	0	0	0	0	0	0	0	3	0	0	0	0	4	0	1	14
07:30	0	0	0	5	0	2	0	0	4	2	0	1	0	2	1	0	0	0	7	0	3	18
07:45	0	2	0	3	2	0	0	0	4	0	0	1	0	3	1	0	0	0	3	0	3	13
Total	0	2	2	17	4	2	0	0	8	2	0	2	0	8	2	0	0	0	15	0	8	48
08:00	0	1	1	9	2	0	0	0	5	0	0	0	0	6	0	1	0	0	9	1	3	29
08:15	0	1	0	9	1	0	0	0	10	0	0	1	0	15	1	0	0	1	27	1	3	61
08:30	0	0	0	2	0	0	0	0	3	0	0	0	0	3	0	0	0	0	22	0	0	30
08:45	0	1	0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	3	0	2	4
Total	0	3	1	21	4	0	1	0	18	1	0	1	0	24	1	1	0	1	61	2	8	124
16:00	0	0	0	5	0	0	0	0	3	0	0	0	0	2	0	1	0	0	3	1	1	13
16:15	0	0	1	4	1	0	0	0	1	0	0	0	0	2	0	2	0	1	0	3	4	7
16:30	0	1	0	8	1	1	0	0	1	1	0	1	0	1	1	0	0	0	2	0	3	12
16:45	0	0	0	3	0	0	0	0	1	0	0	1	0	1	1	0	0	0	0	0	1	5
Total	0	1	1	20	2	1	0	0	6	1	0	2	0	6	2	3	0	1	5	4	9	37
17:00	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
17:15	0	0	0	0	0	0	0	0	5	0	0	0	0	2	0	0	0	0	0	0	0	7
17:30	0	1	0	5	1	0	0	0	3	0	0	3	0	4	3	0	1	0	0	1	5	12
17:45	0	1	0	1	1	0	1	0	7	1	0	0	0	1	0	0	0	0	0	0	2	9
Total	0	2	0	7	2	0	1	0	17	1	0	3	0	7	3	0	1	0	0	1	7	31
Grand Total	0	8	4	65	12	3	2	0	49	5	0	8	0	45	8	4	1	2	81	7	32	240
Apprch %	0.0%	66.7%	33.3%			60.0%	40.0%	0.0%			0.0%	100.0%	0.0%			57.1%	14.3%	28.6%				
Total %	0.0%	25.0%	12.5%		37.5%	9.4%	6.3%	0.0%		15.6%	0.0%	25.0%	0.0%		25.0%	12.5%	3.1%	6.3%		21.9%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-021 Bancroft Avenue-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Bancroft Avenue Southbound					98th Avenue Westbound					Bancroft Avenue Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	2	0	3	2	0	0	0	4	0	0	1	0	3	1	0	0	0	3	0	3
08:00	0	1	1	9	2	0	0	0	5	0	0	0	0	6	0	1	0	0	9	1	3
08:15	0	1	0	9	1	0	0	0	10	0	0	1	0	15	1	0	0	1	27	1	3
08:30	0	0	0	2	0	0	0	0	3	0	0	0	0	3	0	0	0	0	22	0	0
Total Volume	0	4	1	23	5	0	0	0	22	0	0	2	0	27	2	1	0	1	61	2	9
% App Total	0.0%	80.0%	20.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			50.0%	0.0%	50.0%			
PHF	.000	.500	.250		.625	.000	.000	.000		.000	.000	.500	.000		.500	.250	.000	.250		.500	.750

PM PEAK HOUR	Bancroft Avenue Southbound					98th Avenue Westbound					Bancroft Avenue Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	5	0	0	0	0	2	0	0	0	0	0	0	0
17:30	0	1	0	5	1	0	0	0	3	0	0	3	0	4	3	0	1	0	0	1	5
17:45	0	1	0	1	1	0	1	0	7	1	0	0	0	1	0	0	0	0	0	0	2
Total Volume	0	2	0	7	2	0	1	0	17	1	0	3	0	7	3	0	1	0	0	1	7
% App Total	0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.500	.000		.500	.000	.250	.000		.250	.000	.250	.000		.250	.000	.250	.000		.250	.350

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-022 Birch Street-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Birch Street Southbound					98th Avenue Westbound					Birch Street Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	2	0	3	0	5	1	100	1	0	102	4	0	4	0	8	1	97	2	0	100	215	0
07:15	1	1	3	0	5	2	137	3	0	142	12	1	5	0	18	0	143	3	0	146	311	0
07:30	8	6	3	0	17	5	123	3	0	131	8	2	11	0	21	0	146	4	1	151	320	1
07:45	3	13	6	0	22	14	147	4	0	165	15	4	16	0	35	1	173	20	0	194	416	0
Total	14	20	15	0	49	22	507	11	0	540	39	7	36	0	82	2	559	29	1	591	1262	1
08:00	10	29	10	0	49	14	184	2	0	200	17	9	18	0	44	1	175	35	0	211	504	0
08:15	4	21	5	0	30	5	194	3	0	202	18	12	7	0	37	2	175	14	0	191	460	0
08:30	2	3	3	0	8	4	180	2	0	186	20	13	1	0	34	2	125	7	0	134	362	0
08:45	3	2	1	0	6	3	148	2	0	153	4	2	4	0	10	1	106	2	0	109	278	0
Total	19	55	19	0	93	26	706	9	0	741	59	36	30	0	125	6	581	58	0	645	1604	0
16:00	2	9	3	0	14	4	142	8	0	154	3	4	4	0	11	4	148	6	0	158	337	0
16:15	5	12	9	0	26	6	142	3	0	151	19	8	13	0	40	10	169	24	0	203	420	0
16:30	1	2	2	0	5	5	146	5	0	156	9	6	7	0	22	2	179	3	0	184	367	0
16:45	3	4	5	0	12	4	140	4	0	148	5	4	8	0	17	6	179	8	0	193	370	0
Total	11	27	19	0	57	19	570	20	0	609	36	22	32	0	90	22	675	41	0	738	1494	0
17:00	1	5	7	0	13	6	158	2	0	166	9	9	12	0	30	4	161	12	0	177	386	0
17:15	1	2	7	0	10	1	151	4	0	156	10	3	6	0	19	4	195	10	0	209	394	0
17:30	2	3	4	0	9	7	145	3	0	155	12	4	10	0	26	3	198	5	0	206	396	0
17:45	4	7	3	0	14	5	127	3	0	135	12	4	7	0	23	2	191	7	0	200	372	0
Total	8	17	21	0	46	19	581	12	0	612	43	20	35	0	98	13	745	34	0	792	1548	0
Grand Total	52	119	74	0	245	86	2364	52	0	2502	177	85	133	0	395	43	2560	162	1	2766	5908	1
Apprch %	21.2%	48.6%	30.2%	0.0%		3.4%	94.5%	2.1%	0.0%		44.8%	21.5%	33.7%	0.0%		1.6%	92.6%	5.9%	0.0%			
Total %	0.9%	2.0%	1.3%	0.0%	4.1%	1.5%	40.0%	0.9%	0.0%	42.3%	3.0%	1.4%	2.3%	0.0%	6.7%	0.7%	43.3%	2.7%	0.0%	46.8%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-022 Birch Street-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Birch Street Southbound					98th Avenue Westbound					Birch Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	3	13	6	0	22	14	147	4	0	165	15	4	16	0	35	1	173	20	0	194	416
08:00	10	29	10	0	49	14	184	2	0	200	17	9	18	0	44	1	175	35	0	211	504
08:15	4	21	5	0	30	5	194	3	0	202	18	12	7	0	37	2	175	14	0	191	460
08:30	2	3	3	0	8	4	180	2	0	186	20	13	1	0	34	2	125	7	0	134	362
Total Volume	19	66	24	0	109	37	705	11	0	753	70	38	42	0	150	6	648	76	0	730	1742
% App Total	17.4%	60.6%	22.0%	0.0%		4.9%	93.6%	1.5%	0.0%		46.7%	25.3%	28.0%	0.0%		0.8%	88.8%	10.4%	0.0%		
PHF	.475	.569	.600	.000	.556	.661	.909	.688	.000	.932	.875	.731	.583	.000	.852	.750	.926	.543	.000	.865	.864

PM PEAK HOUR	Birch Street Southbound					98th Avenue Westbound					Birch Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	1	5	7	0	13	6	158	2	0	166	9	9	12	0	30	4	161	12	0	177	386
17:15	1	2	7	0	10	1	151	4	0	156	10	3	6	0	19	4	195	10	0	209	394
17:30	2	3	4	0	9	7	145	3	0	155	12	4	10	0	26	3	198	5	0	206	396
17:45	4	7	3	0	14	5	127	3	0	135	12	4	7	0	23	2	191	7	0	200	372
Total Volume	8	17	21	0	46	19	581	12	0	612	43	20	35	0	98	13	745	34	0	792	1548
% App Total	17.4%	37.0%	45.7%	0.0%		3.1%	94.9%	2.0%	0.0%		43.9%	20.4%	35.7%	0.0%		1.6%	94.1%	4.3%	0.0%		
PHF	.500	.607	.750	.000	.821	.679	.919	.750	.000	.922	.896	.556	.729	.000	.817	.813	.941	.708	.000	.947	.977

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-022 Birch Street-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Birch Street Southbound					98th Avenue Westbound					Birch Street Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	1	0	2	1	0	0	0	0	0	1	1	0	1	2	0	0	0	2	0	3	5
07:15	0	0	0	1	0	1	1	0	0	2	1	0	0	0	1	0	0	1	3	1	4	4
07:30	0	2	0	2	2	0	0	0	0	0	0	5	0	11	5	0	0	0	15	0	7	28
07:45	0	4	0	12	4	0	0	0	5	0	0	0	0	22	0	0	0	0	58	0	4	97
Total	0	7	0	17	7	1	1	0	5	2	2	6	0	34	8	0	0	1	78	1	18	134
08:00	0	0	0	4	0	0	0	1	4	1	0	0	0	30	0	0	0	0	57	0	1	95
08:15	0	0	0	2	0	0	0	0	7	0	0	0	0	5	0	0	1	0	12	1	1	26
08:30	0	0	0	6	0	0	0	0	5	0	0	0	0	11	0	0	0	0	3	0	0	25
08:45	0	0	0	1	0	0	1	0	0	1	0	0	0	6	0	0	0	1	1	1	2	8
Total	0	0	0	13	0	0	1	1	16	2	0	0	0	52	0	0	1	1	73	2	4	154
16:00	0	0	0	3	0	0	0	0	1	0	0	0	0	1	0	0	1	0	1	1	1	6
16:15	0	0	0	6	0	0	0	0	2	0	0	2	2	16	4	0	0	1	74	1	5	98
16:30	0	0	1	4	1	0	0	0	1	0	0	1	0	9	1	0	0	0	8	0	2	22
16:45	0	0	0	1	0	1	0	0	3	1	0	0	0	4	0	0	0	0	3	0	1	11
Total	0	0	1	14	1	1	0	0	7	1	0	3	2	30	5	0	1	1	86	2	9	137
17:00	0	0	0	6	0	0	0	0	2	0	0	0	0	19	0	0	0	0	7	0	0	34
17:15	0	0	0	3	0	0	0	0	2	0	0	2	0	3	2	0	0	0	0	0	2	8
17:30	0	0	0	6	0	0	0	0	0	0	0	0	0	6	0	0	1	0	4	1	1	16
17:45	0	0	0	1	0	0	2	0	0	2	0	0	0	6	0	0	0	1	4	1	3	11
Total	0	0	0	16	0	0	2	0	4	2	0	2	0	34	2	0	1	1	15	2	6	69
Grand Total	0	7	1	60	8	2	4	1	32	7	2	11	2	150	15	0	3	4	252	7	37	494
Apprch %	0.0%	87.5%	12.5%			28.6%	57.1%	14.3%			13.3%	73.3%	13.3%			0.0%	42.9%	57.1%				
Total %	0.0%	18.9%	2.7%		21.6%	5.4%	10.8%	2.7%		18.9%	5.4%	29.7%	5.4%		40.5%	0.0%	8.1%	10.8%		18.9%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-022 Birch Street-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Birch Street Southbound					98th Avenue Westbound					Birch Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	4	0	12	4	0	0	0	5	0	0	0	0	22	0	0	0	0	58	0	4
08:00	0	0	0	4	0	0	0	1	4	1	0	0	0	30	0	0	0	0	57	0	1
08:15	0	0	0	2	0	0	0	0	7	0	0	0	0	5	0	0	1	0	12	1	1
08:30	0	0	0	6	0	0	0	0	5	0	0	0	0	11	0	0	0	0	3	0	0
Total Volume	0	4	0	24	4	0	0	1	21	1	0	0	0	68	0	0	1	0	130	1	6
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.250		.250	.000	.000	.000		.000	.000	.250	.000		.250	.375

PM PEAK HOUR	Birch Street Southbound					98th Avenue Westbound					Birch Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	6	0	0	0	0	2	0	0	0	0	19	0	0	0	0	7	0	0
17:15	0	0	0	3	0	0	0	0	2	0	0	2	0	3	2	0	0	0	0	0	2
17:30	0	0	0	6	0	0	0	0	0	0	0	0	0	6	0	0	1	0	4	1	1
17:45	0	0	0	1	0	0	2	0	0	2	0	0	0	6	0	0	0	1	4	1	3
Total Volume	0	0	0	16	0	0	2	0	4	2	0	2	0	34	2	0	1	1	15	2	6
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			0.0%	50.0%	50.0%			
PHF	.000	.000	.000		.000	.000	.250	.000		.250	.000	.250	.000		.250	.000	.250	.250		.500	.500

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-023 Plymouth Street-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Plymouth Street Southbound					98th Avenue Westbound					Plymouth Street Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	1	3	1	0	5	5	101	3	0	109	2	0	3	0	5	2	101	3	0	106	225	0
07:15	6	1	6	0	13	4	138	2	0	144	2	1	0	0	3	2	130	2	0	134	294	0
07:30	5	9	3	0	17	8	128	2	0	138	15	3	9	0	27	3	141	11	0	155	337	0
07:45	4	17	3	0	24	7	162	5	0	174	20	10	11	0	41	4	174	23	0	201	440	0
Total	16	30	13	0	59	24	529	12	0	565	39	14	23	0	76	11	546	39	0	596	1296	0
08:00	6	18	9	0	33	8	212	5	0	225	41	13	11	0	65	1	187	10	0	198	521	0
08:15	3	8	7	0	18	4	211	1	0	216	9	5	3	0	17	1	181	9	0	191	442	0
08:30	4	2	3	0	9	4	201	1	0	206	7	5	3	0	15	2	127	5	0	134	364	0
08:45	3	0	2	0	5	8	145	3	0	156	8	1	1	0	10	0	104	3	0	107	278	0
Total	16	28	21	0	65	24	769	10	0	803	65	24	18	0	107	4	599	27	0	630	1605	0
16:00	1	6	5	0	12	3	141	3	0	147	5	4	2	0	11	4	154	12	0	170	340	0
16:15	7	11	6	0	24	4	163	3	0	170	23	9	7	0	39	5	195	10	0	210	443	0
16:30	3	6	3	0	12	3	144	5	0	152	6	7	7	0	20	5	185	4	0	194	378	0
16:45	5	12	9	0	26	4	157	2	0	163	6	3	5	0	14	4	179	11	0	194	397	0
Total	16	35	23	0	74	14	605	13	0	632	40	23	21	0	84	18	713	37	0	768	1558	0
17:00	3	12	11	0	26	2	158	6	0	166	23	14	10	0	47	4	170	17	0	191	430	0
17:15	4	5	7	0	16	6	166	4	0	176	12	0	9	0	21	5	211	4	0	220	433	0
17:30	5	1	9	0	15	3	157	3	0	163	8	5	7	0	20	4	192	6	0	202	400	0
17:45	6	2	6	0	14	4	137	5	0	146	3	2	8	0	13	3	186	2	0	191	364	0
Total	18	20	33	0	71	15	618	18	0	651	46	21	34	0	101	16	759	29	0	804	1627	0
Grand Total	66	113	90	0	269	77	2521	53	0	2651	190	82	96	0	368	49	2617	132	0	2798	6086	0
Apprch %	24.5%	42.0%	33.5%	0.0%		2.9%	95.1%	2.0%	0.0%		51.6%	22.3%	26.1%	0.0%		1.8%	93.5%	4.7%	0.0%			
Total %	1.1%	1.9%	1.5%	0.0%	4.4%	1.3%	41.4%	0.9%	0.0%	43.6%	3.1%	1.3%	1.6%	0.0%	6.0%	0.8%	43.0%	2.2%	0.0%	46.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
(916) 771-8700
orders@atdtraffic.com

All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

File Name : 15-7302-023 Plymouth Street-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Plymouth Street Southbound					98th Avenue Westbound					Plymouth Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	4	17	3	0	24	7	162	5	0	174	20	10	11	0	41	4	174	23	0	201	440
08:00	6	18	9	0	33	8	212	5	0	225	41	13	11	0	65	1	187	10	0	198	521
08:15	3	8	7	0	18	4	211	1	0	216	9	5	3	0	17	1	181	9	0	191	442
08:30	4	2	3	0	9	4	201	1	0	206	7	5	3	0	15	2	127	5	0	134	364
Total Volume	17	45	22	0	84	23	786	12	0	821	77	33	28	0	138	8	669	47	0	724	1767
% App Total	20.2%	53.6%	26.2%	0.0%		2.8%	95.7%	1.5%	0.0%		55.8%	23.9%	20.3%	0.0%		1.1%	92.4%	6.5%	0.0%		
PHF	.708	.625	.611	.000	.636	.719	.927	.600	.000	.912	.470	.635	.636	.000	.531	.500	.894	.511	.000	.900	.848

PM PEAK HOUR	Plymouth Street Southbound					98th Avenue Westbound					Plymouth Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	5	12	9	0	26	4	157	2	0	163	6	3	5	0	14	4	179	11	0	194	397
17:00	3	12	11	0	26	2	158	6	0	166	23	14	10	0	47	4	170	17	0	191	430
17:15	4	5	7	0	16	6	166	4	0	176	12	0	9	0	21	5	211	4	0	220	433
17:30	5	1	9	0	15	3	157	3	0	163	8	5	7	0	20	4	192	6	0	202	400
Total Volume	17	30	36	0	83	15	638	15	0	668	49	22	31	0	102	17	752	38	0	807	1660
% App Total	20.5%	36.1%	43.4%	0.0%		2.2%	95.5%	2.2%	0.0%		48.0%	21.6%	30.4%	0.0%		2.1%	93.2%	4.7%	0.0%		
PHF	.850	.625	.818	.000	.798	.625	.961	.625	.000	.949	.533	.393	.775	.000	.543	.850	.891	.559	.000	.917	.958

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-023 Plymouth Street-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Plymouth Street Southbound					98th Avenue Westbound					Plymouth Street Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	4	0	0	2	0	0	2	0	0	0	2	0	0	0	0	0	0	2	6
07:15	0	0	0	1	0	1	0	0	1	1	0	0	0	7	0	0	0	0	0	0	1	9
07:30	0	0	0	3	0	0	0	0	6	0	0	0	0	18	0	0	1	0	3	1	1	30
07:45	0	0	0	8	0	0	0	0	29	0	0	0	0	24	0	0	1	0	9	1	1	70
Total	0	0	0	16	0	1	2	0	36	3	0	0	0	51	0	0	2	0	12	2	5	115
08:00	0	0	0	12	0	0	0	0	21	0	0	0	0	27	0	0	1	0	9	1	1	69
08:15	0	0	0	6	0	1	0	0	4	1	0	0	0	7	0	0	1	0	1	1	2	18
08:30	0	0	0	5	0	0	0	0	0	0	0	0	0	9	0	0	0	0	2	0	0	16
08:45	0	0	0	5	0	0	1	0	1	1	0	0	0	3	0	0	1	0	1	1	2	10
Total	0	0	0	28	0	1	1	0	26	2	0	0	0	46	0	0	3	0	13	3	5	113
16:00	0	0	0	2	0	0	1	0	4	1	0	0	0	7	0	0	1	0	3	1	2	16
16:15	0	0	0	19	0	0	0	0	26	0	0	0	0	31	0	0	0	0	2	0	0	78
16:30	0	0	0	3	0	0	1	0	0	1	0	0	0	4	0	0	1	0	2	1	2	9
16:45	0	0	1	1	1	0	0	0	1	0	0	0	0	9	0	0	0	0	1	0	1	12
Total	0	0	1	25	1	0	2	0	31	2	0	0	0	51	0	0	2	0	8	2	5	115
17:00	0	1	0	17	1	0	0	0	48	0	0	0	0	30	0	0	0	0	5	0	1	100
17:15	0	0	0	0	0	0	0	0	6	0	0	0	0	8	0	0	0	1	2	1	1	16
17:30	0	0	0	4	0	0	0	0	6	0	0	0	0	8	0	0	1	0	7	1	1	25
17:45	0	0	0	7	0	0	1	0	2	1	1	0	0	15	1	0	0	0	3	0	2	27
Total	0	1	0	28	1	0	1	0	62	1	1	0	0	61	1	0	1	1	17	2	5	168
Grand Total	0	1	1	97	2	2	6	0	155	8	1	0	0	209	1	0	8	1	50	9	20	511
Apprch %	0.0%	50.0%	50.0%			25.0%	75.0%	0.0%			100.0%	0.0%	0.0%			0.0%	88.9%	11.1%				
Total %	0.0%	5.0%	5.0%		10.0%	10.0%	30.0%	0.0%		40.0%	5.0%	0.0%	0.0%		5.0%	0.0%	40.0%	5.0%		45.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-023 Plymouth Street-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Plymouth Street Southbound					98th Avenue Westbound					Plymouth Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	8	0	0	0	0	29	0	0	0	0	24	0	0	1	0	9	1	1
08:00	0	0	0	12	0	0	0	0	21	0	0	0	0	27	0	0	1	0	9	1	1
08:15	0	0	0	6	0	1	0	0	4	1	0	0	0	7	0	0	1	0	1	1	2
08:30	0	0	0	5	0	0	0	0	0	0	0	0	0	9	0	0	0	0	2	0	0
Total Volume	0	0	0	31	0	1	0	0	54	1	0	0	0	67	0	0	3	0	21	3	4
% App Total	0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.250	.000	.000		.250	.000	.000	.000		.000	.000	.750	.000		.750	.500

PM PEAK HOUR	Plymouth Street Southbound					98th Avenue Westbound					Plymouth Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	1	1	1	0	0	0	1	0	0	0	0	9	0	0	0	0	1	0	1
17:00	0	1	0	17	1	0	0	0	48	0	0	0	0	30	0	0	0	0	5	0	1
17:15	0	0	0	0	0	0	0	0	6	0	0	0	0	8	0	0	0	1	2	1	1
17:30	0	0	0	4	0	0	0	0	6	0	0	0	0	8	0	0	1	0	7	1	1
Total Volume	0	1	1	22	2	0	0	0	61	0	0	0	0	55	0	0	1	1	15	2	4
% App Total	0.0%	50.0%	50.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	50.0%	50.0%			
PHF	.000	.250	.250		.500	.000	.000	.000		.000	.000	.000	.000		.000	.000	.250	.250		.500	1.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-024 Holly Street-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Holly Street Southbound					98th Avenue Westbound					Holly Street Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	3	0	4	0	7	1	101	4	0	106	0	1	2	0	3	1	104	0	0	105	221	0
07:15	4	2	6	0	12	0	147	0	0	147	0	1	1	0	2	3	122	1	0	126	287	0
07:30	11	3	5	0	19	0	140	2	0	142	4	1	2	0	7	4	148	1	0	153	321	0
07:45	5	10	7	0	22	2	180	2	0	184	10	3	5	0	18	2	178	5	0	185	409	0
Total	23	15	22	0	60	3	568	8	0	579	14	6	10	0	30	10	552	7	0	569	1238	0
08:00	2	12	8	0	22	2	227	5	0	234	17	8	11	0	36	1	188	3	0	192	484	0
08:15	3	1	6	0	10	1	238	5	0	244	1	2	3	0	6	7	178	3	0	188	448	0
08:30	2	0	5	0	7	3	203	3	0	209	1	1	0	0	2	3	135	0	0	138	356	0
08:45	4	0	6	0	10	3	160	0	0	163	1	1	1	0	3	2	107	2	0	111	287	0
Total	11	13	25	0	49	9	828	13	0	850	20	12	15	0	47	13	608	8	0	629	1575	0
16:00	7	0	8	0	15	2	139	3	0	144	1	3	2	0	6	9	164	5	0	178	343	0
16:15	7	5	8	0	20	2	192	6	0	200	2	2	0	0	4	5	202	5	0	212	436	0
16:30	5	3	10	0	18	1	153	5	0	159	1	0	1	0	2	7	192	5	0	204	383	0
16:45	3	2	5	0	10	3	164	2	0	169	0	4	2	0	6	8	189	4	0	201	386	0
Total	22	10	31	0	63	8	648	16	0	672	4	9	5	0	18	29	747	19	0	795	1548	0
17:00	7	2	5	0	14	2	176	7	1	186	2	1	1	0	4	11	181	6	0	198	402	1
17:15	3	5	5	0	13	0	177	2	0	179	2	0	1	0	3	8	231	6	1	246	441	1
17:30	8	5	7	0	20	2	172	1	0	175	2	3	2	0	7	5	195	7	0	207	409	0
17:45	6	6	6	0	18	4	137	5	0	146	4	2	1	0	7	11	193	5	0	209	380	0
Total	24	18	23	0	65	8	662	15	1	686	10	6	5	0	21	35	800	24	1	860	1632	2
Grand Total	80	56	101	0	237	28	2706	52	1	2787	48	33	35	0	116	87	2707	58	1	2853	5993	2
Apprch %	33.8%	23.6%	42.6%	0.0%		1.0%	97.1%	1.9%	0.0%		41.4%	28.4%	30.2%	0.0%		3.0%	94.9%	2.0%	0.0%			
Total %	1.3%	0.9%	1.7%	0.0%	4.0%	0.5%	45.2%	0.9%	0.0%	46.5%	0.8%	0.6%	0.6%	0.0%	1.9%	1.5%	45.2%	1.0%	0.0%	47.6%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-024 Holly Street-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Holly Street Southbound					98th Avenue Westbound					Holly Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	5	10	7	0	22	2	180	2	0	184	10	3	5	0	18	2	178	5	0	185	409
08:00	2	12	8	0	22	2	227	5	0	234	17	8	11	0	36	1	188	3	0	192	484
08:15	3	1	6	0	10	1	238	5	0	244	1	2	3	0	6	7	178	3	0	188	448
08:30	2	0	5	0	7	3	203	3	0	209	1	1	0	0	2	3	135	0	0	138	356
Total Volume	12	23	26	0	61	8	848	15	0	871	29	14	19	0	62	13	679	11	0	703	1697
% App Total	19.7%	37.7%	42.6%	0.0%		0.9%	97.4%	1.7%	0.0%		46.8%	22.6%	30.6%	0.0%		1.8%	96.6%	1.6%	0.0%		
PHF	.600	.479	.813	.000	.693	.667	.891	.750	.000	.892	.426	.438	.432	.000	.431	.464	.903	.550	.000	.915	.877

PM PEAK HOUR	Holly Street Southbound					98th Avenue Westbound					Holly Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	3	2	5	0	10	3	164	2	0	169	0	4	2	0	6	8	189	4	0	201	386
17:00	7	2	5	0	14	2	176	7	1	186	2	1	1	0	4	11	181	6	0	198	402
17:15	3	5	5	0	13	0	177	2	0	179	2	0	1	0	3	8	231	6	1	246	441
17:30	8	5	7	0	20	2	172	1	0	175	2	3	2	0	7	5	195	7	0	207	409
Total Volume	21	14	22	0	57	7	689	12	1	709	6	8	6	0	20	32	796	23	1	852	1638
% App Total	36.8%	24.6%	38.6%	0.0%		1.0%	97.2%	1.7%	0.1%		30.0%	40.0%	30.0%	0.0%		3.8%	93.4%	2.7%	0.1%		
PHF	.656	.700	.786	.000	.713	.583	.973	.429	.250	.953	.750	.500	.750	.000	.714	.727	.861	.821	.250	.866	.929

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-024 Holly Street-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Holly Street Southbound					98th Avenue Westbound					Holly Street Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	5	0	0	1	0	2	1	0	0	0	6	0	0	0	0	2	0	1	15
07:15	0	0	0	6	0	0	1	0	3	1	0	0	0	14	0	0	1	0	2	1	2	25
07:30	0	0	0	8	0	0	0	0	3	0	0	0	0	13	0	0	1	0	2	1	1	26
07:45	0	0	0	7	0	0	0	0	9	0	0	0	0	26	0	0	0	0	3	0	0	45
Total	0	0	0	26	0	0	2	0	17	2	0	0	0	59	0	0	2	0	9	2	4	111
08:00	0	0	0	8	0	0	0	0	9	0	0	0	0	9	0	0	1	0	4	1	1	30
08:15	0	0	0	6	0	0	0	0	1	0	0	0	0	7	0	0	1	0	3	1	1	17
08:30	0	0	0	5	0	0	0	0	2	0	0	0	0	5	0	0	0	0	2	0	0	14
08:45	0	0	0	8	0	0	0	0	1	0	0	0	0	5	0	0	1	0	6	1	1	20
Total	0	0	0	27	0	0	0	0	13	0	0	0	0	26	0	0	3	0	15	3	3	81
16:00	0	0	0	6	0	0	0	0	0	0	0	0	0	6	0	0	0	0	3	0	0	15
16:15	0	0	0	15	0	0	0	0	9	0	0	0	0	26	0	0	0	0	3	0	0	53
16:30	0	0	0	9	0	0	2	0	3	2	0	0	0	6	0	0	1	0	1	1	3	19
16:45	1	0	0	3	1	0	1	0	0	1	0	0	0	9	0	0	0	1	5	1	3	17
Total	1	0	0	33	1	0	3	0	12	3	0	0	0	47	0	0	1	1	12	2	6	104
17:00	0	0	0	18	0	0	1	0	1	1	0	0	1	17	1	0	1	0	1	1	3	37
17:15	0	0	0	4	0	0	0	0	2	0	0	0	0	13	0	0	0	0	2	0	0	21
17:30	0	0	0	8	0	0	0	0	4	0	0	0	0	3	0	0	1	0	2	1	1	17
17:45	0	0	0	3	0	0	3	0	3	3	0	0	0	14	0	1	0	1	0	2	5	20
Total	0	0	0	33	0	0	4	0	10	4	0	0	1	47	1	1	2	1	5	4	9	95
Grand Total	1	0	0	119	1	0	9	0	52	9	0	0	1	179	1	1	8	2	41	11	22	391
Apprch %	100.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	100.0%			9.1%	72.7%	18.2%				
Total %	4.5%	0.0%	0.0%		4.5%	0.0%	40.9%	0.0%		40.9%	0.0%	0.0%	4.5%		4.5%	4.5%	36.4%	9.1%		50.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-024 Holly Street-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Holly Street Southbound					98th Avenue Westbound					Holly Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	7	0	0	0	0	9	0	0	0	0	26	0	0	0	0	3	0	0
08:00	0	0	0	8	0	0	0	0	9	0	0	0	0	9	0	0	1	0	4	1	1
08:15	0	0	0	6	0	0	0	0	1	0	0	0	0	7	0	0	1	0	3	1	1
08:30	0	0	0	5	0	0	0	0	2	0	0	0	0	5	0	0	0	0	2	0	0
Total Volume	0	0	0	26	0	0	0	0	21	0	0	0	0	47	0	0	2	0	12	2	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.500	.000		.500	.500

PM PEAK HOUR	Holly Street Southbound					98th Avenue Westbound					Holly Street Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	1	0	0	3	1	0	1	0	0	1	0	0	0	9	0	0	0	1	5	1	3
17:00	0	0	0	18	0	0	1	0	1	1	0	0	1	17	1	0	1	0	1	1	3
17:15	0	0	0	4	0	0	0	0	2	0	0	0	0	13	0	0	0	0	2	0	0
17:30	0	0	0	8	0	0	0	0	4	0	0	0	0	3	0	0	1	0	2	1	1
Total Volume	1	0	0	33	1	0	2	0	7	2	0	0	1	42	1	0	2	1	10	3	7
% App Total	100.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	100.0%			0.0%	66.7%	33.3%			
PHF	.250	.000	.000		.250	.000	.500	.000		.500	.000	.000	.250		.250	.000	.500	.250		.750	.583

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-025 International Boulevard-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	International Boulevard Southbound					98th Avenue Westbound					International Boulevard Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	21	57	28	1	107	12	72	17	0	101	32	34	21	1	88	15	63	10	0	88	384	2
07:15	28	52	32	0	112	17	111	18	0	146	30	39	28	1	98	24	72	16	0	112	468	1
07:30	39	73	31	3	146	19	112	23	0	154	35	73	31	1	140	20	92	14	0	126	566	4
07:45	39	102	33	0	174	24	143	36	0	203	42	97	29	0	168	14	110	22	0	146	691	0
Total	127	284	124	4	539	72	438	94	0	604	139	243	109	3	494	73	337	62	0	472	2109	7
08:00	43	87	33	3	166	29	165	48	0	242	38	100	43	0	181	27	113	15	0	155	744	3
08:15	39	100	29	1	169	43	148	46	0	237	39	101	39	0	179	30	106	14	0	150	735	1
08:30	25	83	49	0	157	24	147	46	0	217	35	130	35	1	201	35	73	13	0	121	696	1
08:45	25	112	21	0	158	21	106	39	0	166	21	70	21	1	113	46	71	28	0	145	582	1
Total	132	382	132	4	650	117	566	179	0	862	133	401	138	2	674	138	363	70	0	571	2757	6
16:00	33	143	38	1	215	49	76	31	0	156	29	114	25	2	170	42	121	44	0	207	748	3
16:15	41	134	36	1	212	46	108	44	0	198	24	116	40	2	182	45	132	37	0	214	806	3
16:30	23	157	33	1	214	41	96	33	0	170	34	133	42	2	211	39	119	34	0	192	787	3
16:45	33	148	38	3	222	52	87	35	0	174	41	131	44	2	218	48	124	35	0	207	821	5
Total	130	582	145	6	863	188	367	143	0	698	128	494	151	8	781	174	496	150	0	820	3162	14
17:00	35	129	39	2	205	37	108	31	0	176	27	140	39	2	208	46	122	39	0	207	796	4
17:15	34	142	38	0	214	43	126	30	0	199	24	162	46	6	238	39	175	44	0	258	909	6
17:30	33	148	28	2	211	47	93	33	0	173	46	121	31	1	199	31	135	39	0	205	788	3
17:45	45	165	30	2	242	40	79	32	0	151	27	144	31	2	204	55	147	43	0	245	842	4
Total	147	584	135	6	872	167	406	126	0	699	124	567	147	11	849	171	579	165	0	915	3335	17
Grand Total	536	1832	536	20	2924	544	1777	542	0	2863	524	1705	545	24	2798	556	1775	447	0	2778	11363	44
Apprch %	18.3%	62.7%	18.3%	0.7%		19.0%	62.1%	18.9%	0.0%		18.7%	60.9%	19.5%	0.9%		20.0%	63.9%	16.1%	0.0%			
Total %	4.7%	16.1%	4.7%	0.2%	25.7%	4.8%	15.6%	4.8%	0.0%	25.2%	4.6%	15.0%	4.8%	0.2%	24.6%	4.9%	15.6%	3.9%	0.0%	24.4%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-025 International Boulevard-98th Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	International Boulevard Southbound					98th Avenue Westbound					International Boulevard Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	39	102	33	0	174	24	143	36	0	203	42	97	29	0	168	14	110	22	0	146	691
08:00	43	87	33	3	166	29	165	48	0	242	38	100	43	0	181	27	113	15	0	155	744
08:15	39	100	29	1	169	43	148	46	0	237	39	101	39	0	179	30	106	14	0	150	735
08:30	25	83	49	0	157	24	147	46	0	217	35	130	35	1	201	35	73	13	0	121	696
Total Volume	146	372	144	4	666	120	603	176	0	899	154	428	146	1	729	106	402	64	0	572	2866
% App Total	21.9%	55.9%	21.6%	0.6%		13.3%	67.1%	19.6%	0.0%		21.1%	58.7%	20.0%	0.1%		18.5%	70.3%	11.2%	0.0%		
PHF	.849	.912	.735	.333	.957	.698	.914	.917	.000	.929	.917	.823	.849	.250	.907	.757	.889	.727	.000	.923	.963

PM PEAK HOUR	International Boulevard Southbound					98th Avenue Westbound					International Boulevard Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	35	129	39	2	205	37	108	31	0	176	27	140	39	2	208	46	122	39	0	207	796
17:15	34	142	38	0	214	43	126	30	0	199	24	162	46	6	238	39	175	44	0	258	909
17:30	33	148	28	2	211	47	93	33	0	173	46	121	31	1	199	31	135	39	0	205	788
17:45	45	165	30	2	242	40	79	32	0	151	27	144	31	2	204	55	147	43	0	245	842
Total Volume	147	584	135	6	872	167	406	126	0	699	124	567	147	11	849	171	579	165	0	915	3335
% App Total	16.9%	67.0%	15.5%	0.7%		23.9%	58.1%	18.0%	0.0%		14.6%	66.8%	17.3%	1.3%		18.7%	63.3%	18.0%	0.0%		
PHF	.817	.885	.865	.750	.901	.888	.806	.955	.000	.878	.674	.875	.799	.458	.892	.777	.827	.938	.000	.887	.917

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-025 International Boulevard-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	International Boulevard Southbound					98th Avenue Westbound					International Boulevard Northbound					98th Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	8	0	0	0	0	9	0	0	0	0	7	0	0	0	0	3	0	0	27
07:15	0	0	0	9	0	0	0	0	6	0	0	0	0	21	0	0	0	0	7	0	0	43
07:30	0	0	0	6	0	0	0	0	9	0	0	0	0	9	0	0	0	0	5	0	0	29
07:45	0	1	0	5	1	0	0	0	8	0	0	0	0	19	0	0	0	0	9	0	1	41
Total	0	1	0	28	1	0	0	0	32	0	0	0	0	56	0	0	0	0	24	0	1	140
08:00	0	0	0	3	0	0	0	0	7	0	0	0	0	5	0	0	1	0	7	1	1	22
08:15	0	0	0	5	0	0	0	0	5	0	0	0	0	6	0	0	1	0	4	1	1	20
08:30	0	0	0	4	0	0	0	0	7	0	0	1	1	6	2	0	0	0	16	0	2	33
08:45	0	2	0	3	2	0	1	0	4	1	0	1	0	2	1	0	1	0	6	1	5	15
Total	0	2	0	15	2	0	1	0	23	1	0	2	1	19	3	0	3	0	33	3	9	90
16:00	0	2	0	9	2	0	0	0	5	0	0	1	0	7	1	0	0	1	13	1	4	34
16:15	0	1	0	5	1	0	0	0	4	0	0	1	0	17	1	0	0	0	11	0	2	37
16:30	0	2	0	5	2	0	1	0	18	1	0	1	1	14	2	0	1	0	13	1	6	50
16:45	0	2	0	0	2	0	0	0	5	0	0	0	0	7	0	0	1	0	9	1	3	21
Total	0	7	0	19	7	0	1	0	32	1	0	3	1	45	4	0	2	1	46	3	15	142
17:00	0	0	0	10	0	0	0	0	29	0	0	1	0	13	1	2	0	0	13	2	3	65
17:15	0	1	0	4	1	0	0	0	10	0	0	0	0	22	0	0	1	0	21	1	2	57
17:30	1	1	0	2	2	0	0	1	10	1	1	3	0	5	4	0	2	0	2	2	9	19
17:45	0	1	1	6	2	1	0	0	6	1	0	0	0	9	0	0	0	0	11	0	3	32
Total	1	3	1	22	5	1	0	1	55	2	1	4	0	49	5	2	3	0	47	5	17	173
Grand Total	1	13	1	84	15	1	2	1	142	4	1	9	2	169	12	2	8	1	150	11	42	545
Apprch %	6.7%	86.7%	6.7%			25.0%	50.0%	25.0%			8.3%	75.0%	16.7%			18.2%	72.7%	9.1%				
Total %	2.4%	31.0%	2.4%		35.7%	2.4%	4.8%	2.4%		9.5%	2.4%	21.4%	4.8%		28.6%	4.8%	19.0%	2.4%		26.2%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-025 International Boulevard-98th Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	International Boulevard Southbound					98th Avenue Westbound					International Boulevard Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	1	0	5	1	0	0	0	8	0	0	0	0	19	0	0	0	0	9	0	1
08:00	0	0	0	3	0	0	0	0	7	0	0	0	0	5	0	0	1	0	7	1	1
08:15	0	0	0	5	0	0	0	0	5	0	0	0	0	6	0	0	1	0	4	1	1
08:30	0	0	0	4	0	0	0	0	7	0	0	1	1	6	2	0	0	0	16	0	2
Total Volume	0	1	0	17	1	0	0	0	27	0	0	1	1	36	2	0	2	0	36	2	5
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	50.0%	50.0%			0.0%	100.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.000	.250	.250		.250	.000	.500	.000		.500	.625

PM PEAK HOUR	International Boulevard Southbound					98th Avenue Westbound					International Boulevard Northbound					98th Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	10	0	0	0	0	29	0	0	1	0	13	1	2	0	0	13	2	3
17:15	0	1	0	4	1	0	0	0	10	0	0	0	0	22	0	0	1	0	21	1	2
17:30	1	1	0	2	2	0	0	1	10	1	1	3	0	5	4	0	2	0	2	2	9
17:45	0	1	1	6	2	1	0	0	6	1	0	0	0	9	0	0	0	0	11	0	3
Total Volume	1	3	1	22	5	1	0	1	55	2	1	4	0	49	5	2	3	0	47	5	17
% App Total	20.0%	60.0%	20.0%			50.0%	0.0%	50.0%			20.0%	80.0%	0.0%			40.0%	60.0%	0.0%			
PHF	.250	.750	.250		.625	.250	.000	.250		.500	.250	.333	.000		.313	.250	.375	.000		.625	.472

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-026 Fontaine Street-I-580 Overcrossing.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Fontaine Street Southbound					I-580 Overcrossing Westbound					Fontaine Street Northbound					Driveway Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	2	14	1	0	17	0	1	0	0	1	0	1	12	1	14	0	1	0	0	1	33	1
07:15	1	26	2	0	29	2	0	2	0	4	0	5	21	2	28	0	0	0	0	0	61	2
07:30	3	29	4	0	36	2	1	1	0	4	0	7	32	2	41	0	0	0	0	0	81	2
07:45	10	39	5	1	55	4	1	7	0	12	0	9	32	4	45	1	1	0	0	2	114	5
Total	16	108	12	1	137	8	3	10	0	21	0	22	97	9	128	1	2	0	0	3	289	10
08:00	21	62	14	0	97	5	7	5	0	17	12	21	34	3	70	1	6	10	0	17	201	3
08:15	14	65	6	2	87	11	2	4	0	17	6	15	32	2	55	2	6	8	0	16	175	4
08:30	6	40	1	0	47	7	2	4	0	13	0	18	32	0	50	0	0	1	0	1	111	0
08:45	4	36	3	2	45	3	2	4	0	9	0	9	18	0	27	0	0	1	0	1	82	2
Total	45	203	24	4	276	26	13	17	0	56	18	63	116	5	202	3	12	20	0	35	569	9
16:00	10	43	5	1	59	1	0	3	0	4	6	6	20	1	33	1	6	5	0	12	108	2
16:15	7	32	3	1	43	1	0	4	0	5	1	2	5	1	9	2	12	7	0	21	78	2
16:30	9	30	3	0	42	1	0	4	0	5	2	3	20	0	25	2	5	3	0	10	82	0
16:45	2	37	0	0	39	2	0	1	0	3	1	2	11	1	15	1	2	0	0	3	60	1
Total	28	142	11	2	183	5	0	12	0	17	10	13	56	3	82	6	25	15	0	46	328	5
17:00	4	36	3	1	44	5	2	1	0	8	0	3	12	0	15	1	3	0	0	4	71	1
17:15	3	38	17	0	58	1	2	1	0	4	0	3	11	0	14	1	6	3	0	10	86	0
17:30	4	33	13	0	50	6	2	1	0	9	1	5	15	0	21	1	17	1	0	19	99	0
17:45	3	46	2	0	51	5	1	0	0	6	0	6	19	0	25	1	4	1	0	6	88	0
Total	14	153	35	1	203	17	7	3	0	27	1	17	57	0	75	4	30	5	0	39	344	1
Grand Total	103	606	82	8	799	56	23	42	0	121	29	115	326	17	487	14	69	40	0	123	1530	25
Apprch %	12.9%	75.8%	10.3%	1.0%		46.3%	19.0%	34.7%	0.0%		6.0%	23.6%	66.9%	3.5%		11.4%	56.1%	32.5%	0.0%			
Total %	6.7%	39.6%	5.4%	0.5%	52.2%	3.7%	1.5%	2.7%	0.0%	7.9%	1.9%	7.5%	21.3%	1.1%	31.8%	0.9%	4.5%	2.6%	0.0%	8.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-026 Fontaine Street-I-580 Overcrossing.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Fontaine Street Southbound					I-580 Overcrossing Westbound					Fontaine Street Northbound					Driveway Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	10	39	5	1	55	4	1	7	0	12	0	9	32	4	45	1	1	0	0	2	114
08:00	21	62	14	0	97	5	7	5	0	17	12	21	34	3	70	1	6	10	0	17	201
08:15	14	65	6	2	87	11	2	4	0	17	6	15	32	2	55	2	6	8	0	16	175
08:30	6	40	1	0	47	7	2	4	0	13	0	18	32	0	50	0	0	1	0	1	111
Total Volume	51	206	26	3	286	27	12	20	0	59	18	63	130	9	220	4	13	19	0	36	601
% App Total	17.8%	72.0%	9.1%	1.0%		45.8%	20.3%	33.9%	0.0%		8.2%	28.6%	59.1%	4.1%		11.1%	36.1%	52.8%	0.0%		
PHF	.607	.792	.464	.375	.737	.614	.429	.714	.000	.868	.375	.750	.956	.563	.786	.500	.542	.475	.000	.529	.748

PM PEAK HOUR	Fontaine Street Southbound					I-580 Overcrossing Westbound					Fontaine Street Northbound					Driveway Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	4	36	3	1	44	5	2	1	0	8	0	3	12	0	15	1	3	0	0	4	71
17:15	3	38	17	0	58	1	2	1	0	4	0	3	11	0	14	1	6	3	0	10	86
17:30	4	33	13	0	50	6	2	1	0	9	1	5	15	0	21	1	17	1	0	19	99
17:45	3	46	2	0	51	5	1	0	0	6	0	6	19	0	25	1	4	1	0	6	88
Total Volume	14	153	35	1	203	17	7	3	0	27	1	17	57	0	75	4	30	5	0	39	344
% App Total	6.9%	75.4%	17.2%	0.5%		63.0%	25.9%	11.1%	0.0%		1.3%	22.7%	76.0%	0.0%		10.3%	76.9%	12.8%	0.0%		
PHF	.875	.832	.515	.250	.875	.708	.875	.750	.000	.750	.250	.708	.750	.000	.750	1.000	.441	.417	.000	.513	.869

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-026 Fontaine Street-I-580 Overcrossing.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Fontaine Street Southbound					I-580 Overcrossing Westbound					Fontaine Street Northbound					Driveway Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
07:15	0	0	0	1	0	0	0	0	1	0	0	0	0	3	0	0	0	0	3	0	0	8
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	6
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	8	0	0	11
Total	0	0	0	1	0	0	0	0	1	0	0	0	0	9	0	0	0	0	16	0	0	27
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	38	0	0	0	0	48	0	0	86
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	6	0	0	8
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	16	0	0	29
08:45	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	4	0	1	6
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	55	0	0	0	0	74	0	1	129
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	11	0	0	18
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	0	0	33
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	56	0	0	63
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
17:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	7	0	0	8
17:45	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	4
Total	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	13	0	0	16
Grand Total	1	0	0	2	1	0	0	0	3	0	0	0	0	71	0	0	0	0	159	0	1	235
Apprch %	100.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	100.0%	0.0%	0.0%		100.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-026 Fontaine Street-I-580 Overcrossing.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Fontaine Street Southbound					I-580 Overcrossing Westbound					Fontaine Street Northbound					Driveway Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	8	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	38	0	0	0	0	48	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	6	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	16	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	56	0	0	0	0	78	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	Fontaine Street Southbound					I-580 Overcrossing Westbound					Fontaine Street Northbound					Driveway Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
17:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	7	0	0
17:45	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0
Total Volume	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	13	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-027 Crest Avenue-Fontaine Street.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Southbound					Fontaine Street Westbound					Crest Avenue Northbound					Fontaine Street Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	0	0	0	0	0	18	0	0	18	0	0	2	0	2	0	13	0	0	13	33	0
07:15	0	0	0	0	0	0	22	0	1	23	1	0	6	0	7	0	21	1	0	22	52	1
07:30	0	0	0	0	0	1	30	0	1	32	1	0	2	0	3	0	38	0	1	39	74	2
07:45	0	0	0	0	0	3	36	0	5	44	0	0	5	0	5	0	40	1	0	41	90	5
Total	0	0	0	0	0	4	106	0	7	117	2	0	15	0	17	0	112	2	1	115	249	8
08:00	0	0	0	0	0	1	61	0	9	71	1	0	8	0	9	0	73	0	1	74	154	10
08:15	0	0	0	0	0	1	79	0	20	100	1	0	9	0	10	0	71	0	0	71	181	20
08:30	0	0	0	0	0	4	64	0	25	93	2	0	1	0	3	0	40	1	0	41	137	25
08:45	0	0	0	0	0	3	35	0	5	43	1	0	2	0	3	0	20	0	0	20	66	5
Total	0	0	0	0	0	9	239	0	59	307	5	0	20	0	25	0	204	1	1	206	538	60
16:00	0	0	0	0	0	4	40	0	5	49	1	0	3	0	4	0	25	1	1	27	80	6
16:15	0	0	0	0	0	4	38	0	1	43	1	0	0	0	1	0	9	2	0	11	55	1
16:30	0	0	0	0	0	5	32	0	1	38	0	0	5	0	5	0	18	1	0	19	62	1
16:45	0	0	0	0	0	5	35	0	5	45	1	0	4	0	5	0	9	0	0	9	59	5
Total	0	0	0	0	0	18	145	0	12	175	3	0	12	0	15	0	61	4	1	66	256	13
17:00	0	0	0	0	0	4	34	0	1	39	1	0	1	0	2	0	13	3	0	16	57	1
17:15	0	0	0	0	0	3	38	0	5	46	1	0	2	0	3	0	14	0	0	14	63	5
17:30	0	0	0	0	0	4	36	0	1	41	1	0	4	0	5	0	21	2	0	23	69	1
17:45	0	0	0	0	0	8	42	0	8	58	1	0	2	0	3	0	21	2	0	23	84	8
Total	0	0	0	0	0	19	150	0	15	184	4	0	9	0	13	0	69	7	0	76	273	15
Grand Total	0	0	0	0	0	50	640	0	93	783	14	0	56	0	70	0	446	14	3	463	1316	96
Apprch %	0.0%	0.0%	0.0%	0.0%		6.4%	81.7%	0.0%	11.9%		20.0%	0.0%	80.0%	0.0%		0.0%	96.3%	3.0%	0.6%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	3.8%	48.6%	0.0%	7.1%	59.5%	1.1%	0.0%	4.3%	0.0%	5.3%	0.0%	33.9%	1.1%	0.2%	35.2%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-027 Crest Avenue-Fontaine Street.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Southbound					Fontaine Street Westbound					Crest Avenue Northbound					Fontaine Street Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	3	36	0	5	44	0	0	5	0	5	0	40	1	0	41	90
08:00	0	0	0	0	0	1	61	0	9	71	1	0	8	0	9	0	73	0	1	74	154
08:15	0	0	0	0	0	1	79	0	20	100	1	0	9	0	10	0	71	0	0	71	181
08:30	0	0	0	0	0	4	64	0	25	93	2	0	1	0	3	0	40	1	0	41	137
Total Volume	0	0	0	0	0	9	240	0	59	308	4	0	23	0	27	0	224	2	1	227	562
% App Total	0.0%	0.0%	0.0%	0.0%		2.9%	77.9%	0.0%	19.2%		14.8%	0.0%	85.2%	0.0%		0.0%	98.7%	0.9%	0.4%		
PHF	.000	.000	.000	.000	.000	.563	.759	.000	.590	.770	.500	.000	.639	.000	.675	.000	.767	.500	.250	.767	.776

PM PEAK HOUR	Southbound					Fontaine Street Westbound					Crest Avenue Northbound					Fontaine Street Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	4	34	0	1	39	1	0	1	0	2	0	13	3	0	16	57
17:15	0	0	0	0	0	3	38	0	5	46	1	0	2	0	3	0	14	0	0	14	63
17:30	0	0	0	0	0	4	36	0	1	41	1	0	4	0	5	0	21	2	0	23	69
17:45	0	0	0	0	0	8	42	0	8	58	1	0	2	0	3	0	21	2	0	23	84
Total Volume	0	0	0	0	0	19	150	0	15	184	4	0	9	0	13	0	69	7	0	76	273
% App Total	0.0%	0.0%	0.0%	0.0%		10.3%	81.5%	0.0%	8.2%		30.8%	0.0%	69.2%	0.0%		0.0%	90.8%	9.2%	0.0%		
PHF	.000	.000	.000	.000	.000	.594	.893	.000	.469	.793	1.000	.000	.563	.000	.650	.000	.821	.583	.000	.826	.813

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-027 Crest Avenue-Fontaine Street.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Southbound					Fontaine Street Westbound					Crest Avenue Northbound					Fontaine Street Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
08:00	0	0	0	0	0	0	0	0	6	0	0	0	0	6	0	0	1	0	0	1	1	12
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	6	0	0	0	0	7	0	0	1	0	0	1	1	13
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
17:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	4
Grand Total	0	0	0	0	0	0	0	0	7	0	0	0	0	13	0	0	1	0	0	1	1	20
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		100.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-027 Crest Avenue-Fontaine Street.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Southbound					Fontaine Street Westbound					Crest Avenue Northbound					Fontaine Street Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	6	0	0	0	0	6	0	0	1	0	0	1	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	6	0	0	0	0	7	0	0	1	0	0	1	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.250	.000		.250	.250

PM PEAK HOUR	Southbound					Fontaine Street Westbound					Crest Avenue Northbound					Fontaine Street Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-028 Golf Links Road-Fontaine Street.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Golf Links Road Southbound					Fontaine Street Westbound					Golf Links Road Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	8	21	0	0	29	3	0	12	0	15	0	22	2	1	25	0	0	0	0	0	69	1
07:15	27	37	0	0	64	4	0	20	0	24	0	32	2	0	34	0	0	0	0	0	122	0
07:30	29	30	0	0	59	1	0	29	0	30	0	24	5	0	29	0	0	0	0	0	118	0
07:45	37	37	0	0	74	6	0	36	0	42	0	43	2	0	45	0	0	0	0	0	161	0
Total	101	125	0	0	226	14	0	97	0	111	0	121	11	1	133	0	0	0	0	0	470	1
08:00	60	32	0	0	92	11	0	48	0	59	0	40	16	0	56	0	0	0	0	0	207	0
08:15	58	43	0	0	101	22	0	60	0	82	0	60	8	0	68	0	0	0	0	0	251	0
08:30	31	37	0	0	68	18	0	45	0	63	0	70	7	0	77	0	0	0	0	0	208	0
08:45	24	23	0	0	47	10	0	31	0	41	0	50	2	0	52	0	0	0	0	0	140	0
Total	173	135	0	0	308	61	0	184	0	245	0	220	33	0	253	0	0	0	0	0	806	0
16:00	19	46	0	0	65	4	0	37	0	41	0	37	7	0	44	0	0	0	0	0	150	0
16:15	12	44	0	0	56	2	0	42	0	44	0	45	2	0	47	0	0	0	0	0	147	0
16:30	13	40	0	0	53	2	0	26	0	28	0	52	3	0	55	0	0	0	0	0	136	0
16:45	10	44	0	0	54	2	0	30	0	32	0	48	2	0	50	0	0	0	0	0	136	0
Total	54	174	0	0	228	10	0	135	0	145	0	182	14	0	196	0	0	0	0	0	569	0
17:00	13	52	0	0	65	2	0	37	0	39	0	55	1	0	56	0	0	0	0	0	160	0
17:15	14	45	0	0	59	6	0	31	0	37	0	38	1	0	39	0	0	0	0	0	135	0
17:30	18	44	0	0	62	8	0	34	0	42	0	43	4	0	47	0	0	0	0	0	151	0
17:45	18	45	0	0	63	3	0	37	0	40	0	36	6	0	42	0	0	0	0	0	145	0
Total	63	186	0	0	249	19	0	139	0	158	0	172	12	0	184	0	0	0	0	0	591	0
Grand Total	391	620	0	0	1011	104	0	555	0	659	0	695	70	1	766	0	0	0	0	0	2436	1
Apprch %	38.7%	61.3%	0.0%	0.0%		15.8%	0.0%	84.2%	0.0%		0.0%	90.7%	9.1%	0.1%		0.0%	0.0%	0.0%	0.0%			
Total %	16.1%	25.5%	0.0%	0.0%	41.5%	4.3%	0.0%	22.8%	0.0%	27.1%	0.0%	28.5%	2.9%	0.0%	31.4%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-028 Golf Links Road-Fontaine Street.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Golf Links Road Southbound					Fontaine Street Westbound					Golf Links Road Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	37	37	0	0	74	6	0	36	0	42	0	43	2	0	45	0	0	0	0	0	161
08:00	60	32	0	0	92	11	0	48	0	59	0	40	16	0	56	0	0	0	0	0	207
08:15	58	43	0	0	101	22	0	60	0	82	0	60	8	0	68	0	0	0	0	0	251
08:30	31	37	0	0	68	18	0	45	0	63	0	70	7	0	77	0	0	0	0	0	208
Total Volume	186	149	0	0	335	57	0	189	0	246	0	213	33	0	246	0	0	0	0	0	827
% App Total	55.5%	44.5%	0.0%	0.0%		23.2%	0.0%	76.8%	0.0%		0.0%	86.6%	13.4%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.775	.866	.000	.000	.829	.648	.000	.788	.000	.750	.000	.761	.516	.000	.799	.000	.000	.000	.000	.000	.824

PM PEAK HOUR	Golf Links Road Southbound					Fontaine Street Westbound					Golf Links Road Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	13	52	0	0	65	2	0	37	0	39	0	55	1	0	56	0	0	0	0	0	160
17:15	14	45	0	0	59	6	0	31	0	37	0	38	1	0	39	0	0	0	0	0	135
17:30	18	44	0	0	62	8	0	34	0	42	0	43	4	0	47	0	0	0	0	0	151
17:45	18	45	0	0	63	3	0	37	0	40	0	36	6	0	42	0	0	0	0	0	145
Total Volume	63	186	0	0	249	19	0	139	0	158	0	172	12	0	184	0	0	0	0	0	591
% App Total	25.3%	74.7%	0.0%	0.0%		12.0%	0.0%	88.0%	0.0%		0.0%	93.5%	6.5%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.875	.894	.000	.000	.958	.594	.000	.939	.000	.940	.000	.782	.500	.000	.821	.000	.000	.000	.000	.000	.923

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-028 Golf Links Road-Fontaine Street.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Golf Links Road Southbound					Fontaine Street Westbound					Golf Links Road Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	4	0	0	0	0	0	0	0	5
08:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
08:15	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0	1	2
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	8
16:45	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	2
Total	0	1	0	0	1	0	0	0	4	0	0	0	0	6	0	0	0	0	0	0	1	10
17:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
17:30	0	0	0	0	0	0	0	0	3	0	0	0	0	4	0	0	0	0	0	0	0	7
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	4	0	0	0	0	9	0	0	0	0	0	0	0	13
Grand Total	0	1	0	0	1	0	0	0	10	0	0	0	1	20	1	0	0	0	0	0	2	30
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%				
Total %	0.0%	50.0%	0.0%		50.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	50.0%		50.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-028 Golf Links Road-Fontaine Street.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Golf Links Road Southbound					Fontaine Street Westbound					Golf Links Road Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	2	0	0	0	1	2	1	0	0	0	0	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.250		.250	.000	.000	.000		.000	.250

PM PEAK HOUR	Golf Links Road Southbound					Fontaine Street Westbound					Golf Links Road Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	3	0	0	0	0	4	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	4	0	0	0	0	9	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-029 Golf Links Road-82nd Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Southbound					82nd Avenue Westbound					Golf Links Road Northbound					82nd Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	0	0	0	0	4	10	0	0	14	32	0	0	0	32	0	3	28	1	32	78	1
07:15	0	0	0	0	0	10	9	0	0	19	51	0	4	2	57	0	5	45	0	50	126	2
07:30	0	0	0	0	0	7	14	0	0	21	57	0	0	0	57	0	5	51	0	56	134	0
07:45	0	0	0	0	0	10	9	0	0	19	74	0	1	0	75	0	6	57	0	63	157	0
Total	0	0	0	0	0	31	42	0	0	73	214	0	5	2	221	0	19	181	1	201	495	3
08:00	0	0	0	0	0	5	15	0	0	20	77	0	7	0	84	0	8	78	0	86	190	0
08:15	0	0	0	0	0	7	14	0	0	21	119	0	7	0	126	0	17	87	1	105	252	1
08:30	0	0	0	0	0	2	14	0	0	16	102	0	9	0	111	0	10	49	0	59	186	0
08:45	0	0	0	0	0	6	11	0	0	17	82	0	4	0	86	0	7	30	1	38	141	1
Total	0	0	0	0	0	20	54	0	0	74	380	0	27	0	407	0	42	244	2	288	769	2
16:00	0	0	0	0	0	8	13	0	0	21	66	0	5	0	71	0	8	57	0	65	157	0
16:15	0	0	0	0	0	4	10	0	0	14	63	0	10	0	73	0	11	43	0	54	141	0
16:30	0	0	0	0	0	3	10	0	0	13	64	0	9	0	73	0	11	45	1	57	143	1
16:45	0	0	0	0	0	7	16	0	0	23	60	0	7	0	67	0	15	49	0	64	154	0
Total	0	0	0	0	0	22	49	0	0	71	253	0	31	0	284	0	45	194	1	240	595	1
17:00	0	0	0	0	0	4	11	0	0	15	63	0	8	0	71	0	16	48	0	64	150	0
17:15	0	0	0	0	0	3	18	0	0	21	77	0	7	0	84	0	19	69	0	88	193	0
17:30	0	0	0	0	0	10	14	0	0	24	64	0	4	0	68	0	15	54	2	71	163	2
17:45	0	0	0	0	0	4	9	0	0	13	68	0	13	0	81	0	15	46	2	63	157	2
Total	0	0	0	0	0	21	52	0	0	73	272	0	32	0	304	0	65	217	4	286	663	4
Grand Total	0	0	0	0	0	94	197	0	0	291	1119	0	95	2	1216	0	171	836	8	1015	2522	10
Apprch %	0.0%	0.0%	0.0%	0.0%		32.3%	67.7%	0.0%	0.0%		92.0%	0.0%	7.8%	0.2%		0.0%	16.8%	82.4%	0.8%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%	7.8%	0.0%	0.0%	11.5%	44.4%	0.0%	3.8%	0.1%	48.2%	0.0%	6.8%	33.1%	0.3%	40.2%	100.0%	

ALL TRAFFIC DATA

City of Oakland
(916) 771-8700
orders@atdtraffic.com

All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

File Name : 15-7302-029 Golf Links Road-82nd Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Southbound					82nd Avenue Westbound					Golf Links Road Northbound					82nd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	10	9	0	0	19	74	0	1	0	75	0	6	57	0	63	157
08:00	0	0	0	0	0	5	15	0	0	20	77	0	7	0	84	0	8	78	0	86	190
08:15	0	0	0	0	0	7	14	0	0	21	119	0	7	0	126	0	17	87	1	105	252
08:30	0	0	0	0	0	2	14	0	0	16	102	0	9	0	111	0	10	49	0	59	186
Total Volume	0	0	0	0	0	24	52	0	0	76	372	0	24	0	396	0	41	271	1	313	785
% App Total	0.0%	0.0%	0.0%	0.0%		31.6%	68.4%	0.0%	0.0%		93.9%	0.0%	6.1%	0.0%		0.0%	13.1%	86.6%	0.3%		
PHF	.000	.000	.000	.000	.000	.600	.867	.000	.000	.905	.782	.000	.667	.000	.786	.000	.603	.779	.250	.745	.779

PM PEAK HOUR	Southbound					82nd Avenue Westbound					Golf Links Road Northbound					82nd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	4	11	0	0	15	63	0	8	0	71	0	16	48	0	64	150
17:15	0	0	0	0	0	3	18	0	0	21	77	0	7	0	84	0	19	69	0	88	193
17:30	0	0	0	0	0	10	14	0	0	24	64	0	4	0	68	0	15	54	2	71	163
17:45	0	0	0	0	0	4	9	0	0	13	68	0	13	0	81	0	15	46	2	63	157
Total Volume	0	0	0	0	0	21	52	0	0	73	272	0	32	0	304	0	65	217	4	286	663
% App Total	0.0%	0.0%	0.0%	0.0%		28.8%	71.2%	0.0%	0.0%		89.5%	0.0%	10.5%	0.0%		0.0%	22.7%	75.9%	1.4%		
PHF	.000	.000	.000	.000	.000	.525	.722	.000	.000	.760	.883	.000	.615	.000	.905	.000	.855	.786	.500	.813	.859

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-029 Golf Links Road-82nd Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Southbound					82nd Avenue Westbound					Golf Links Road Northbound					82nd Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
07:30	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	4	0	0	0	0	0	0	0	5
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	3
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	6	1	1	7
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	7	1	1	11
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	3
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2	0	0	5
Grand Total	0	0	0	0	0	0	0	0	1	0	0	0	0	14	0	0	0	1	9	1	1	24
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	100.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	100.0%		100.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-029 Golf Links Road-82nd Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Southbound					82nd Avenue Westbound					Golf Links Road Northbound					82nd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	Southbound					82nd Avenue Westbound					Golf Links Road Northbound					82nd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-030 MacArthur Boulevard-82nd Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	MacArthur Boulevard Southbound					82nd Avenue Westbound					MacArthur Boulevard Northbound					82nd Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	6	19	2	0	27	9	18	15	0	42	2	24	6	0	32	9	17	1	0	27	128	0
07:15	12	15	8	0	35	8	21	30	0	59	5	25	4	0	34	15	31	7	0	53	181	0
07:30	13	29	7	0	49	10	36	28	0	74	4	51	7	0	62	15	37	12	0	64	249	0
07:45	12	41	17	0	70	12	41	25	0	78	20	107	15	0	142	16	33	27	0	76	366	0
Total	43	104	34	0	181	39	116	98	0	253	31	207	32	0	270	55	118	47	0	220	924	0
08:00	18	45	6	0	69	15	46	36	0	97	18	107	14	0	139	24	60	7	0	91	396	0
08:15	31	53	15	0	99	15	67	49	0	131	8	114	21	0	143	23	50	11	0	84	457	0
08:30	19	45	25	0	89	9	64	48	0	121	7	71	6	0	84	24	33	13	0	70	364	0
08:45	7	45	11	0	63	9	50	35	0	94	9	58	3	0	70	10	30	11	0	51	278	0
Total	75	188	57	0	320	48	227	168	0	443	42	350	44	0	436	81	173	42	0	296	1495	0
16:00	20	73	17	0	110	6	41	30	0	77	10	54	6	0	70	14	36	9	0	59	316	0
16:15	19	65	22	0	106	7	43	18	0	68	7	49	5	0	61	21	25	12	0	58	293	0
16:30	23	68	21	0	112	8	47	25	0	80	10	56	2	0	68	18	35	13	0	66	326	0
16:45	19	70	23	0	112	12	42	23	0	77	5	48	8	0	61	22	34	12	0	68	318	0
Total	81	276	83	0	440	33	173	96	0	302	32	207	21	0	260	75	130	46	0	251	1253	0
17:00	38	76	22	0	136	11	43	19	0	73	6	65	8	0	79	12	27	10	0	49	337	0
17:15	38	71	24	0	133	13	50	29	0	92	11	62	13	0	86	8	34	9	0	51	362	0
17:30	22	69	21	0	112	8	43	30	0	81	7	61	8	0	76	11	43	9	0	63	332	0
17:45	21	66	26	0	113	10	48	20	0	78	8	58	7	0	73	20	32	14	0	66	330	0
Total	119	282	93	0	494	42	184	98	0	324	32	246	36	0	314	51	136	42	0	229	1361	0
Grand Total	318	850	267	0	1435	162	700	460	0	1322	137	1010	133	0	1280	262	557	177	0	996	5033	0
Apprch %	22.2%	59.2%	18.6%	0.0%		12.3%	53.0%	34.8%	0.0%		10.7%	78.9%	10.4%	0.0%		26.3%	55.9%	17.8%	0.0%			
Total %	6.3%	16.9%	5.3%	0.0%	28.5%	3.2%	13.9%	9.1%	0.0%	26.3%	2.7%	20.1%	2.6%	0.0%	25.4%	5.2%	11.1%	3.5%	0.0%	19.8%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-030 MacArthur Boulevard-82nd Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	MacArthur Boulevard Southbound					82nd Avenue Westbound					MacArthur Boulevard Northbound					82nd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	12	41	17	0	70	12	41	25	0	78	20	107	15	0	142	16	33	27	0	76	366
08:00	18	45	6	0	69	15	46	36	0	97	18	107	14	0	139	24	60	7	0	91	396
08:15	31	53	15	0	99	15	67	49	0	131	8	114	21	0	143	23	50	11	0	84	457
08:30	19	45	25	0	89	9	64	48	0	121	7	71	6	0	84	24	33	13	0	70	364
Total Volume	80	184	63	0	327	51	218	158	0	427	53	399	56	0	508	87	176	58	0	321	1583
% App Total	24.5%	56.3%	19.3%	0.0%		11.9%	51.1%	37.0%	0.0%		10.4%	78.5%	11.0%	0.0%		27.1%	54.8%	18.1%	0.0%		
PHF	.645	.868	.630	.000	.826	.850	.813	.806	.000	.815	.663	.875	.667	.000	.888	.906	.733	.537	.000	.882	.866

PM PEAK HOUR	MacArthur Boulevard Southbound					82nd Avenue Westbound					MacArthur Boulevard Northbound					82nd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	38	76	22	0	136	11	43	19	0	73	6	65	8	0	79	12	27	10	0	49	337
17:15	38	71	24	0	133	13	50	29	0	92	11	62	13	0	86	8	34	9	0	51	362
17:30	22	69	21	0	112	8	43	30	0	81	7	61	8	0	76	11	43	9	0	63	332
17:45	21	66	26	0	113	10	48	20	0	78	8	58	7	0	73	20	32	14	0	66	330
Total Volume	119	282	93	0	494	42	184	98	0	324	32	246	36	0	314	51	136	42	0	229	1361
% App Total	24.1%	57.1%	18.8%	0.0%		13.0%	56.8%	30.2%	0.0%		10.2%	78.3%	11.5%	0.0%		22.3%	59.4%	18.3%	0.0%		
PHF	.783	.928	.894	.000	.908	.808	.920	.817	.000	.880	.727	.946	.692	.000	.913	.638	.791	.750	.000	.867	.940

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-030 MacArthur Boulevard-82nd Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	MacArthur Boulevard Southbound					82nd Avenue Westbound					MacArthur Boulevard Northbound					82nd Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	2	0	0	0	0	4	0	0	0	0	4	0	0	0	0	4	0	0	14
07:15	0	0	0	6	0	0	0	0	9	0	0	0	0	4	0	0	0	0	6	0	0	25
07:30	0	1	0	0	1	0	0	0	5	0	0	0	0	4	0	0	0	0	3	0	1	12
07:45	0	0	0	1	0	0	0	0	6	0	0	1	0	4	1	0	0	0	6	0	1	17
Total	0	1	0	9	1	0	0	0	24	0	0	1	0	16	1	0	0	0	19	0	2	68
08:00	0	0	0	1	0	0	0	0	4	0	0	0	0	1	0	0	0	0	5	0	0	11
08:15	0	0	1	5	1	0	0	0	2	0	0	0	0	2	0	0	0	0	5	0	1	14
08:30	0	0	1	3	1	0	0	0	2	0	0	0	0	4	0	0	0	0	5	0	1	14
08:45	0	1	0	8	1	0	0	0	2	0	0	0	0	5	0	0	0	0	5	0	1	20
Total	0	1	2	17	3	0	0	0	10	0	0	0	0	12	0	0	0	0	20	0	3	59
16:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	7	0	0	9
16:15	0	0	1	5	1	0	0	0	6	0	0	2	0	2	2	0	0	0	11	0	3	24
16:30	0	0	0	1	0	0	0	1	2	1	0	0	0	3	0	0	1	0	18	1	2	24
16:45	0	1	0	6	1	0	0	0	2	0	0	1	0	1	1	0	0	0	10	0	2	19
Total	0	1	1	12	2	0	0	1	11	1	0	3	0	7	3	0	1	0	46	1	7	76
17:00	0	1	0	3	1	0	0	0	4	0	0	0	0	4	0	0	1	0	15	1	2	26
17:15	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	0	0	0	6	0	0	12
17:30	0	1	0	4	1	0	0	0	7	0	1	1	0	2	2	0	0	0	9	0	3	22
17:45	0	1	0	3	1	0	0	0	1	0	0	0	0	4	0	0	0	0	14	0	1	22
Total	0	3	0	13	3	0	0	0	12	0	1	1	0	13	2	0	1	0	44	1	6	82
Grand Total	0	6	3	51	9	0	0	1	57	1	1	5	0	48	6	0	2	0	129	2	18	285
Apprch %	0.0%	66.7%	33.3%			0.0%	0.0%	100.0%			16.7%	83.3%	0.0%			0.0%	100.0%	0.0%				
Total %	0.0%	33.3%	16.7%		50.0%	0.0%	0.0%	5.6%		5.6%	5.6%	27.8%	0.0%		33.3%	0.0%	11.1%	0.0%		11.1%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-030 MacArthur Boulevard-82nd Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	MacArthur Boulevard Southbound					82nd Avenue Westbound					MacArthur Boulevard Northbound					82nd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	1	0	0	0	0	6	0	0	1	0	4	1	0	0	0	6	0	1
08:00	0	0	0	1	0	0	0	0	4	0	0	0	0	1	0	0	0	0	5	0	0
08:15	0	0	1	5	1	0	0	0	2	0	0	0	0	2	0	0	0	0	5	0	1
08:30	0	0	1	3	1	0	0	0	2	0	0	0	0	4	0	0	0	0	5	0	1
Total Volume	0	0	2	10	2	0	0	0	14	0	0	1	0	11	1	0	0	0	21	0	3
% App Total	0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.500		.500	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000	.750

PM PEAK HOUR	MacArthur Boulevard Southbound					82nd Avenue Westbound					MacArthur Boulevard Northbound					82nd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	1	0	3	1	0	0	0	4	0	0	0	0	4	0	0	1	0	15	1	2
17:15	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	0	0	0	6	0	0
17:30	0	1	0	4	1	0	0	0	7	0	1	1	0	2	2	0	0	0	9	0	3
17:45	0	1	0	3	1	0	0	0	1	0	0	0	0	4	0	0	0	0	14	0	1
Total Volume	0	3	0	13	3	0	0	0	12	0	1	1	0	13	2	0	1	0	44	1	6
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			50.0%	50.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.750	.000		.750	.000	.000	.000		.000	.250	.250	.000		.250	.000	.250	.000		.250	.500

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-031 Bancroft Avenue-82nd Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Bancroft Avenue Southbound					82nd Avenue Westbound					Bancroft Avenue Northbound					82nd Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	2	42	4	0	48	4	15	6	0	25	2	76	5	1	84	6	18	5	0	29	186	1
07:15	8	45	2	0	55	5	13	13	0	31	7	94	7	1	109	17	21	3	0	41	236	1
07:30	10	55	6	2	73	14	34	20	0	68	3	123	21	1	148	30	31	5	0	66	355	3
07:45	22	86	13	2	123	21	40	31	0	92	11	158	24	1	194	26	44	7	0	77	486	3
Total	42	228	25	4	299	44	102	70	0	216	23	451	57	4	535	79	114	20	0	213	1263	8
08:00	22	100	13	0	135	23	36	28	0	87	12	131	13	1	157	16	46	5	0	67	446	1
08:15	17	91	11	0	119	17	58	38	0	113	13	161	14	0	188	10	41	6	0	57	477	0
08:30	16	89	9	0	114	14	69	25	0	108	8	126	15	1	150	11	21	8	0	40	412	1
08:45	16	80	4	1	101	9	48	21	0	78	5	92	12	1	110	14	24	9	0	47	336	2
Total	71	360	37	1	469	63	211	112	0	386	38	510	54	3	605	51	132	28	0	211	1671	4
16:00	18	136	24	0	178	18	36	16	0	70	9	109	11	0	129	7	25	9	0	41	418	0
16:15	15	153	21	0	189	11	52	19	0	82	8	103	16	1	128	16	41	12	0	69	468	1
16:30	17	141	20	0	178	17	50	18	0	85	9	107	17	3	136	12	38	6	0	56	455	3
16:45	22	155	16	0	193	16	45	10	0	71	14	95	13	1	123	11	34	6	0	51	438	1
Total	72	585	81	0	738	62	183	63	0	308	40	414	57	5	516	46	138	33	0	217	1779	5
17:00	13	174	32	0	219	13	33	12	0	58	6	107	11	2	126	14	34	9	0	57	460	2
17:15	12	143	21	0	176	16	47	18	0	81	15	128	13	2	158	14	27	10	0	51	466	2
17:30	16	153	16	2	187	19	43	13	0	75	8	131	21	1	161	15	28	8	0	51	474	3
17:45	24	164	14	1	203	18	37	16	0	71	4	120	18	2	144	22	28	12	0	62	480	3
Total	65	634	83	3	785	66	160	59	0	285	33	486	63	7	589	65	117	39	0	221	1880	10
Grand Total	250	1807	226	8	2291	235	656	304	0	1195	134	1861	231	19	2245	241	501	120	0	862	6593	27
Apprch %	10.9%	78.9%	9.9%	0.3%		19.7%	54.9%	25.4%	0.0%		6.0%	82.9%	10.3%	0.8%		28.0%	58.1%	13.9%	0.0%			
Total %	3.8%	27.4%	3.4%	0.1%	34.7%	3.6%	9.9%	4.6%	0.0%	18.1%	2.0%	28.2%	3.5%	0.3%	34.1%	3.7%	7.6%	1.8%	0.0%	13.1%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-031 Bancroft Avenue-82nd Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Bancroft Avenue Southbound					82nd Avenue Westbound					Bancroft Avenue Northbound					82nd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	22	86	13	2	123	21	40	31	0	92	11	158	24	1	194	26	44	7	0	77	486
08:00	22	100	13	0	135	23	36	28	0	87	12	131	13	1	157	16	46	5	0	67	446
08:15	17	91	11	0	119	17	58	38	0	113	13	161	14	0	188	10	41	6	0	57	477
08:30	16	89	9	0	114	14	69	25	0	108	8	126	15	1	150	11	21	8	0	40	412
Total Volume	77	366	46	2	491	75	203	122	0	400	44	576	66	3	689	63	152	26	0	241	1821
% App Total	15.7%	74.5%	9.4%	0.4%		18.8%	50.8%	30.5%	0.0%		6.4%	83.6%	9.6%	0.4%		26.1%	63.1%	10.8%	0.0%		
PHF	.875	.915	.885	.250	.909	.815	.736	.803	.000	.885	.846	.894	.688	.750	.888	.606	.826	.813	.000	.782	.937

PM PEAK HOUR	Bancroft Avenue Southbound					82nd Avenue Westbound					Bancroft Avenue Northbound					82nd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	13	174	32	0	219	13	33	12	0	58	6	107	11	2	126	14	34	9	0	57	460
17:15	12	143	21	0	176	16	47	18	0	81	15	128	13	2	158	14	27	10	0	51	466
17:30	16	153	16	2	187	19	43	13	0	75	8	131	21	1	161	15	28	8	0	51	474
17:45	24	164	14	1	203	18	37	16	0	71	4	120	18	2	144	22	28	12	0	62	480
Total Volume	65	634	83	3	785	66	160	59	0	285	33	486	63	7	589	65	117	39	0	221	1880
% App Total	8.3%	80.8%	10.6%	0.4%		23.2%	56.1%	20.7%	0.0%		5.6%	82.5%	10.7%	1.2%		29.4%	52.9%	17.6%	0.0%		
PHF	.677	.911	.648	.375	.896	.868	.851	.819	.000	.880	.550	.927	.750	.875	.915	.739	.860	.813	.000	.891	.979

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-031 Bancroft Avenue-82nd Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Bancroft Avenue Southbound					82nd Avenue Westbound					Bancroft Avenue Northbound					82nd Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	2	0	0	2	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	2	4
07:15	0	0	0	0	0	0	0	0	1	0	0	1	0	1	1	0	0	0	0	0	1	2
07:30	0	1	0	3	1	0	0	0	11	0	0	0	0	8	0	0	0	0	5	0	1	27
07:45	0	2	0	14	2	0	0	0	7	0	0	0	0	7	0	0	0	0	4	0	2	32
Total	0	5	0	17	5	0	0	0	19	0	0	1	0	20	1	0	0	0	9	0	6	65
08:00	0	0	0	8	0	0	0	0	10	0	0	0	0	15	0	0	0	0	4	0	0	37
08:15	0	0	0	3	0	0	0	0	2	0	0	0	0	6	0	0	0	0	5	0	0	16
08:30	0	1	0	2	1	0	0	0	3	0	0	1	0	2	1	0	0	0	1	0	2	8
08:45	0	1	0	1	1	0	0	0	1	0	0	0	0	2	0	0	1	0	2	1	2	6
Total	0	2	0	14	2	0	0	0	16	0	0	1	0	25	1	0	1	0	12	1	4	67
16:00	0	0	0	6	0	0	0	0	2	0	0	0	0	3	0	0	0	0	3	0	0	14
16:15	0	1	0	5	1	0	0	0	1	0	0	0	0	2	0	0	0	0	3	0	1	11
16:30	0	2	0	5	2	0	0	0	1	0	0	1	0	8	1	0	0	1	7	1	4	21
16:45	0	1	0	2	1	0	0	0	2	0	0	0	0	7	0	0	0	0	9	0	1	20
Total	0	4	0	18	4	0	0	0	6	0	0	1	0	20	1	0	0	1	22	1	6	66
17:00	0	0	0	2	0	0	0	0	0	0	0	2	0	0	2	0	0	0	8	0	2	10
17:15	0	0	0	3	0	0	0	0	3	0	0	1	0	10	1	0	1	0	8	1	2	24
17:30	0	1	0	8	1	0	0	0	4	0	1	0	0	12	1	0	0	0	8	0	2	32
17:45	0	1	0	4	1	0	0	0	1	0	0	2	0	4	2	0	0	0	6	0	3	15
Total	0	2	0	17	2	0	0	0	8	0	1	5	0	26	6	0	1	0	30	1	9	81
Grand Total	0	13	0	66	13	0	0	0	49	0	1	8	0	91	9	0	2	1	73	3	25	279
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			11.1%	88.9%	0.0%			0.0%	66.7%	33.3%				
Total %	0.0%	52.0%	0.0%		52.0%	0.0%	0.0%	0.0%		0.0%	4.0%	32.0%	0.0%		36.0%	0.0%	8.0%	4.0%		12.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-031 Bancroft Avenue-82nd Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Bancroft Avenue Southbound					82nd Avenue Westbound					Bancroft Avenue Northbound					82nd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	2	0	14	2	0	0	0	7	0	0	0	0	7	0	0	0	0	4	0	2
08:00	0	0	0	8	0	0	0	0	10	0	0	0	0	15	0	0	0	0	4	0	0
08:15	0	0	0	3	0	0	0	0	2	0	0	0	0	6	0	0	0	0	5	0	0
08:30	0	1	0	2	1	0	0	0	3	0	0	1	0	2	1	0	0	0	1	0	2
Total Volume	0	3	0	27	3	0	0	0	22	0	0	1	0	30	1	0	0	0	14	0	4
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.375	.000		.375	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000	.500

PM PEAK HOUR	Bancroft Avenue Southbound					82nd Avenue Westbound					Bancroft Avenue Northbound					82nd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	2	0	0	0	0	0	0	0	2	0	0	2	0	0	0	8	0	2
17:15	0	0	0	3	0	0	0	0	3	0	0	1	0	10	1	0	1	0	8	1	2
17:30	0	1	0	8	1	0	0	0	4	0	1	0	0	12	1	0	0	0	8	0	2
17:45	0	1	0	4	1	0	0	0	1	0	0	2	0	4	2	0	0	0	6	0	3
Total Volume	0	2	0	17	2	0	0	0	8	0	1	5	0	26	6	0	1	0	30	1	9
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			16.7%	83.3%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.500	.000		.500	.000	.000	.000		.000	.250	.625	.000		.750	.000	.250	.000		.250	.750

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-032 Mountain Boulevard-Rifle Lane.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Mountain Boulevard Southbound					Rifle Lane Westbound					Mountain Boulevard Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	22	0	0	22	1	0	2	0	3	0	32	0	0	32	0	0	0	0	0	57	0
07:15	0	29	0	0	29	1	0	1	0	2	0	47	0	0	47	0	0	0	0	0	78	0
07:30	0	30	0	0	30	0	0	2	0	2	0	76	0	0	76	0	0	0	0	0	108	0
07:45	0	26	0	0	26	0	0	3	0	3	0	150	1	0	151	0	0	0	0	0	180	0
Total	0	107	0	0	107	2	0	8	0	10	0	305	1	0	306	0	0	0	0	0	423	0
08:00	3	37	0	0	40	1	0	6	0	7	0	154	1	0	155	0	0	0	0	0	202	0
08:15	0	38	0	0	38	1	0	3	0	4	0	145	0	0	145	0	0	0	0	0	187	0
08:30	0	40	0	0	40	0	0	2	0	2	0	163	1	0	164	0	0	0	0	0	206	0
08:45	1	26	0	0	27	0	0	2	0	2	0	104	0	0	104	0	0	0	0	0	133	0
Total	4	141	0	0	145	2	0	13	0	15	0	566	2	0	568	0	0	0	0	0	728	0
16:00	1	36	0	0	37	0	0	1	0	1	0	42	1	0	43	0	0	0	0	0	81	0
16:15	0	39	0	0	39	2	0	0	0	2	0	57	4	0	61	0	0	0	0	0	102	0
16:30	3	50	0	0	53	2	0	2	0	4	0	41	0	0	41	0	0	0	0	0	98	0
16:45	0	54	0	0	54	0	0	3	0	3	0	38	4	0	42	0	0	0	0	0	99	0
Total	4	179	0	0	183	4	0	6	0	10	0	178	9	0	187	0	0	0	0	0	380	0
17:00	4	77	0	0	81	0	0	4	0	4	0	45	1	0	46	0	0	0	0	0	131	0
17:15	0	67	0	0	67	0	0	1	0	1	0	51	2	0	53	0	0	0	0	0	121	0
17:30	3	58	0	0	61	0	0	2	0	2	0	50	0	0	50	0	0	0	0	0	113	0
17:45	2	67	0	0	69	0	0	2	0	2	0	52	2	0	54	0	0	0	0	0	125	0
Total	9	269	0	0	278	0	0	9	0	9	0	198	5	0	203	0	0	0	0	0	490	0
Grand Total	17	696	0	0	713	8	0	36	0	44	0	1247	17	0	1264	0	0	0	0	0	2021	0
Apprch %	2.4%	97.6%	0.0%	0.0%		18.2%	0.0%	81.8%	0.0%		0.0%	98.7%	1.3%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	0.8%	34.4%	0.0%	0.0%	35.3%	0.4%	0.0%	1.8%	0.0%	2.2%	0.0%	61.7%	0.8%	0.0%	62.5%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-032 Mountain Boulevard-Rifle Lane.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Mountain Boulevard Southbound					Rifle Lane Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	26	0	0	26	0	0	3	0	3	0	150	1	0	151	0	0	0	0	0	180
08:00	3	37	0	0	40	1	0	6	0	7	0	154	1	0	155	0	0	0	0	0	202
08:15	0	38	0	0	38	1	0	3	0	4	0	145	0	0	145	0	0	0	0	0	187
08:30	0	40	0	0	40	0	0	2	0	2	0	163	1	0	164	0	0	0	0	0	206
Total Volume	3	141	0	0	144	2	0	14	0	16	0	612	3	0	615	0	0	0	0	0	775
% App Total	2.1%	97.9%	0.0%	0.0%		12.5%	0.0%	87.5%	0.0%		0.0%	99.5%	0.5%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.250	.881	.000	.000	.900	.500	.000	.583	.000	.571	.000	.939	.750	.000	.938	.000	.000	.000	.000	.000	.941

PM PEAK HOUR	Mountain Boulevard Southbound					Rifle Lane Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	4	77	0	0	81	0	0	4	0	4	0	45	1	0	46	0	0	0	0	0	131
17:15	0	67	0	0	67	0	0	1	0	1	0	51	2	0	53	0	0	0	0	0	121
17:30	3	58	0	0	61	0	0	2	0	2	0	50	0	0	50	0	0	0	0	0	113
17:45	2	67	0	0	69	0	0	2	0	2	0	52	2	0	54	0	0	0	0	0	125
Total Volume	9	269	0	0	278	0	0	9	0	9	0	198	5	0	203	0	0	0	0	0	490
% App Total	3.2%	96.8%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		0.0%	97.5%	2.5%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.563	.873	.000	.000	.858	.000	.000	.563	.000	.563	.000	.952	.625	.000	.940	.000	.000	.000	.000	.000	.935

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-032 Mountain Boulevard-Rifle Lane.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Mountain Boulevard Southbound					Rifle Lane Westbound					Mountain Boulevard Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
07:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	2	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	1	3
08:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	1	2
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	1	2
17:45	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	0	1	0	0	1	0	0	0	3	0	0	2	0	0	2	0	0	0	0	0	3	3
Grand Total	0	2	0	2	2	0	0	0	6	0	0	4	0	0	4	0	0	0	0	0	6	8
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	33.3%	0.0%		33.3%	0.0%	0.0%	0.0%		0.0%	0.0%	66.7%	0.0%		66.7%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-032 Mountain Boulevard-Rifle Lane.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Mountain Boulevard Southbound					Rifle Lane Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.250

PM PEAK HOUR	Mountain Boulevard Southbound					Rifle Lane Westbound					Mountain Boulevard Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	1
17:45	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	1	0	0	1	0	0	0	3	0	0	2	0	0	2	0	0	0	0	0	3
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.750

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-033 Mountain Boulevard-I-580 WB On-Ramp-Edwa
Date : 4/14/2015

Unshifted Count = All Vehicles

	I-580 WB On-Ramp Southbound					Leona Drive Westbound					Mountain Boulevard Northbound					Edwards Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	0	0	0	0	7	3	18	0	28	20	6	6	0	32	128	9	16	0	153	213	0
07:15	0	0	0	0	0	5	2	17	0	24	34	10	4	0	48	140	2	23	0	165	237	0
07:30	0	0	0	0	0	6	4	24	0	34	33	37	1	0	71	171	3	24	0	198	303	0
07:45	0	0	0	0	0	9	9	32	0	50	51	94	6	0	151	163	7	19	0	189	390	0
Total	0	0	0	0	0	27	18	91	0	136	138	147	17	0	302	602	21	82	0	705	1143	0
08:00	0	0	0	0	0	10	5	14	0	29	56	105	0	0	161	166	9	29	0	204	394	0
08:15	0	0	0	0	0	14	4	19	0	37	51	93	4	0	148	154	5	24	0	183	368	0
08:30	0	0	0	0	0	5	2	15	0	22	68	87	4	0	159	137	8	34	0	179	360	0
08:45	0	0	0	0	0	7	3	12	0	22	43	69	1	0	113	102	2	21	0	125	260	0
Total	0	0	0	0	0	36	14	60	0	110	218	354	9	0	581	559	24	108	0	691	1382	0
16:00	0	0	0	0	0	3	3	5	0	11	32	7	6	0	45	146	10	33	0	189	245	0
16:15	0	0	0	0	0	2	3	5	0	10	41	4	11	0	56	171	9	37	0	217	283	0
16:30	0	0	0	0	0	4	1	8	0	13	30	3	7	0	40	155	13	51	0	219	272	0
16:45	0	0	0	0	0	5	1	3	0	9	31	8	3	0	42	136	11	48	0	195	246	0
Total	0	0	0	0	0	14	8	21	0	43	134	22	27	0	183	608	43	169	0	820	1046	0
17:00	0	0	0	0	0	2	2	4	0	8	35	6	8	0	49	151	12	79	0	242	299	0
17:15	0	0	0	0	0	9	2	9	0	20	40	5	7	0	52	161	14	58	0	233	305	0
17:30	0	0	0	0	0	5	4	8	0	17	38	6	10	0	54	176	17	56	0	249	320	0
17:45	0	0	0	0	0	7	3	6	0	16	35	5	9	0	49	134	28	62	0	224	289	0
Total	0	0	0	0	0	23	11	27	0	61	148	22	34	0	204	622	71	255	0	948	1213	0
Grand Total	0	0	0	0	0	100	51	199	0	350	638	545	87	0	1270	2391	159	614	0	3164	4784	0
Apprch %	0.0%	0.0%	0.0%	0.0%		28.6%	14.6%	56.9%	0.0%		50.2%	42.9%	6.9%	0.0%		75.6%	5.0%	19.4%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	1.1%	4.2%	0.0%	7.3%	13.3%	11.4%	1.8%	0.0%	26.5%	50.0%	3.3%	12.8%	0.0%	66.1%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-033 Mountain Boulevard-I-580 WB On-Ramp-Edwa
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	I-580 WB On-Ramp Southbound					Leona Drive Westbound					Mountain Boulevard Northbound					Edwards Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	9	9	32	0	50	51	94	6	0	151	163	7	19	0	189	390
08:00	0	0	0	0	0	10	5	14	0	29	56	105	0	0	161	166	9	29	0	204	394
08:15	0	0	0	0	0	14	4	19	0	37	51	93	4	0	148	154	5	24	0	183	368
08:30	0	0	0	0	0	5	2	15	0	22	68	87	4	0	159	137	8	34	0	179	360
Total Volume	0	0	0	0	0	38	20	80	0	138	226	379	14	0	619	620	29	106	0	755	1512
% App Total	0.0%	0.0%	0.0%	0.0%		27.5%	14.5%	58.0%	0.0%		36.5%	61.2%	2.3%	0.0%		82.1%	3.8%	14.0%	0.0%		
PHF	.000	.000	.000	.000	.000	.679	.556	.625	.000	.690	.831	.902	.583	.000	.961	.934	.806	.779	.000	.925	.959

PM PEAK HOUR	I-580 WB On-Ramp Southbound					Leona Drive Westbound					Mountain Boulevard Northbound					Edwards Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	2	2	4	0	8	35	6	8	0	49	151	12	79	0	242	299
17:15	0	0	0	0	0	9	2	9	0	20	40	5	7	0	52	161	14	58	0	233	305
17:30	0	0	0	0	0	5	4	8	0	17	38	6	10	0	54	176	17	56	0	249	320
17:45	0	0	0	0	0	7	3	6	0	16	35	5	9	0	49	134	28	62	0	224	289
Total Volume	0	0	0	0	0	23	11	27	0	61	148	22	34	0	204	622	71	255	0	948	1213
% App Total	0.0%	0.0%	0.0%	0.0%		37.7%	18.0%	44.3%	0.0%		72.5%	10.8%	16.7%	0.0%		65.6%	7.5%	26.9%	0.0%		
PHF	.000	.000	.000	.000	.000	.639	.688	.750	.000	.763	.925	.917	.850	.000	.944	.884	.634	.807	.000	.952	.948

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-033 Mountain Boulevard-I-580 WB On-Ramp-Edwa
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	I-580 WB On-Ramp Southbound					Leona Drive Westbound					Mountain Boulevard Northbound					Edwards Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	5
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	4
07:30	0	0	0	0	0	0	0	0	0	0	1	0	0	2	1	0	0	0	0	0	1	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	1	0	0	12	1	0	0	0	0	0	1	12
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	1	1	2
16:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
Total	0	0	0	0	0	0	0	0	1	0	1	0	0	4	1	0	0	0	0	0	1	5
17:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	1	1	2
Total	0	0	0	0	0	0	0	0	0	0	2	0	0	3	2	0	0	1	0	1	3	3
Grand Total	0	0	0	0	0	0	0	0	1	0	4	0	0	21	4	0	0	2	0	2	6	22
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	100.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	66.7%	0.0%	0.0%		66.7%	0.0%	0.0%	33.3%		33.3%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-033 Mountain Boulevard-I-580 WB On-Ramp-Edwa
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	I-580 WB On-Ramp Southbound					Leona Drive Westbound					Mountain Boulevard Northbound					Edwards Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	1	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.250		.250	.250

PM PEAK HOUR	I-580 WB On-Ramp Southbound					Leona Drive Westbound					Mountain Boulevard Northbound					Edwards Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	2	0	0	3	2	0	0	1	0	1	3
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	100.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.500	.000	.000		.500	.000	.000	.250		.250	.750

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-034 I-580 EB Off-Ramp-Edwards Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	I-580 EB Off-Ramp Southbound					Edwards Avenue Westbound					Driveway Northbound					Edwards Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	8	1	61	0	70	1	22	0	0	23	1	0	0	0	1	0	146	0	0	146	240	0
07:15	3	0	79	0	82	1	34	0	0	35	0	0	1	0	1	0	155	0	0	155	273	0
07:30	3	0	114	0	117	1	37	0	0	38	0	0	1	0	1	0	201	0	0	201	357	0
07:45	6	0	130	0	136	0	60	0	0	60	1	0	0	0	1	0	192	0	0	192	389	0
Total	20	1	384	0	405	3	153	0	0	156	2	0	2	0	4	0	694	0	0	694	1259	0
08:00	13	0	126	0	139	0	61	0	0	61	0	0	0	0	0	0	190	0	0	190	390	0
08:15	5	1	121	0	127	0	55	0	0	55	0	0	0	0	0	0	175	0	0	175	357	0
08:30	8	0	117	0	125	0	68	0	0	68	0	0	1	0	1	0	166	0	0	166	360	0
08:45	3	0	121	0	124	0	48	0	0	48	0	0	0	0	0	0	125	1	0	126	298	0
Total	29	1	485	0	515	0	232	0	0	232	0	0	1	0	1	0	656	1	0	657	1405	0
16:00	16	3	108	0	127	0	36	0	0	36	1	0	0	0	1	0	171	0	0	171	335	0
16:15	14	1	84	0	99	0	42	0	0	42	0	0	0	0	0	0	211	2	0	213	354	0
16:30	16	0	90	0	106	0	33	0	0	33	0	0	1	0	1	0	203	1	0	204	344	0
16:45	17	2	81	0	100	0	31	0	0	31	1	0	0	0	1	0	176	2	0	178	310	0
Total	63	6	363	0	432	0	142	0	0	142	2	0	1	0	3	0	761	5	0	766	1343	0
17:00	22	2	84	0	108	1	35	0	1	37	2	0	0	0	2	0	221	0	0	221	368	1
17:15	14	2	73	0	89	0	42	0	0	42	4	0	6	0	10	0	218	6	0	224	365	0
17:30	17	4	87	0	108	1	41	0	0	42	2	0	6	0	8	0	225	0	0	225	383	0
17:45	32	2	106	0	140	0	38	0	0	38	4	0	3	0	7	0	185	2	0	187	372	0
Total	85	10	350	0	445	2	156	0	1	159	12	0	15	0	27	0	849	8	0	857	1488	1
Grand Total	197	18	1582	0	1797	5	683	0	1	689	16	0	19	0	35	0	2960	14	0	2974	5495	1
Apprch %	11.0%	1.0%	88.0%	0.0%		0.7%	99.1%	0.0%	0.1%		45.7%	0.0%	54.3%	0.0%		0.0%	99.5%	0.5%	0.0%			
Total %	3.6%	0.3%	28.8%	0.0%	32.7%	0.1%	12.4%	0.0%	0.0%	12.5%	0.3%	0.0%	0.3%	0.0%	0.6%	0.0%	53.9%	0.3%	0.0%	54.1%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-034 I-580 EB Off-Ramp-Edwards Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	I-580 EB Off-Ramp Southbound					Edwards Avenue Westbound					Driveway Northbound					Edwards Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	6	0	130	0	136	0	60	0	0	60	1	0	0	0	1	0	192	0	0	192	389
08:00	13	0	126	0	139	0	61	0	0	61	0	0	0	0	0	0	190	0	0	190	390
08:15	5	1	121	0	127	0	55	0	0	55	0	0	0	0	0	0	175	0	0	175	357
08:30	8	0	117	0	125	0	68	0	0	68	0	0	1	0	1	0	166	0	0	166	360
Total Volume	32	1	494	0	527	0	244	0	0	244	1	0	1	0	2	0	723	0	0	723	1496
% App Total	6.1%	0.2%	93.7%	0.0%		0.0%	100.0%	0.0%	0.0%		50.0%	0.0%	50.0%	0.0%		0.0%	100.0%	0.0%	0.0%		
PHF	.615	.250	.950	.000	.948	.000	.897	.000	.000	.897	.250	.000	.250	.000	.500	.000	.941	.000	.000	.941	.959

PM PEAK HOUR	I-580 EB Off-Ramp Southbound					Edwards Avenue Westbound					Driveway Northbound					Edwards Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	22	2	84	0	108	1	35	0	1	37	2	0	0	0	2	0	221	0	0	221	368
17:15	14	2	73	0	89	0	42	0	0	42	4	0	6	0	10	0	218	6	0	224	365
17:30	17	4	87	0	108	1	41	0	0	42	2	0	6	0	8	0	225	0	0	225	383
17:45	32	2	106	0	140	0	38	0	0	38	4	0	3	0	7	0	185	2	0	187	372
Total Volume	85	10	350	0	445	2	156	0	1	159	12	0	15	0	27	0	849	8	0	857	1488
% App Total	19.1%	2.2%	78.7%	0.0%		1.3%	98.1%	0.0%	0.6%		44.4%	0.0%	55.6%	0.0%		0.0%	99.1%	0.9%	0.0%		
PHF	.664	.625	.825	.000	.795	.500	.929	.000	.250	.946	.750	.000	.625	.000	.675	.000	.943	.333	.000	.952	.971

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-034 I-580 EB Off-Ramp-Edwards Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	I-580 EB Off-Ramp Southbound					Edwards Avenue Westbound					Driveway Northbound					Edwards Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	4	0	0	10
07:30	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	1	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	9	0	0	0	0	5	0	1	14
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1
16:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2	0	0	5
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	5	0	0	0	0	2	0	1	7
17:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	3
17:30	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0	0	0	0	0	1	2
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	1	2
Total	0	0	0	0	0	0	2	0	0	2	0	0	0	6	0	0	1	0	1	1	3	7
Grand Total	0	0	0	0	0	0	4	0	0	4	0	0	0	20	0	0	2	0	9	2	6	29
Apprch %	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	66.7%	0.0%		66.7%	0.0%	0.0%	0.0%		0.0%	0.0%	33.3%	0.0%		33.3%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-034 I-580 EB Off-Ramp-Edwards Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	I-580 EB Off-Ramp Southbound					Edwards Avenue Westbound					Driveway Northbound					Edwards Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.250	.000		.250	.250

PM PEAK HOUR	I-580 EB Off-Ramp Southbound					Edwards Avenue Westbound					Driveway Northbound					Edwards Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0
17:30	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	1
Total Volume	0	0	0	0	0	0	2	0	0	2	0	0	0	6	0	0	1	0	1	1	3
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.000	.250	.000		.250	.750

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-035 Greenly Drive-Edwards Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Southbound					Edwards Avenue Westbound					Greenly Drive Northbound					Edwards Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	0	0	0	0	4	81	0	0	85	2	0	13	0	15	0	129	3	0	132	232	0
07:15	0	0	0	0	0	6	103	0	0	109	13	0	11	0	24	0	146	5	0	151	284	0
07:30	0	0	0	0	0	3	143	0	0	146	13	0	14	0	27	0	182	5	0	187	360	0
07:45	0	0	0	0	0	2	179	0	0	181	13	0	19	0	32	0	159	9	0	168	381	0
Total	0	0	0	0	0	15	506	0	0	521	41	0	57	0	98	0	616	22	0	638	1257	0
08:00	0	0	0	0	0	2	164	0	0	166	18	0	19	0	37	0	158	12	0	170	373	0
08:15	0	0	0	0	0	6	157	0	0	163	14	0	16	0	30	0	149	9	0	158	351	0
08:30	0	0	0	0	0	11	158	0	0	169	8	0	15	0	23	0	144	7	0	151	343	0
08:45	0	0	0	0	0	5	163	0	0	168	6	0	9	0	15	0	119	3	0	122	305	0
Total	0	0	0	0	0	24	642	0	0	666	46	0	59	0	105	0	570	31	0	601	1372	0
16:00	0	0	0	0	0	13	131	0	0	144	4	0	4	0	8	0	170	7	0	177	329	0
16:15	0	0	0	0	0	12	116	0	0	128	2	0	10	0	12	0	186	13	0	199	339	0
16:30	0	0	0	0	0	13	111	0	0	124	2	0	8	0	10	0	181	8	0	189	323	0
16:45	0	0	0	0	0	20	98	0	0	118	11	0	8	0	19	0	153	3	0	156	293	0
Total	0	0	0	0	0	58	456	0	0	514	19	0	30	0	49	0	690	31	0	721	1284	0
17:00	0	0	0	0	0	13	103	0	0	116	8	0	10	0	18	0	206	14	0	220	354	0
17:15	0	0	0	0	0	15	103	0	0	118	8	0	11	0	19	0	190	14	0	204	341	0
17:30	0	0	0	0	0	12	120	0	0	132	7	0	7	0	14	0	195	14	0	209	355	0
17:45	0	0	0	0	0	18	136	0	0	154	3	0	7	0	10	0	166	12	0	178	342	0
Total	0	0	0	0	0	58	462	0	0	520	26	0	35	0	61	0	757	54	0	811	1392	0
Grand Total	0	0	0	0	0	155	2066	0	0	2221	132	0	181	0	313	0	2633	138	0	2771	5305	0
Apprch %	0.0%	0.0%	0.0%	0.0%		7.0%	93.0%	0.0%	0.0%		42.2%	0.0%	57.8%	0.0%		0.0%	95.0%	5.0%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	38.9%	0.0%	0.0%	41.9%	2.5%	0.0%	3.4%	0.0%	5.9%	0.0%	49.6%	2.6%	0.0%	52.2%	100.0%	

ALL TRAFFIC DATA

City of Oakland
(916) 771-8700
orders@atdtraffic.com

All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

File Name : 15-7302-035 Greenly Drive-Edwards Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Southbound					Edwards Avenue Westbound					Greenly Drive Northbound					Edwards Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	0	0	3	143	0	0	146	13	0	14	0	27	0	182	5	0	187	360
07:45	0	0	0	0	0	2	179	0	0	181	13	0	19	0	32	0	159	9	0	168	381
08:00	0	0	0	0	0	2	164	0	0	166	18	0	19	0	37	0	158	12	0	170	373
08:15	0	0	0	0	0	6	157	0	0	163	14	0	16	0	30	0	149	9	0	158	351
Total Volume	0	0	0	0	0	13	643	0	0	656	58	0	68	0	126	0	648	35	0	683	1465
% App Total	0.0%	0.0%	0.0%	0.0%		2.0%	98.0%	0.0%	0.0%		46.0%	0.0%	54.0%	0.0%		0.0%	94.9%	5.1%	0.0%		
PHF	.000	.000	.000	.000	.000	.542	.898	.000	.000	.906	.806	.000	.895	.000	.851	.000	.890	.729	.000	.913	.961

PM PEAK HOUR	Southbound					Edwards Avenue Westbound					Greenly Drive Northbound					Edwards Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	13	103	0	0	116	8	0	10	0	18	0	206	14	0	220	354
17:15	0	0	0	0	0	15	103	0	0	118	8	0	11	0	19	0	190	14	0	204	341
17:30	0	0	0	0	0	12	120	0	0	132	7	0	7	0	14	0	195	14	0	209	355
17:45	0	0	0	0	0	18	136	0	0	154	3	0	7	0	10	0	166	12	0	178	342
Total Volume	0	0	0	0	0	58	462	0	0	520	26	0	35	0	61	0	757	54	0	811	1392
% App Total	0.0%	0.0%	0.0%	0.0%		11.2%	88.8%	0.0%	0.0%		42.6%	0.0%	57.4%	0.0%		0.0%	93.3%	6.7%	0.0%		
PHF	.000	.000	.000	.000	.000	.806	.849	.000	.000	.844	.813	.000	.795	.000	.803	.000	.919	.964	.000	.922	.980

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-035 Greenly Drive-Edwards Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Southbound					Edwards Avenue Westbound					Greenly Drive Northbound					Edwards Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:30	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	1	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	3	1	0	0	0	1	0	0	0	0	0	0	1	4
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
08:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	1	0	2	2	2
17:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	4	0	0	0	0	1	0	0	1	1	0	2	2	5
Grand Total	0	0	0	0	0	0	1	0	12	1	0	0	0	3	0	0	1	1	0	2	3	15
Apprch %	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	50.0%	50.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	33.3%	0.0%		33.3%	0.0%	0.0%	0.0%		0.0%	0.0%	33.3%	33.3%		66.7%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-035 Greenly Drive-Edwards Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Southbound					Edwards Avenue Westbound					Greenly Drive Northbound					Edwards Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	1
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	4	1	0	0	0	1	0	0	0	0	0	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.250

PM PEAK HOUR	Southbound					Edwards Avenue Westbound					Greenly Drive Northbound					Edwards Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	1	0	2	2
17:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	4	0	0	0	0	1	0	0	1	1	0	2	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	50.0%	50.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.250	.250		.250	.250

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-036 Ney Avenue-73rd Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

	Ney Avenue Southbound					73rd Avenue Westbound					Ney Avenue Northbound					73rd Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	2	0	1	0	3	1	97	0	0	98	1	1	6	0	8	2	99	2	0	103	212	0
07:15	2	1	4	0	7	5	126	2	0	133	0	0	15	0	15	0	118	1	0	119	274	0
07:30	2	2	3	0	7	2	146	0	0	148	1	1	12	0	14	1	168	2	0	171	340	0
07:45	0	1	4	0	5	14	144	0	0	158	2	0	23	0	25	0	127	2	0	129	317	0
Total	6	4	12	0	22	22	513	2	0	537	4	2	56	0	62	3	512	7	0	522	1143	0
08:00	3	0	4	0	7	2	133	3	0	138	2	5	11	0	18	1	121	3	0	125	288	0
08:15	4	2	4	0	10	3	120	1	0	124	1	7	25	0	33	1	116	3	0	120	287	0
08:30	4	1	3	0	8	3	118	1	0	122	3	5	23	0	31	0	119	1	0	120	281	0
08:45	2	2	0	0	4	1	142	5	0	148	0	1	14	0	15	2	99	0	0	101	268	0
Total	13	5	11	0	29	9	513	10	0	532	6	18	73	0	97	4	455	7	0	466	1124	0
16:00	1	3	5	0	9	13	114	2	0	129	1	2	12	0	15	6	150	1	0	157	310	0
16:15	3	5	5	0	13	13	116	5	0	134	0	2	8	0	10	2	174	4	0	180	337	0
16:30	0	11	4	0	15	9	119	3	0	131	1	2	11	0	14	1	179	7	0	187	347	0
16:45	1	6	2	0	9	13	112	4	0	129	2	1	10	0	13	4	146	2	0	152	303	0
Total	5	25	16	0	46	48	461	14	0	523	4	7	41	0	52	13	649	14	0	676	1297	0
17:00	4	5	7	0	16	8	104	4	0	116	3	2	7	0	12	2	201	3	0	206	350	0
17:15	4	6	4	0	14	13	111	3	0	127	0	2	5	0	7	2	191	5	0	198	346	0
17:30	6	4	7	0	17	13	102	4	0	119	0	1	7	0	8	3	200	4	0	207	351	0
17:45	2	2	6	0	10	13	124	7	0	144	0	4	11	0	15	2	154	3	0	159	328	0
Total	16	17	24	0	57	47	441	18	0	506	3	9	30	0	42	9	746	15	0	770	1375	0
Grand Total	40	51	63	0	154	126	1928	44	0	2098	17	36	200	0	253	29	2362	43	0	2434	4939	0
Apprch %	26.0%	33.1%	40.9%	0.0%		6.0%	91.9%	2.1%	0.0%		6.7%	14.2%	79.1%	0.0%		1.2%	97.0%	1.8%	0.0%			
Total %	0.8%	1.0%	1.3%	0.0%	3.1%	2.6%	39.0%	0.9%	0.0%	42.5%	0.3%	0.7%	4.0%	0.0%	5.1%	0.6%	47.8%	0.9%	0.0%	49.3%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-036 Ney Avenue-73rd Avenue.ppd
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Ney Avenue Southbound					73rd Avenue Westbound					Ney Avenue Northbound					73rd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	2	2	3	0	7	2	146	0	0	148	1	1	12	0	14	1	168	2	0	171	340
07:45	0	1	4	0	5	14	144	0	0	158	2	0	23	0	25	0	127	2	0	129	317
08:00	3	0	4	0	7	2	133	3	0	138	2	5	11	0	18	1	121	3	0	125	288
08:15	4	2	4	0	10	3	120	1	0	124	1	7	25	0	33	1	116	3	0	120	287
Total Volume	9	5	15	0	29	21	543	4	0	568	6	13	71	0	90	3	532	10	0	545	1232
% App Total	31.0%	17.2%	51.7%	0.0%		3.7%	95.6%	0.7%	0.0%		6.7%	14.4%	78.9%	0.0%		0.6%	97.6%	1.8%	0.0%		
PHF	.563	.625	.938	.000	.725	.375	.930	.333	.000	.899	.750	.464	.710	.000	.682	.750	.792	.833	.000	.797	.906

PM PEAK HOUR	Ney Avenue Southbound					73rd Avenue Westbound					Ney Avenue Northbound					73rd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	4	5	7	0	16	8	104	4	0	116	3	2	7	0	12	2	201	3	0	206	350
17:15	4	6	4	0	14	13	111	3	0	127	0	2	5	0	7	2	191	5	0	198	346
17:30	6	4	7	0	17	13	102	4	0	119	0	1	7	0	8	3	200	4	0	207	351
17:45	2	2	6	0	10	13	124	7	0	144	0	4	11	0	15	2	154	3	0	159	328
Total Volume	16	17	24	0	57	47	441	18	0	506	3	9	30	0	42	9	746	15	0	770	1375
% App Total	28.1%	29.8%	42.1%	0.0%		9.3%	87.2%	3.6%	0.0%		7.1%	21.4%	71.4%	0.0%		1.2%	96.9%	1.9%	0.0%		
PHF	.667	.708	.857	.000	.838	.904	.889	.643	.000	.878	.250	.563	.682	.000	.700	.750	.928	.750	.000	.930	.979

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-036 Ney Avenue-73rd Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Ney Avenue Southbound					73rd Avenue Westbound					Ney Avenue Northbound					73rd Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4
07:30	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	4	0	1	5
07:45	0	2	0	0	2	0	0	0	0	0	0	0	0	3	0	1	0	0	3	1	3	6
Total	0	2	0	5	2	0	1	0	1	1	0	0	0	3	0	1	0	0	7	1	4	16
08:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
08:15	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	1	3
08:30	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total	0	0	0	3	0	0	1	0	0	1	0	0	0	1	0	0	0	0	4	0	1	8
16:00	0	0	0	2	0	0	0	0	4	0	0	0	0	3	0	0	0	0	2	0	0	11
16:15	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	2	0	0	0	0	0	0	0	1	0	2	1	0	0	0	2	0	1	6
Total	0	0	0	6	0	0	0	0	4	0	0	1	0	5	1	0	0	0	5	0	1	20
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
17:15	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
17:30	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	1	4
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total	0	2	0	2	2	0	0	0	0	0	0	0	0	1	0	0	0	0	4	0	2	7
Grand Total	0	4	0	16	4	0	2	0	5	2	0	1	0	10	1	1	0	0	20	1	8	51
Apprch %	0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			100.0%	0.0%	0.0%				
Total %	0.0%	50.0%	0.0%		50.0%	0.0%	25.0%	0.0%		25.0%	0.0%	12.5%	0.0%		12.5%	12.5%	0.0%	0.0%		12.5%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-036 Ney Avenue-73rd Avenue.ppd
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Ney Avenue Southbound					73rd Avenue Westbound					Ney Avenue Northbound					73rd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	4	0	1
07:45	0	2	0	0	2	0	0	0	0	0	0	0	0	3	0	1	0	0	3	1	3
08:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
08:15	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	1
Total Volume	0	2	0	3	2	0	2	0	0	2	0	0	0	3	0	1	0	0	10	1	5
% App Total	0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.500	.000		.500	.000	.000	.000		.000	.250	.000	.000		.250	.417

PM PEAK HOUR	Ney Avenue Southbound					73rd Avenue Westbound					Ney Avenue Northbound					73rd Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
17:15	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
17:30	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Total Volume	0	2	0	2	2	0	0	0	0	0	0	0	0	1	0	0	0	0	4	0	2
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.500	.000		.500	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.500

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

All Traffic Data

(916) 771-8700
orders@atdtraffic.com

City of Oakland
All Vehicles on Unshifted Tab
Peds & Bikes on Bank 1 Tab
Nothing on Bank 2 Tab

File Name : 15-7302-037 MacArthur Boulevard-Foothill Boulevard-73rd Avenue
Site Code : 00000000
Start Date : 4/14/2015
Page No : 1

Groups Printed- Unshifted

	MacArthur Boulevard Southbound					73rd Avenue Westbound					MacArthur Boulevard Northbound					73rd Avenue Eastbound						Foothill Boulevard Southeastbound								
Start Time	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	Uturn	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	Uturn	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	0	0	0	0	0	3	93	2	1	99	22	13	5	10	50	0	11	92	13	0	116	1	7	16	14	0	38	0	303	303
07:15	0	0	0	2	2	4	121	4	1	130	28	20	14	8	70	10	7	103	12	0	132	0	8	13	11	0	32	0	366	366
07:30	0	0	0	8	8	3	136	4	2	145	31	27	17	14	89	10	24	137	17	0	188	0	13	22	14	0	49	0	479	479
07:45	0	0	0	3	3	3	138	4	0	145	61	48	50	7	166	9	20	111	27	1	167	0	7	26	12	0	45	1	526	527
Total	0	0	0	13	13	13	488	14	4	519	142	108	86	39	375	29	62	443	69	1	603	1	35	77	51	0	164	1	1674	1675
08:00	0	0	0	12	12	2	119	7	1	129	61	56	47	5	169	15	36	115	28	0	194	0	12	37	16	0	65	0	569	569
08:15	0	0	0	10	10	5	106	13	2	126	61	52	43	5	161	16	36	106	32	0	190	0	14	45	26	0	85	0	572	572
08:30	0	0	0	14	14	1	113	14	2	130	58	55	38	8	159	8	30	100	20	1	158	0	14	29	18	1	62	1	523	524
08:45	0	0	0	10	10	4	133	9	0	146	48	42	29	8	127	17	12	86	22	1	137	0	5	32	22	0	59	1	479	480
Total	0	0	0	46	46	12	471	43	5	531	228	205	157	26	616	56	114	407	102	2	679	0	45	143	82	1	271	2	2143	2145
16:00	0	0	0	18	18	16	96	7	1	120	45	34	28	6	113	15	28	131	27	0	201	0	20	63	35	0	118	0	570	570
16:15	0	0	0	20	20	10	106	3	0	119	29	31	23	14	97	11	29	145	39	0	224	0	24	64	38	0	126	0	586	586
16:30	0	0	0	11	11	7	110	4	2	123	31	29	22	16	98	11	36	143	40	0	230	1	29	58	37	0	125	0	587	587
16:45	0	0	0	10	10	9	106	3	1	119	29	13	25	9	76	10	19	137	58	0	224	0	17	51	33	0	101	0	530	530
Total	0	0	0	59	59	42	418	17	4	481	134	107	98	45	384	47	112	556	164	0	879	1	90	236	143	0	470	0	2273	2273
17:00	0	0	0	10	10	13	90	2	3	108	32	20	23	12	87	9	38	146	44	0	237	0	48	73	31	0	152	0	594	594
17:15	0	0	0	13	13	9	102	5	4	120	27	26	26	14	93	12	34	154	60	0	260	1	31	71	34	0	137	0	623	623
17:30	0	0	0	10	10	7	94	5	4	110	38	32	25	18	113	10	37	160	39	0	246	1	26	68	39	0	134	0	613	613
17:45	0	0	0	13	13	16	102	3	0	121	46	38	28	12	124	13	29	124	42	0	208	0	23	64	40	0	127	0	593	593
Total	0	0	0	46	46	45	388	15	11	459	143	116	102	56	417	44	138	584	185	0	951	2	128	276	144	0	550	0	2423	2423
Grand Total	0	0	0	164	164	112	1765	89	24	1990	647	536	443	166	1792	176	426	1990	520	3	3112	4	298	732	420	1	1455	3	8513	8516
Apprch %	0	0	0	100		5.6	88.7	4.5	1.2		36.1	29.9	24.7	9.3		5.7	13.7	63.9	16.7			0.3	20.5	50.3	28.9	0.1				
Total %	0	0	0	1.9	1.9	1.3	20.7	1	0.3	23.4	7.6	6.3	5.2	1.9	21.1	2.1	5	23.4	6.1		36.6	0	3.5	8.6	4.9	0	17.1	0	100	

All Traffic Data

(916) 771-8700
orders@atdtraffic.com

City of Oakland
All Vehicles on Unshifted Tab
Peds & Bikes on Bank 1 Tab
Nothing on Bank 2 Tab

File Name : 15-7302-037 MacArthur Boulevard-Foothill Boulevard-73rd Avenue
Site Code : 00000000
Start Date : 4/14/2015

	MacArthur Boulevard Southbound					73rd Avenue Westbound					MacArthur Boulevard Northbound					73rd Avenue Eastbound					Foothill Boulevard Southeastbound						
Start Time	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	Uturn	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																											
Peak Hour for Entire Intersection Begins at 07:45																											
07:45	0	0	0	3	3	3	**138**	4	0	**145**	**61**	48	**50**	7	166	9	20	111	27	167	0	7	26	12	0	45	526
08:00	0	0	0	12	12	2	119	7	1	129	61	**56**	47	5	**169**	15	**36**	**115**	28	**194**	0	12	37	16	0	65	569
08:15	0	0	0	10	10	**5**	106	13	**2**	126	61	52	43	5	161	**16**	36	106	**32**	190	0	**14**	**45**	**26**	0	**85**	**572**
08:30	0	0	0	**14**	**14**	1	113	**14**	2	130	58	55	38	**8**	159	8	30	100	20	158	0	14	29	18	**1**	62	523
Total Volume	0	0	0	39	39	11	476	38	5	530	241	211	178	25	655	48	122	432	107	709	0	47	137	72	1	257	2190
% App. Total	0	0	0	100		2.1	89.8	7.2	0.9		36.8	32.2	27.2	3.8		6.8	17.2	60.9	15.1		0	18.3	53.3	28	0.4		
PHF	.000	.000	.000	.696	.696	.550	.862	.679	.625	.914	.988	.942	.890	.781	.969	.750	.847	.939	.836	.914	.000	.839	.761	.692	.250	.756	.957

All Traffic Data

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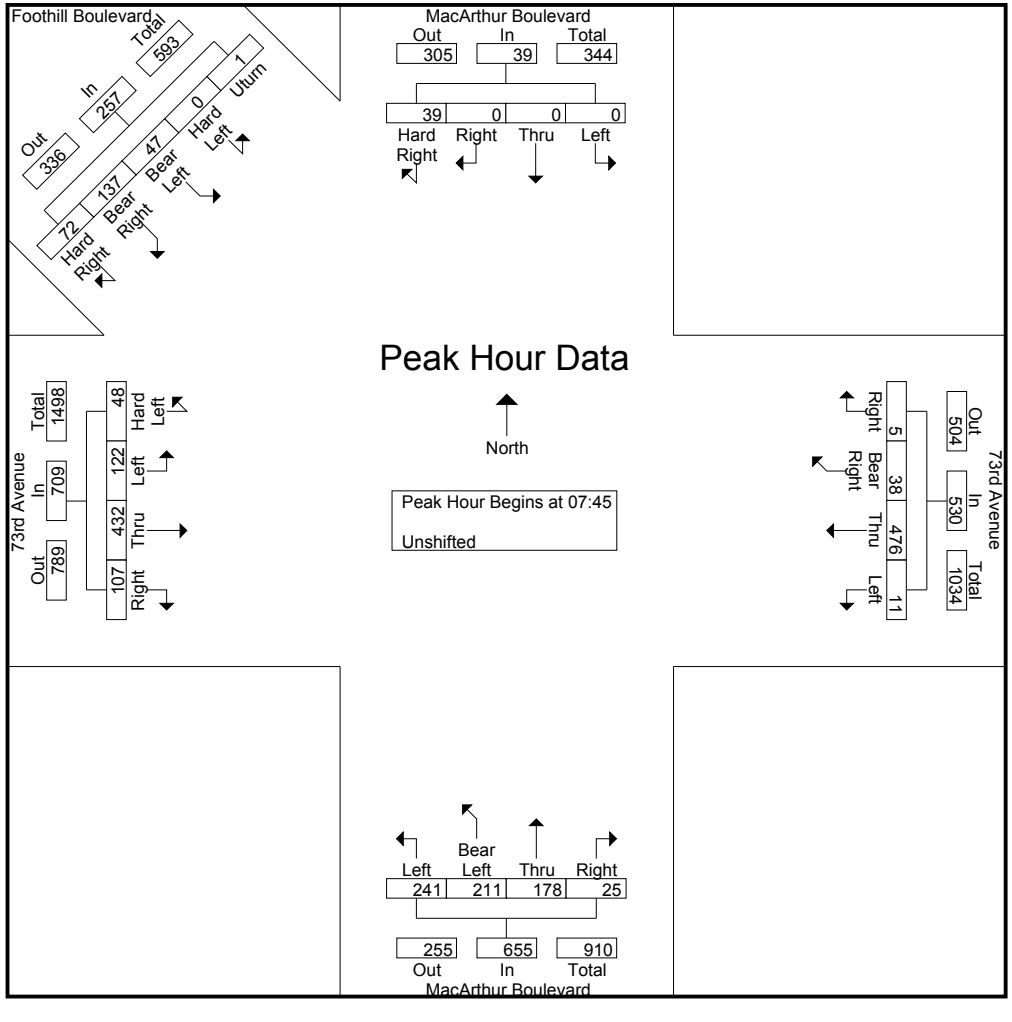
orders@atdtraffic.com

City of Oakland
All Vehicles on Unshifted Tab
Peds & Bikes on Bank 1 Tab
Nothing on Bank 2 Tab

File Name : 15-7302-037 MacArthur Boulevard-Foothill Boulevard-73rd Avenue
Site Code : 00000000
Start Date : 4/14/2015
Page No : 3



All Traffic Data

(916) 771-8700
orders@atdtraffic.com

City of Oakland
All Vehicles on Unshifted Tab
Peds & Bikes on Bank 1 Tab
Nothing on Bank 2 Tab

File Name : 15-7302-037 MacArthur Boulevard-Foothill Boulevard-73rd Avenue
Site Code : 00000000
Start Date : 4/14/2015
Page No : 4

	MacArthur Boulevard Southbound					73rd Avenue Westbound					MacArthur Boulevard Northbound					73rd Avenue Eastbound					Foothill Boulevard Southeastbound						
Start Time	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	Uturn	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																											
Peak Hour for Entire Intersection Begins at 17:00																											
17:00	0	0	0	10	10	13	90	2	3	108	32	20	23	12	87	9	**38**	146	44	237	0	**48**	**73**	31	0	**152**	594
17:15	0	0	0	**13**	**13**	9	**102**	**5**	**4**	120	27	26	26	14	93	12	34	154	**60**	**260**	**1**	31	71	34	0	137	**623**
17:30	0	0	0	10	10	7	94	5	4	110	38	32	25	**18**	113	10	37	**160**	39	246	1	26	68	39	0	134	613
17:45	0	0	0	13	13	**16**	102	3	0	**121**	**46**	**38**	**28**	12	**124**	**13**	29	124	42	208	0	23	64	**40**	0	127	593
Total Volume	0	0	0	46	46	45	388	15	11	459	143	116	102	56	417	44	138	584	185	951	2	128	276	144	0	550	2423
% App. Total	0	0	0	100		9.8	84.5	3.3	2.4		34.3	27.8	24.5	13.4		4.6	14.5	61.4	19.5		0.4	23.3	50.2	26.2	0		
PHF	.000	.000	.000	.885	.885	.703	.951	.750	.688	.948	.777	.763	.911	.778	.841	.846	.908	.913	.771	.914	.500	.667	.945	.900	.000	.905	.972

All Traffic Data

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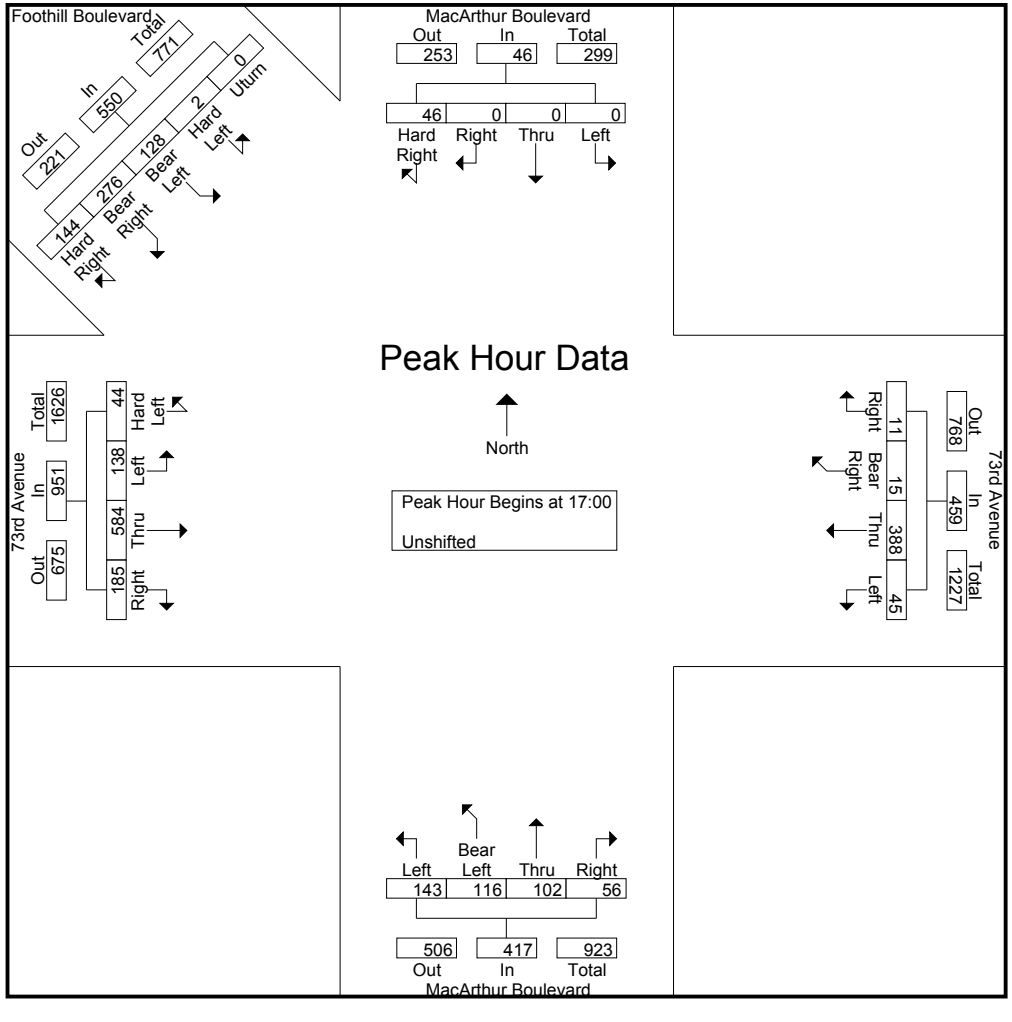
City of Oakland
All Vehicles on Unshifted Tab
Peds & Bikes on Bank 1 Tab
Nothing on Bank 2 Tab

File Name : 15-7302-037 MacArthur Boulevard-Foothill Boulevard-73rd Avenue
Site Code : 00000000
Start Date : 4/14/2015
Page No : 5



All Traffic Data

(916) 771-8700
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City of Oakland
All Vehicles on Unshifted Tab
Peds & Bikes on Bank 1 Tab
Nothing on Bank 2 Tab

File Name : 15-7302-037 MacArthur Boulevard-Foothill Boulevard-73rd Avenue
Site Code : 00000000
Start Date : 4/14/2015
Page No : 1

Groups Printed- Bank 1

	MacArthur Boulevard Southbound						73rd Avenue Westbound						MacArthur Boulevard Northbound						73rd Avenue Eastbound						Foothill Boulevard Southeastbound								
Start Time	Left	Thru	Right	Hard Right	Peds	App. Total	Left	Thru	Bear Right	Right	Peds	App. Total	Left	Bear Left	Thru	Right	Peds	App. Total	Hard Left	Left	Thru	Right	Peds	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	1	0	0	0	0	5	0	0	0	0	0	0	0	8	1	9
07:30	0	0	0	0	1	0	0	1	0	0	4	1	0	0	0	0	1	0	0	0	0	0	4	0	0	0	0	0	1	1	10	2	12
07:45	0	0	0	0	5	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1	0	5	1	0	0	1	0	5	6	11	8	19
Total	0	0	0	0	6	0	0	1	0	0	4	1	0	2	0	0	5	2	0	0	1	0	15	1	0	0	1	0	6	7	30	11	41
08:00	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	6	0	0	0	0	0	1	1	9	1	10
08:15	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	11	1	12
08:30	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	0	3	0	0	0	0	0	8	0	0	0	0	0	1	1	15	1	16
08:45	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	3	1	4
Total	0	0	0	0	2	0	0	1	0	0	6	1	0	0	0	0	4	0	1	0	0	0	26	1	0	0	0	0	2	2	38	4	42
16:00	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	4	0	0	0	0	0	16	0	0	0	0	0	2	2	24	2	26
16:15	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	9	0	9
16:30	0	0	0	0	1	0	0	0	0	0	6	0	1	1	0	0	1	2	0	0	0	1	7	1	0	0	0	0	1	1	15	4	19
16:45	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	0	5	0	0	0	0	0	15	0	0	0	2	0	1	3	24	3	27
Total	0	0	0	0	4	0	0	0	0	0	16	0	1	1	0	0	11	2	0	0	0	1	41	1	0	0	2	0	4	6	72	9	81
17:00	0	0	0	0	1	0	0	0	0	0	5	0	0	1	0	0	1	1	0	0	0	0	8	0	0	0	0	0	1	1	15	2	17
17:15	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	3	0	0	0	0	0	7	0	0	0	0	0	0	0	16	0	16
17:30	0	0	0	0	1	0	0	0	0	0	8	0	0	0	0	0	10	0	0	0	0	0	9	0	0	0	0	0	1	1	28	1	29
17:45	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	3	0	0	0	0	0	4	0	0	0	1	0	0	1	15	1	16
Total	0	0	0	0	2	0	0	0	0	0	27	0	0	1	0	0	17	1	0	0	0	0	28	0	0	0	1	0	2	3	74	4	78
Grand Total	0	0	0	0	14	0	0	2	0	0	53	2	1	4	0	0	37	5	1	0	1	1	110	3	0	0	4	0	14	18	214	28	242
Apprch %	0	0	0	0			0	100	0	0			20	80	0	0			33.3	0	33.3	33.3			0	0	22.2	0	77.8				
Total %	0	0	0	0		0	0	7.1	0	0		7.1	3.6	14.3	0	0		17.9	3.6	0	3.6	3.6		10.7	0	0	14.3	0	50	64.3	88.4	11.6	

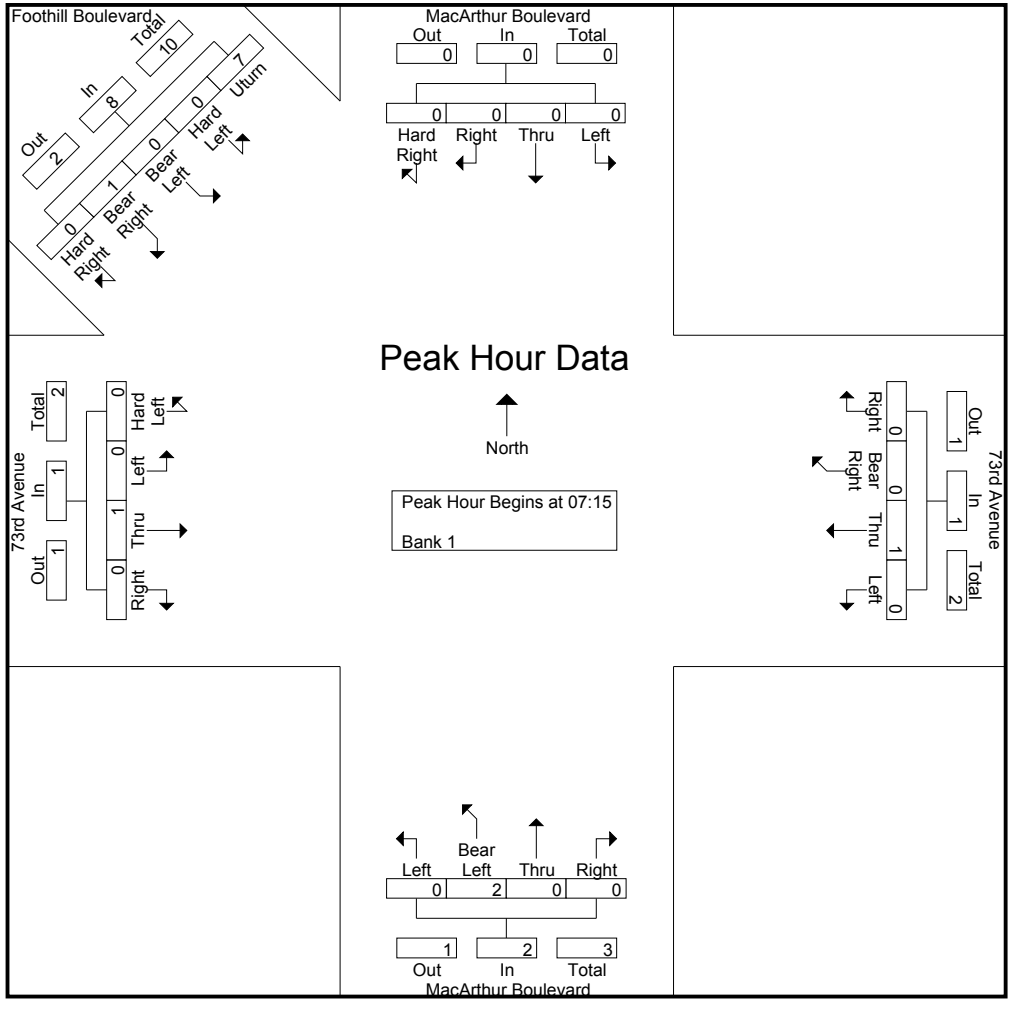
	MacArthur Boulevard Southbound					73rd Avenue Westbound					MacArthur Boulevard Northbound					73rd Avenue Eastbound					Foothill Boulevard Southeastbound							
Start Time	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																											
Peak Hour for Entire Intersection Begins at 07:15																											
07:15	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	1
07:30	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
07:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	**1**	0	**1**	0	0	**1**	0	**5**	**6**	**8**
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total Volume	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	0	0	1	0	1	0	0	1	0	7	8	12
% App. Total	0	0	0	0		0	100	0	0		0	100	0	0		0	0	100	0		0	0	12.5	0	87.5		
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.500	.000	.000	.500	.000	.000	.250	.000	.250	.000	.000	.250	.000	.350	.333	.375

All Traffic Data

(916) 771-8700
orders@atdtraffic.com

City of Oakland
All Vehicles on Unshifted Tab
Peds & Bikes on Bank 1 Tab
Nothing on Bank 2 Tab

File Name : 15-7302-037 MacArthur Boulevard-Foothill Boulevard-73rd Avenue
Site Code : 00000000
Start Date : 4/14/2015
Page No : 2



All Traffic Data

(916) 771-8700
orders@atdtraffic.com

City of Oakland
All Vehicles on Unshifted Tab
Peds & Bikes on Bank 1 Tab
Nothing on Bank 2 Tab

File Name : 15-7302-037 MacArthur Boulevard-Foothill Boulevard-73rd Avenue
Site Code : 00000000
Start Date : 4/14/2015

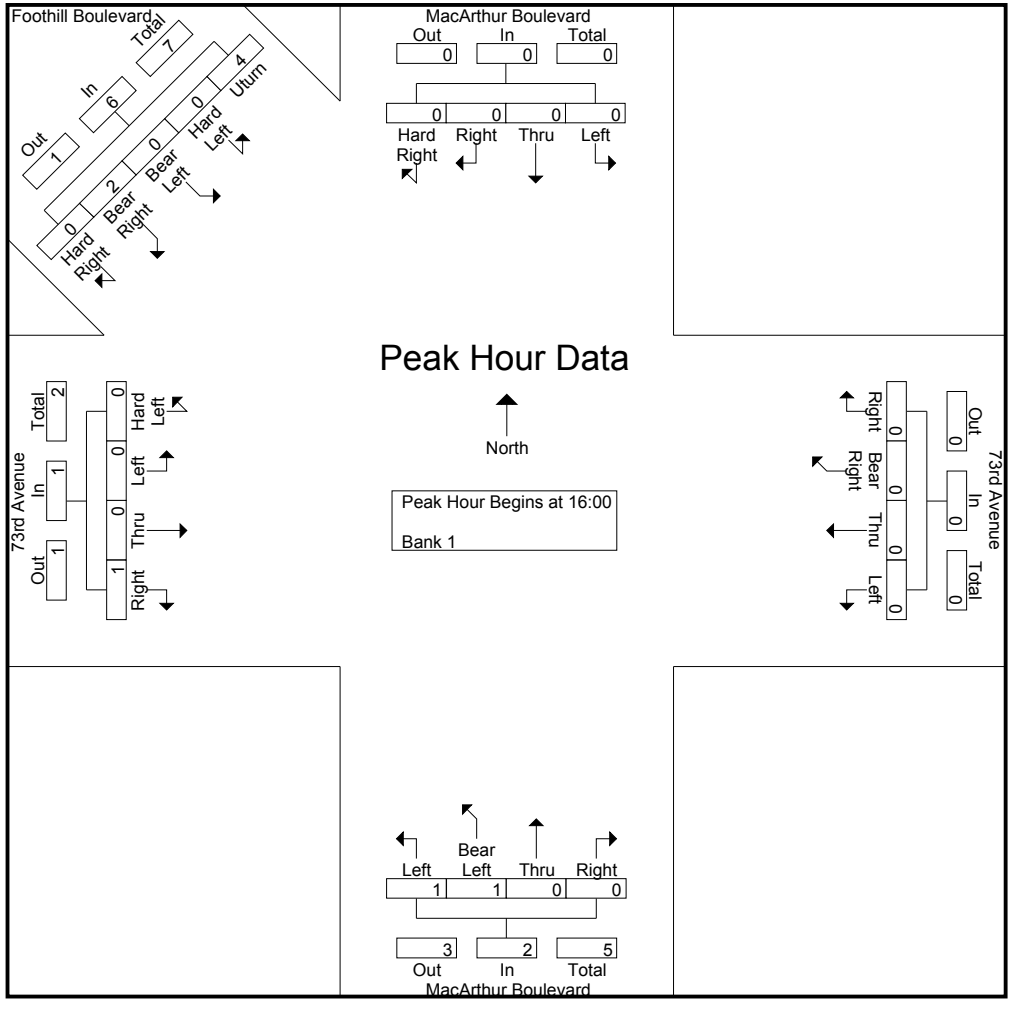
	MacArthur Boulevard Southbound					73rd Avenue Westbound					MacArthur Boulevard Northbound					73rd Avenue Eastbound					Foothill Boulevard Southeastbound						
Start Time	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																											
Peak Hour for Entire Intersection Begins at 16:00																											
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	2	2
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	**2**	0	0	0	**1**	**1**	0	0	0	1	1	**4**
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	1	**3**	3
Total Volume	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	1	1	0	0	2	4	6	9
% App. Total	0	0	0	0		0	0	0	0		50	50	0	0		0	0	0	100		0	0	33.3	66.7		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.250	.000	.000	.000	.250	.250	.000	.000	.250	.500	.500	.563

All Traffic Data

(916) 771-8700
orders@atdtraffic.com

City of Oakland
All Vehicles on Unshifted Tab
Peds & Bikes on Bank 1 Tab
Nothing on Bank 2 Tab

File Name : 15-7302-037 MacArthur Boulevard-Foothill Boulevard-73rd Avenue
Site Code : 00000000
Start Date : 4/14/2015
Page No : 4



ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-038 Kuhnle Avenue-I-580 WB Off-Ramp-Frontage
Date : 4/14/2015

Unshifted Count = All Vehicles

	Kuhnle Avenue Southbound					I-580 WB Off-Ramp Westbound					Kuhnle Avenue Northbound					Frontage Road Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	1	2	0	3	14	1	0	0	15	101	0	0	0	101	0	0	13	0	13	132	0
07:15	0	0	2	0	2	49	5	0	0	54	114	1	0	0	115	0	0	11	0	11	182	0
07:30	0	2	1	0	3	28	8	1	0	37	150	0	0	1	151	0	0	14	0	14	205	1
07:45	0	2	2	0	4	23	9	0	0	32	201	0	0	0	201	0	0	25	0	25	262	0
Total	0	5	7	0	12	114	23	1	0	138	566	1	0	1	568	0	0	63	0	63	781	1
08:00	0	0	2	0	2	33	4	1	0	38	176	0	0	1	177	0	0	23	0	23	240	1
08:15	0	2	1	0	3	38	13	0	0	51	176	0	0	0	176	0	0	16	0	16	246	0
08:30	0	2	0	0	2	38	9	1	0	48	174	1	0	0	175	0	0	16	0	16	241	0
08:45	0	3	1	0	4	51	13	1	0	65	124	0	0	0	124	1	0	16	0	17	210	0
Total	0	7	4	0	11	160	39	3	0	202	650	1	0	1	652	1	0	71	0	72	937	1
16:00	0	2	2	0	4	63	6	0	0	69	102	0	0	0	102	0	0	125	0	125	300	0
16:15	0	1	1	0	2	58	6	1	0	65	111	1	0	0	112	1	0	158	0	159	338	0
16:30	0	3	0	0	3	49	7	1	0	57	112	2	0	0	114	2	0	141	0	143	317	0
16:45	0	2	2	0	4	54	11	3	0	68	95	1	0	0	96	0	0	183	0	183	351	0
Total	0	8	5	0	13	224	30	5	0	259	420	4	0	0	424	3	0	607	0	610	1306	0
17:00	0	1	1	0	2	78	4	4	0	86	99	1	0	0	100	1	0	166	0	167	355	0
17:15	0	1	2	0	3	74	13	0	0	87	118	0	0	1	119	0	0	181	0	181	390	1
17:30	0	2	2	0	4	51	14	2	0	67	111	1	0	0	112	0	0	171	0	171	354	0
17:45	0	2	3	0	5	81	17	4	0	102	115	0	0	0	115	0	0	176	0	176	398	0
Total	0	6	8	0	14	284	48	10	0	342	443	2	0	1	446	1	0	694	0	695	1497	1
Grand Total	0	26	24	0	50	782	140	19	0	941	2079	8	0	3	2090	5	0	1435	0	1440	4521	3
Apprch %	0.0%	52.0%	48.0%	0.0%		83.1%	14.9%	2.0%	0.0%		99.5%	0.4%	0.0%	0.1%		0.3%	0.0%	99.7%	0.0%			
Total %	0.0%	0.6%	0.5%	0.0%	1.1%	17.3%	3.1%	0.4%	0.0%	20.8%	46.0%	0.2%	0.0%	0.1%	46.2%	0.1%	0.0%	31.7%	0.0%	31.9%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-038 Kuhnle Avenue-I-580 WB Off-Ramp-Frontage
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Kuhnle Avenue Southbound					I-580 WB Off-Ramp Westbound					Kuhnle Avenue Northbound					Frontage Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	2	2	0	4	23	9	0	0	32	201	0	0	0	201	0	0	25	0	25	262
08:00	0	0	2	0	2	33	4	1	0	38	176	0	0	1	177	0	0	23	0	23	240
08:15	0	2	1	0	3	38	13	0	0	51	176	0	0	0	176	0	0	16	0	16	246
08:30	0	2	0	0	2	38	9	1	0	48	174	1	0	0	175	0	0	16	0	16	241
Total Volume	0	6	5	0	11	132	35	2	0	169	727	1	0	1	729	0	0	80	0	80	989
% App Total	0.0%	54.5%	45.5%	0.0%		78.1%	20.7%	1.2%	0.0%		99.7%	0.1%	0.0%	0.1%		0.0%	0.0%	100.0%	0.0%		
PHF	.000	.750	.625	.000	.688	.868	.673	.500	.000	.828	.904	.250	.000	.250	.907	.000	.000	.800	.000	.800	.944

PM PEAK HOUR	Kuhnle Avenue Southbound					I-580 WB Off-Ramp Westbound					Kuhnle Avenue Northbound					Frontage Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	1	1	0	2	78	4	4	0	86	99	1	0	0	100	1	0	166	0	167	355
17:15	0	1	2	0	3	74	13	0	0	87	118	0	0	1	119	0	0	181	0	181	390
17:30	0	2	2	0	4	51	14	2	0	67	111	1	0	0	112	0	0	171	0	171	354
17:45	0	2	3	0	5	81	17	4	0	102	115	0	0	0	115	0	0	176	0	176	398
Total Volume	0	6	8	0	14	284	48	10	0	342	443	2	0	1	446	1	0	694	0	695	1497
% App Total	0.0%	42.9%	57.1%	0.0%		83.0%	14.0%	2.9%	0.0%		99.3%	0.4%	0.0%	0.2%		0.1%	0.0%	99.9%	0.0%		
PHF	.000	.750	.667	.000	.700	.877	.706	.625	.000	.838	.939	.500	.000	.250	.937	.250	.000	.959	.000	.960	.940

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-038 Kuhnle Avenue-I-580 WB Off-Ramp-Frontage
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Kuhnle Avenue Southbound					I-580 WB Off-Ramp Westbound					Kuhnle Avenue Northbound					Frontage Road Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:30	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	4	0
Grand Total	0	0	0	0	0	0	0	0	3	0	2	2	0	0	4	0	0	0	0	0	4	3
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			50.0%	50.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	50.0%	50.0%	0.0%		100.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-038 Kuhnle Avenue-I-580 WB Off-Ramp-Frontage
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Kuhnle Avenue Southbound					I-580 WB Off-Ramp Westbound					Kuhnle Avenue Northbound					Frontage Road Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	Kuhnle Avenue Southbound					I-580 WB Off-Ramp Westbound					Kuhnle Avenue Northbound					Frontage Road Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	4
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			50.0%	50.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.500	.500	.000		.500	.000	.000	.000		.000	.500

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-039 Kuhnle Avenue-Sunnymere Avenue-Seminary
Date : 4/14/2015

Unshifted Count = All Vehicles

	Kuhnle Avenue Southbound					I-580 EB On-Ramp Westbound					Sunnymere Avenue Northbound					Seminary Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	12	0	19	0	31	0	0	0	0	0	2	26	9	0	37	77	61	1	0	139	207	0
07:15	11	6	43	0	60	0	0	0	0	0	3	23	3	0	29	89	68	1	3	161	250	3
07:30	14	4	27	0	45	0	0	0	0	0	7	28	7	0	42	125	71	4	1	201	288	1
07:45	22	2	25	0	49	0	0	0	0	0	5	46	5	0	56	152	75	7	2	236	341	2
Total	59	12	114	0	185	0	0	0	0	0	17	123	24	0	164	443	275	13	6	737	1086	6
08:00	19	7	32	0	58	0	0	0	0	0	14	38	13	0	65	141	117	5	0	263	386	0
08:15	12	7	37	0	56	0	0	0	0	0	23	53	11	0	87	124	80	14	0	218	361	0
08:30	23	6	27	0	56	0	0	0	0	0	11	53	6	0	70	122	72	7	4	205	331	4
08:45	20	4	45	0	69	0	0	0	0	0	4	26	4	0	34	102	59	3	1	165	268	1
Total	74	24	141	0	239	0	0	0	0	0	52	170	34	0	256	489	328	29	5	851	1346	5
16:00	92	23	73	0	188	0	0	0	0	0	3	10	1	0	14	91	94	12	2	199	401	2
16:15	114	29	75	0	218	0	0	0	0	0	2	16	1	0	19	95	77	13	3	188	425	3
16:30	104	25	60	0	189	0	0	0	0	0	1	18	6	0	25	96	83	14	3	196	410	3
16:45	138	36	67	0	241	0	0	0	0	0	3	13	3	0	19	81	102	12	3	198	458	3
Total	448	113	275	0	836	0	0	0	0	0	9	57	11	0	77	363	356	51	11	781	1694	11
17:00	139	23	77	0	239	0	0	0	0	0	2	13	5	0	20	90	98	12	0	200	459	0
17:15	133	41	85	0	259	0	0	0	0	0	4	16	7	0	27	104	89	14	2	209	495	2
17:30	132	24	70	0	226	0	0	0	0	0	2	14	10	0	26	96	102	11	1	210	462	1
17:45	129	34	95	0	258	0	0	0	0	0	5	16	3	0	24	100	84	17	1	202	484	1
Total	533	122	327	0	982	0	0	0	0	0	13	59	25	0	97	390	373	54	4	821	1900	4
Grand Total	1114	271	857	0	2242	0	0	0	0	0	91	409	94	0	594	1685	1332	147	26	3190	6026	26
Apprch %	49.7%	12.1%	38.2%	0.0%		0.0%	0.0%	0.0%	0.0%		15.3%	68.9%	15.8%	0.0%		52.8%	41.8%	4.6%	0.8%			
Total %	18.5%	4.5%	14.2%	0.0%	37.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	6.8%	1.6%	0.0%	9.9%	28.0%	22.1%	2.4%	0.4%	52.9%	100.0%	

ALL TRAFFIC DATA

City of Oakland
(916) 771-8700
orders@atdtraffic.com

All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

File Name : 15-7302-039 Kuhnle Avenue-Sunnymere Avenue-Seminary
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Kuhnle Avenue Southbound					I-580 EB On-Ramp Westbound					Sunnymere Avenue Northbound					Seminary Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	22	2	25	0	49	0	0	0	0	0	5	46	5	0	56	152	75	7	2	236	341
08:00	19	7	32	0	58	0	0	0	0	0	14	38	13	0	65	141	117	5	0	263	386
08:15	12	7	37	0	56	0	0	0	0	0	23	53	11	0	87	124	80	14	0	218	361
08:30	23	6	27	0	56	0	0	0	0	0	11	53	6	0	70	122	72	7	4	205	331
Total Volume	76	22	121	0	219	0	0	0	0	0	53	190	35	0	278	539	344	33	6	922	1419
% App Total	34.7%	10.0%	55.3%	0.0%		0.0%	0.0%	0.0%	0.0%		19.1%	68.3%	12.6%	0.0%		58.5%	37.3%	3.6%	0.7%		
PHF	.826	.786	.818	.000	.944	.000	.000	.000	.000	.000	.576	.896	.673	.000	.799	.887	.735	.589	.375	.876	.919

PM PEAK HOUR	Kuhnle Avenue Southbound					I-580 EB On-Ramp Westbound					Sunnymere Avenue Northbound					Seminary Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	139	23	77	0	239	0	0	0	0	0	2	13	5	0	20	90	98	12	0	200	459
17:15	133	41	85	0	259	0	0	0	0	0	4	16	7	0	27	104	89	14	2	209	495
17:30	132	24	70	0	226	0	0	0	0	0	2	14	10	0	26	96	102	11	1	210	462
17:45	129	34	95	0	258	0	0	0	0	0	5	16	3	0	24	100	84	17	1	202	484
Total Volume	533	122	327	0	982	0	0	0	0	0	13	59	25	0	97	390	373	54	4	821	1900
% App Total	54.3%	12.4%	33.3%	0.0%		0.0%	0.0%	0.0%	0.0%		13.4%	60.8%	25.8%	0.0%		47.5%	45.4%	6.6%	0.5%		
PHF	.959	.744	.861	.000	.948	.000	.000	.000	.000	.000	.650	.922	.625	.000	.898	.938	.914	.794	.500	.977	.960

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-039 Kuhnle Avenue-Sunnymere Avenue-Seminary
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Kuhnle Avenue Southbound					I-580 EB On-Ramp Westbound					Sunnymere Avenue Northbound					Seminary Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1
17:30	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	2	0	2	2
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	0	0	3	1	4	3
Grand Total	0	0	0	0	0	0	0	0	3	0	1	3	0	0	4	1	0	0	3	1	5	6
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			25.0%	75.0%	0.0%			100.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	20.0%	60.0%	0.0%		80.0%	20.0%	0.0%	0.0%		20.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-039 Kuhnle Avenue-Sunnymere Avenue-Seminary
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Kuhnle Avenue Southbound					I-580 EB On-Ramp Westbound					Sunnymere Avenue Northbound					Seminary Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	Kuhnle Avenue Southbound					I-580 EB On-Ramp Westbound					Sunnymere Avenue Northbound					Seminary Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1
17:30	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	2	0	2
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	0	0	3	1	4
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			100.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.375	.000		.375	.250	.000	.000		.250	.500

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-040 Overdale Avenue-I-580 EB Off-Ramp-Seminar
Date : 4/14/2015

Unshifted Count = All Vehicles

	I-580 EB Off-Ramp Southbound					Seminary Avenue Westbound					Overdale Avenue Northbound					Seminary Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	4	2	26	0	32	0	20	0	0	20	0	0	0	0	0	0	132	1	0	133	185	0
07:15	3	7	37	0	47	2	49	0	0	51	1	0	2	0	3	0	161	0	0	161	262	0
07:30	6	5	50	0	61	0	35	0	0	35	1	0	5	0	6	0	203	0	0	203	305	0
07:45	4	3	88	0	95	0	32	0	1	33	1	0	2	0	3	0	221	0	0	221	352	1
Total	17	17	201	0	235	2	136	0	1	139	3	0	9	0	12	0	717	1	0	718	1104	1
08:00	12	10	103	0	125	0	46	0	1	47	2	0	6	0	8	0	251	1	0	252	432	1
08:15	10	10	119	0	139	0	61	0	0	61	0	0	2	0	2	0	218	0	0	218	420	0
08:30	12	5	102	0	119	1	40	0	0	41	3	0	5	0	8	0	180	1	0	181	349	0
08:45	12	11	115	0	138	0	49	0	1	50	0	0	6	0	6	0	157	2	0	159	353	1
Total	46	36	439	0	521	1	196	0	2	199	5	0	19	0	24	0	806	4	0	810	1554	2
16:00	44	33	121	0	198	2	75	0	1	78	0	0	0	0	0	0	155	0	0	155	431	1
16:15	33	36	89	0	158	1	78	0	2	81	1	0	6	0	7	0	149	1	1	151	397	3
16:30	35	33	95	0	163	1	63	0	1	65	4	0	7	0	11	0	158	2	0	160	399	1
16:45	46	33	122	0	201	1	70	0	2	73	1	0	0	0	1	0	155	0	0	155	430	2
Total	158	135	427	0	720	5	286	0	6	297	6	0	13	0	19	0	617	3	1	621	1657	7
17:00	33	20	100	0	153	2	79	0	0	81	0	0	0	0	0	0	173	2	0	175	409	0
17:15	39	33	88	0	160	0	88	0	1	89	0	0	0	0	0	0	163	2	1	166	415	2
17:30	46	27	109	0	182	2	69	0	1	72	3	0	4	0	7	0	164	1	0	165	426	1
17:45	51	25	133	0	209	0	99	0	1	100	0	0	2	0	2	0	159	3	0	162	473	1
Total	169	105	430	0	704	4	335	0	3	342	3	0	6	0	9	0	659	8	1	668	1723	4
Grand Total	390	293	1497	0	2180	12	953	0	12	977	17	0	47	0	64	0	2799	16	2	2817	6038	14
Apprch %	17.9%	13.4%	68.7%	0.0%		1.2%	97.5%	0.0%	1.2%		26.6%	0.0%	73.4%	0.0%		0.0%	99.4%	0.6%	0.1%			
Total %	6.5%	4.9%	24.8%	0.0%	36.1%	0.2%	15.8%	0.0%	0.2%	16.2%	0.3%	0.0%	0.8%	0.0%	1.1%	0.0%	46.4%	0.3%	0.0%	46.7%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-040 Overdale Avenue-I-580 EB Off-Ramp-Seminar
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	I-580 EB Off-Ramp Southbound					Seminary Avenue Westbound					Overdale Avenue Northbound					Seminary Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	12	10	103	0	125	0	46	0	1	47	2	0	6	0	8	0	251	1	0	252	432
08:15	10	10	119	0	139	0	61	0	0	61	0	0	2	0	2	0	218	0	0	218	420
08:30	12	5	102	0	119	1	40	0	0	41	3	0	5	0	8	0	180	1	0	181	349
08:45	12	11	115	0	138	0	49	0	1	50	0	0	6	0	6	0	157	2	0	159	353
Total Volume	46	36	439	0	521	1	196	0	2	199	5	0	19	0	24	0	806	4	0	810	1554
% App Total	8.8%	6.9%	84.3%	0.0%		0.5%	98.5%	0.0%	1.0%		20.8%	0.0%	79.2%	0.0%		0.0%	99.5%	0.5%	0.0%		
PHF	.958	.818	.922	.000	.937	.250	.803	.000	.500	.816	.417	.000	.792	.000	.750	.000	.803	.500	.000	.804	.899

PM PEAK HOUR	I-580 EB Off-Ramp Southbound					Seminary Avenue Westbound					Overdale Avenue Northbound					Seminary Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	33	20	100	0	153	2	79	0	0	81	0	0	0	0	0	0	173	2	0	175	409
17:15	39	33	88	0	160	0	88	0	1	89	0	0	0	0	0	0	163	2	1	166	415
17:30	46	27	109	0	182	2	69	0	1	72	3	0	4	0	7	0	164	1	0	165	426
17:45	51	25	133	0	209	0	99	0	1	100	0	0	2	0	2	0	159	3	0	162	473
Total Volume	169	105	430	0	704	4	335	0	3	342	3	0	6	0	9	0	659	8	1	668	1723
% App Total	24.0%	14.9%	61.1%	0.0%		1.2%	98.0%	0.0%	0.9%		33.3%	0.0%	66.7%	0.0%		0.0%	98.7%	1.2%	0.1%		
PHF	.828	.795	.808	.000	.842	.500	.846	.000	.750	.855	.250	.000	.375	.000	.321	.000	.952	.667	.250	.954	.911

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-040 Overdale Avenue-I-580 EB Off-Ramp-Seminar
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	I-580 EB Off-Ramp Southbound					Seminary Avenue Westbound					Overdale Avenue Northbound					Seminary Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	4
16:15	0	0	0	0	0	0	1	0	0	1	0	0	0	3	0	0	0	0	0	0	1	3
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	8	0	0	0	0	0	0	1	8
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
17:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	1	0	0	1	1	3
Grand Total	0	0	0	0	0	0	1	0	1	1	0	0	0	12	0	0	1	0	0	1	2	13
Apprch %	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	50.0%	0.0%		50.0%	0.0%	0.0%	0.0%		0.0%	0.0%	50.0%	0.0%		50.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-040 Overdale Avenue-I-580 EB Off-Ramp-Seminar
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	I-580 EB Off-Ramp Southbound					Seminary Avenue Westbound					Overdale Avenue Northbound					Seminary Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	I-580 EB Off-Ramp Southbound					Seminary Avenue Westbound					Overdale Avenue Northbound					Seminary Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
17:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	1	0	0	1	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.250	.000		.250	.250

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-041 Fontaine Street-Keller Avenue I-580 EB On-Ra
Date : 4/14/2015

Unshifted Count = All Vehicles

	Fontaine Street Southbound					Keller Avenue I-580 EB On-Ramp Westbound					Fontaine Street Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	81	22	0	0	103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	103	0
07:15	80	31	0	0	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	111	0
07:30	93	37	0	0	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130	0
07:45	99	52	0	0	151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	151	0
Total	353	142	0	0	495	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	495	0
08:00	103	89	0	0	192	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	192	0
08:15	92	78	0	0	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	170	0
08:30	77	47	0	0	124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	124	0
08:45	81	42	0	0	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	123	0
Total	353	256	0	0	609	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	609	0
16:00	74	53	0	0	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	127	0
16:15	67	40	0	0	107	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	108	0
16:30	81	46	0	0	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	127	0
16:45	76	44	0	0	120	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	121	0
Total	298	183	0	0	481	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	483	0
17:00	96	58	0	0	154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	154	0
17:15	85	59	0	0	144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	144	0
17:30	90	48	0	0	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	138	0
17:45	88	52	0	0	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	140	0
Total	359	217	0	0	576	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	576	0
Grand Total	1363	798	0	0	2161	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2163	0
Apprch %	63.1%	36.9%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	50.0%	50.0%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	63.0%	36.9%	0.0%	0.0%	99.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-041 Fontaine Street-Keller Avenue I-580 EB On-Ra
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Fontaine Street Southbound					Keller Avenue I-580 EB On-Ramp Westbound					Fontaine Street Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	93	37	0	0	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130
07:45	99	52	0	0	151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	151
08:00	103	89	0	0	192	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	192
08:15	92	78	0	0	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	170
Total Volume	387	256	0	0	643	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	643
% App Total	60.2%	39.8%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.939	.719	.000	.000	.837	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.837

PM PEAK HOUR	Fontaine Street Southbound					Keller Avenue I-580 EB On-Ramp Westbound					Fontaine Street Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	96	58	0	0	154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	154
17:15	85	59	0	0	144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	144
17:30	90	48	0	0	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	138
17:45	88	52	0	0	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	140
Total Volume	359	217	0	0	576	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	576
% App Total	62.3%	37.7%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.935	.919	.000	.000	.935	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.935

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-041 Fontaine Street-Keller Avenue I-580 EB On-Ra
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

	Fontaine Street Southbound					Keller Avenue I-580 EB On-Ramp Westbound					Fontaine Street Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-041 Fontaine Street-Keller Avenue I-580 EB On-Ra
Date : 4/14/2015

Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Fontaine Street Southbound					Keller Avenue I-580 EB On-Ramp Westbound					Fontaine Street Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	Fontaine Street Southbound					Keller Avenue I-580 EB On-Ramp Westbound					Fontaine Street Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-042 Mountain Boulevard-SR 13 NB On-Ramp-Cala
Date : 4/14/2015

Unshifted Count = All Vehicles

	SR 13 NB On-Ramp Southbound					Mountain Boulevard Westbound					Mountain Boulevard Northbound					Calaveras Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	0	0	0	0	0	0	5	0	5	0	59	0	0	59	19	0	0	0	19	83	0
07:15	0	0	0	0	0	0	0	2	0	2	0	69	0	0	69	30	0	0	0	30	101	0
07:30	0	0	0	0	0	0	0	8	0	8	0	92	0	0	92	34	0	0	0	34	134	0
07:45	0	0	0	0	0	0	0	9	0	9	0	122	0	0	122	58	0	0	0	58	189	0
Total	0	0	0	0	0	0	0	24	0	24	0	342	0	0	342	141	0	0	0	141	507	0
08:00	0	0	0	0	0	0	0	8	0	8	0	102	0	0	102	44	0	0	0	44	154	0
08:15	0	0	0	0	0	0	0	4	0	4	0	121	0	0	121	43	0	0	0	43	168	0
08:30	0	0	0	0	0	0	0	4	0	4	0	109	0	0	109	41	0	0	0	41	154	0
08:45	0	0	0	0	0	0	0	1	0	1	0	92	0	0	92	35	0	0	0	35	128	0
Total	0	0	0	0	0	0	0	17	0	17	0	424	0	0	424	163	0	0	0	163	604	0
16:00	0	0	0	0	0	0	0	0	0	0	0	49	0	0	49	28	0	0	0	28	77	0
16:15	0	0	0	0	0	0	0	1	0	1	0	49	0	0	49	18	0	0	0	18	68	0
16:30	0	0	0	0	0	0	0	2	0	2	0	47	0	0	47	30	0	0	0	30	79	0
16:45	0	0	0	0	0	0	0	6	0	6	0	43	0	0	43	24	0	0	0	24	73	0
Total	0	0	0	0	0	0	0	9	0	9	0	188	0	0	188	100	0	0	0	100	297	0
17:00	0	0	0	0	0	0	0	5	0	5	0	50	0	0	50	30	0	0	0	30	85	0
17:15	0	0	0	0	0	0	0	5	0	5	0	48	0	0	48	30	0	0	0	30	83	0
17:30	0	0	0	0	0	0	0	9	0	9	0	54	0	0	54	35	0	0	0	35	98	0
17:45	0	0	0	0	0	0	0	1	0	1	0	45	0	0	45	21	0	0	0	21	67	0
Total	0	0	0	0	0	0	0	20	0	20	0	197	0	0	197	116	0	0	0	116	333	0
Grand Total	0	0	0	0	0	0	0	70	0	70	0	1151	0	0	1151	520	0	0	0	520	1741	0
Apprch %	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		0.0%	100.0%	0.0%	0.0%		100.0%	0.0%	0.0%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	4.0%	0.0%	66.1%	0.0%	0.0%	66.1%	29.9%	0.0%	0.0%	0.0%	29.9%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-042 Mountain Boulevard-SR 13 NB On-Ramp-Cala
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	SR 13 NB On-Ramp Southbound					Mountain Boulevard Westbound					Mountain Boulevard Northbound					Calaveras Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	9	0	9	0	122	0	0	122	58	0	0	0	58	189
08:00	0	0	0	0	0	0	0	8	0	8	0	102	0	0	102	44	0	0	0	44	154
08:15	0	0	0	0	0	0	0	4	0	4	0	121	0	0	121	43	0	0	0	43	168
08:30	0	0	0	0	0	0	0	4	0	4	0	109	0	0	109	41	0	0	0	41	154
Total Volume	0	0	0	0	0	0	0	25	0	25	0	454	0	0	454	186	0	0	0	186	665
% App Total	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		0.0%	100.0%	0.0%	0.0%		100.0%	0.0%	0.0%	0.0%		
PHF	.000	.000	.000	.000	.000	.000	.000	.694	.000	.694	.000	.930	.000	.000	.930	.802	.000	.000	.000	.802	.880

PM PEAK HOUR	SR 13 NB On-Ramp Southbound					Mountain Boulevard Westbound					Mountain Boulevard Northbound					Calaveras Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	0	0	6	0	6	0	43	0	0	43	24	0	0	0	24	73
17:00	0	0	0	0	0	0	0	5	0	5	0	50	0	0	50	30	0	0	0	30	85
17:15	0	0	0	0	0	0	0	5	0	5	0	48	0	0	48	30	0	0	0	30	83
17:30	0	0	0	0	0	0	0	9	0	9	0	54	0	0	54	35	0	0	0	35	98
Total Volume	0	0	0	0	0	0	0	25	0	25	0	195	0	0	195	119	0	0	0	119	339
% App Total	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		0.0%	100.0%	0.0%	0.0%		100.0%	0.0%	0.0%	0.0%		
PHF	.000	.000	.000	.000	.000	.000	.000	.694	.000	.694	.000	.903	.000	.000	.903	.850	.000	.000	.000	.850	.865

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-042 Mountain Boulevard-SR 13 NB On-Ramp-Cala
Date : 4/14/2015

Bank 1 Count = Nothing

	SR 13 NB On-Ramp Southbound					Mountain Boulevard Westbound					Mountain Boulevard Northbound					Calaveras Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-042 Mountain Boulevard-SR 13 NB On-Ramp-Cala
Date : 4/14/2015

Bank 1 Count = Nothing

AM PEAK HOUR	SR 13 NB On-Ramp Southbound					Mountain Boulevard Westbound					Mountain Boulevard Northbound					Calaveras Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	SR 13 NB On-Ramp Southbound					Mountain Boulevard Westbound					Mountain Boulevard Northbound					Calaveras Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-043 SR 13 SB Off-Ramp-I-580 EB Off-Ramp-Cala
Date : 4/14/2015

Unshifted Count = All Vehicles

	SR 13 SB Off-Ramp Southbound					Calaveras Avenue Westbound					I-580 EB Off-Ramp Northbound					Calaveras Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	0	18	0	18	0	0	0	0	0	1	0	10	0	11	0	0	0	0	0	29	0
07:15	0	0	29	0	29	0	0	0	0	0	0	0	19	0	19	0	0	0	0	0	48	0
07:30	1	0	30	0	31	0	0	0	0	0	5	0	23	0	28	0	0	0	0	0	59	0
07:45	3	0	50	0	53	0	0	0	0	0	1	0	33	0	34	0	0	0	0	0	87	0
Total	4	0	127	0	131	0	0	0	0	0	7	0	85	0	92	0	0	0	0	0	223	0
08:00	5	0	48	0	53	0	0	0	0	0	1	0	26	0	27	0	0	0	0	0	80	0
08:15	5	0	49	0	54	0	0	0	0	0	4	0	29	0	33	0	0	0	0	0	87	0
08:30	6	0	59	0	65	0	0	0	0	0	2	0	23	0	25	0	0	0	0	0	90	0
08:45	4	0	42	0	46	0	0	0	0	0	0	0	28	0	28	0	0	0	0	0	74	0
Total	20	0	198	0	218	0	0	0	0	0	7	0	106	0	113	0	0	0	0	0	331	0
16:00	8	0	42	0	50	0	0	0	0	0	4	0	25	0	29	0	0	0	0	0	79	0
16:15	7	0	32	0	39	0	0	0	0	0	2	0	17	0	19	0	0	0	0	0	58	0
16:30	61	0	58	0	119	0	0	0	0	0	4	0	18	0	22	0	0	0	0	0	141	0
16:45	103	0	61	0	164	0	0	0	0	0	1	0	19	0	20	0	0	0	0	0	184	0
Total	179	0	193	0	372	0	0	0	0	0	11	0	79	0	90	0	0	0	0	0	462	0
17:00	154	0	74	0	228	0	0	0	0	0	2	0	21	0	23	0	0	0	0	0	251	0
17:15	141	0	54	0	195	0	0	0	0	0	3	0	18	0	21	0	0	0	0	0	216	0
17:30	138	0	73	0	211	0	0	0	0	0	6	0	20	0	26	0	0	0	0	0	237	0
17:45	159	0	63	0	222	0	0	0	0	0	6	0	17	0	23	0	0	0	0	0	245	0
Total	592	0	264	0	856	0	0	0	0	0	17	0	76	0	93	0	0	0	0	0	949	0
Grand Total	795	0	782	0	1577	0	0	0	0	0	42	0	346	0	388	0	0	0	0	0	1965	0
Apprch %	50.4%	0.0%	49.6%	0.0%		0.0%	0.0%	0.0%	0.0%		10.8%	0.0%	89.2%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	40.5%	0.0%	39.8%	0.0%	80.3%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	17.6%	0.0%	19.7%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-043 SR 13 SB Off-Ramp-I-580 EB Off-Ramp-Cala
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	SR 13 SB Off-Ramp Southbound					Calaveras Avenue Westbound					I-580 EB Off-Ramp Northbound					Calaveras Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	3	0	50	0	53	0	0	0	0	0	1	0	33	0	34	0	0	0	0	0	87
08:00	5	0	48	0	53	0	0	0	0	0	1	0	26	0	27	0	0	0	0	0	80
08:15	5	0	49	0	54	0	0	0	0	0	4	0	29	0	33	0	0	0	0	0	87
08:30	6	0	59	0	65	0	0	0	0	0	2	0	23	0	25	0	0	0	0	0	90
Total Volume	19	0	206	0	225	0	0	0	0	0	8	0	111	0	119	0	0	0	0	0	344
% App Total	8.4%	0.0%	91.6%	0.0%		0.0%	0.0%	0.0%	0.0%		6.7%	0.0%	93.3%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.792	.000	.873	.000	.865	.000	.000	.000	.000	.000	.500	.000	.841	.000	.875	.000	.000	.000	.000	.000	.956

PM PEAK HOUR	SR 13 SB Off-Ramp Southbound					Calaveras Avenue Westbound					I-580 EB Off-Ramp Northbound					Calaveras Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	154	0	74	0	228	0	0	0	0	0	2	0	21	0	23	0	0	0	0	0	251
17:15	141	0	54	0	195	0	0	0	0	0	3	0	18	0	21	0	0	0	0	0	216
17:30	138	0	73	0	211	0	0	0	0	0	6	0	20	0	26	0	0	0	0	0	237
17:45	159	0	63	0	222	0	0	0	0	0	6	0	17	0	23	0	0	0	0	0	245
Total Volume	592	0	264	0	856	0	0	0	0	0	17	0	76	0	93	0	0	0	0	0	949
% App Total	69.2%	0.0%	30.8%	0.0%		0.0%	0.0%	0.0%	0.0%		18.3%	0.0%	81.7%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.931	.000	.892	.000	.939	.000	.000	.000	.000	.000	.708	.000	.905	.000	.894	.000	.000	.000	.000	.000	.945

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-043 SR 13 SB Off-Ramp-I-580 EB Off-Ramp-Cala
Date : 4/14/2015

Bank 1 Count = Nothing

	SR 13 SB Off-Ramp Southbound					Calaveras Avenue Westbound					I-580 EB Off-Ramp Northbound					Calaveras Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-043 SR 13 SB Off-Ramp-I-580 EB Off-Ramp-Cala
Date : 4/14/2015

Bank 1 Count = Nothing

AM PEAK HOUR	SR 13 SB Off-Ramp Southbound					Calaveras Avenue Westbound					I-580 EB Off-Ramp Northbound					Calaveras Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	SR 13 SB Off-Ramp Southbound					Calaveras Avenue Westbound					I-580 EB Off-Ramp Northbound					Calaveras Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-044 SR 13-South of Carson Street Interchange.ppc
Date : 4/14/2015

Unshifted Count = All Vehicles

	SR 13 Southbound					South of Carson Street Interchange Westbound					SR 13 Northbound					South of Carson Street Interchange Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	535	0	0	535	0	0	0	0	0	0	429	0	0	429	0	0	0	0	0	964	0
07:15	0	696	0	0	696	0	0	0	0	0	0	577	0	0	577	0	0	0	0	0	1273	0
07:30	0	765	0	0	765	0	0	0	0	0	0	610	0	0	610	0	0	0	0	0	1375	0
07:45	0	838	0	0	838	0	0	0	0	0	0	666	0	0	666	0	0	0	0	0	1504	0
Total	0	2834	0	0	2834	0	0	0	0	0	0	2282	0	0	2282	0	0	0	0	0	5116	0
08:00	0	771	0	0	771	0	0	0	0	0	0	649	0	0	649	0	0	0	0	0	1420	0
08:15	0	757	0	0	757	0	0	0	0	0	0	630	0	0	630	0	0	0	0	0	1387	0
08:30	0	680	0	0	680	0	0	0	0	0	0	644	0	0	644	0	0	0	0	0	1324	0
08:45	0	713	0	0	713	0	0	0	0	0	0	534	0	0	534	0	0	0	0	0	1247	0
Total	0	2921	0	0	2921	0	0	0	0	0	0	2457	0	0	2457	0	0	0	0	0	5378	0
16:00	0	637	0	0	637	0	0	0	0	0	0	551	0	0	551	0	0	0	0	0	1188	0
16:15	0	659	0	0	659	0	0	0	0	0	0	559	0	0	559	0	0	0	0	0	1218	0
16:30	0	689	0	0	689	0	0	0	0	0	0	583	0	0	583	0	0	0	0	0	1272	0
16:45	0	643	0	0	643	0	0	0	0	0	0	582	0	0	582	0	0	0	0	0	1225	0
Total	0	2628	0	0	2628	0	0	0	0	0	0	2275	0	0	2275	0	0	0	0	0	4903	0
17:00	0	624	0	0	624	0	0	0	0	0	0	594	0	0	594	0	0	0	0	0	1218	0
17:15	0	681	0	0	681	0	0	0	0	0	0	523	0	0	523	0	0	0	0	0	1204	0
17:30	0	733	0	0	733	0	0	0	0	0	0	579	0	0	579	0	0	0	0	0	1312	0
17:45	0	646	0	0	646	0	0	0	0	0	0	581	0	0	581	0	0	0	0	0	1227	0
Total	0	2684	0	0	2684	0	0	0	0	0	0	2277	0	0	2277	0	0	0	0	0	4961	0
Grand Total	0	11067	0	0	11067	0	0	0	0	0	0	9291	0	0	9291	0	0	0	0	0	20358	0
Apprch %	0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	0.0%	54.4%	0.0%	0.0%	54.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	45.6%	0.0%	0.0%	45.6%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-044 SR 13-South of Carson Street Interchange.ppc
Date : 4/14/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	SR 13 Southbound					South of Carson Street Interchange Westbound					SR 13 Northbound					South of Carson Street Interchange Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	765	0	0	765	0	0	0	0	0	0	610	0	0	610	0	0	0	0	0	1375
07:45	0	838	0	0	838	0	0	0	0	0	0	666	0	0	666	0	0	0	0	0	1504
08:00	0	771	0	0	771	0	0	0	0	0	0	649	0	0	649	0	0	0	0	0	1420
08:15	0	757	0	0	757	0	0	0	0	0	0	630	0	0	630	0	0	0	0	0	1387
Total Volume	0	3131	0	0	3131	0	0	0	0	0	0	2555	0	0	2555	0	0	0	0	0	5686
% App Total	0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.934	.000	.000	.934	.000	.000	.000	.000	.000	.000	.959	.000	.000	.959	.000	.000	.000	.000	.000	.945

PM PEAK HOUR	SR 13 Southbound					South of Carson Street Interchange Westbound					SR 13 Northbound					South of Carson Street Interchange Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	624	0	0	624	0	0	0	0	0	0	594	0	0	594	0	0	0	0	0	1218
17:15	0	681	0	0	681	0	0	0	0	0	0	523	0	0	523	0	0	0	0	0	1204
17:30	0	733	0	0	733	0	0	0	0	0	0	579	0	0	579	0	0	0	0	0	1312
17:45	0	646	0	0	646	0	0	0	0	0	0	581	0	0	581	0	0	0	0	0	1227
Total Volume	0	2684	0	0	2684	0	0	0	0	0	0	2277	0	0	2277	0	0	0	0	0	4961
% App Total	0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.915	.000	.000	.915	.000	.000	.000	.000	.000	.000	.958	.000	.000	.958	.000	.000	.000	.000	.000	.945

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-044 SR 13-South of Carson Street Interchange.ppc
Date : 4/14/2015

Bank 1 Count = Nothing

	SR 13 Southbound					South of Carson Street Interchange Westbound					SR 13 Northbound					South of Carson Street Interchange Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Ped Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	

ALL TRAFFIC DATA

City of Oakland
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 15-7302-044 SR 13-South of Carson Street Interchange.ppc
Date : 4/14/2015

Bank 1 Count = Nothing

AM PEAK HOUR	SR 13 Southbound					South of Carson Street Interchange Westbound					SR 13 Northbound					South of Carson Street Interchange Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

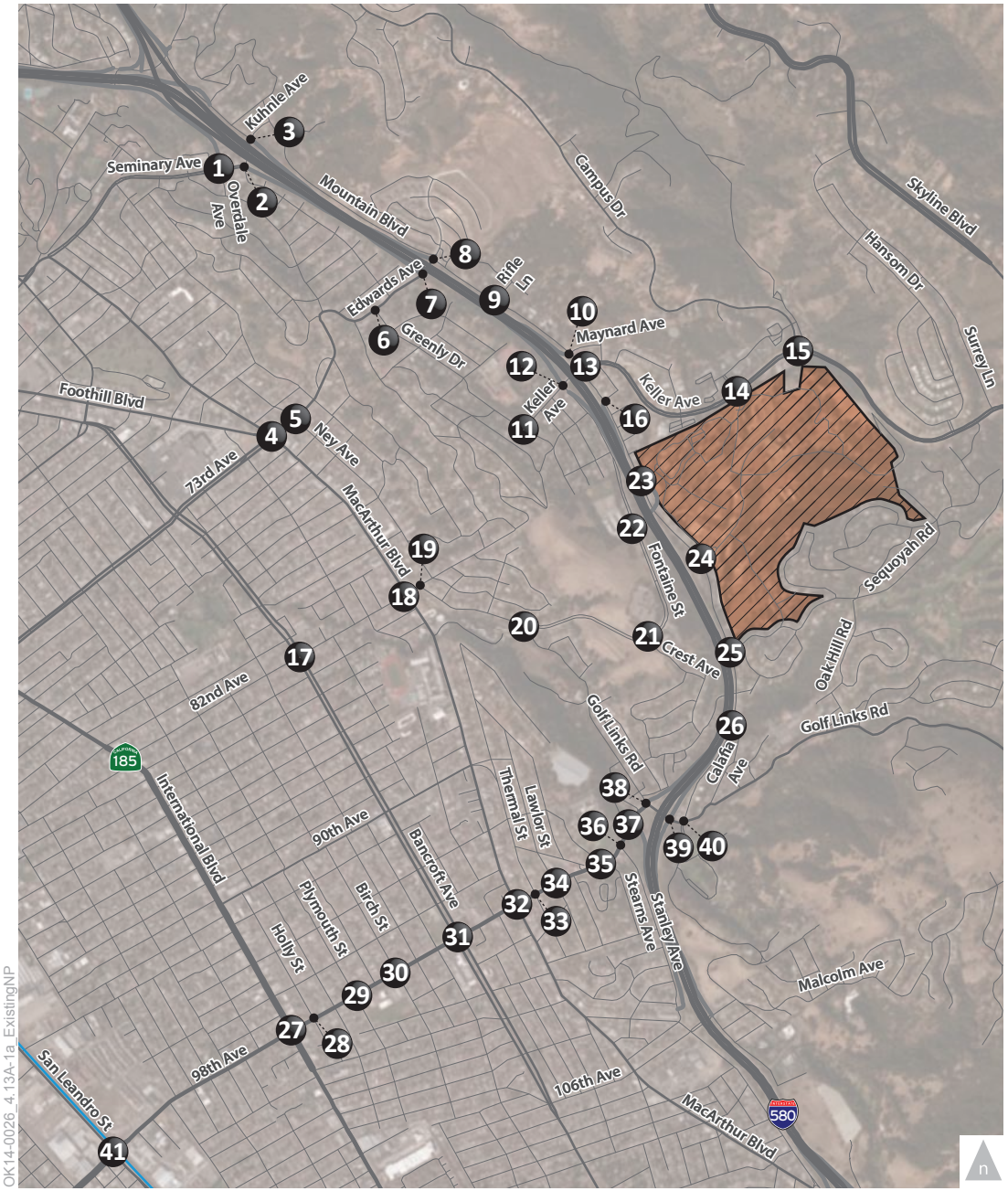
PM PEAK HOUR	SR 13 Southbound					South of Carson Street Interchange Westbound					SR 13 Northbound					South of Carson Street Interchange Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

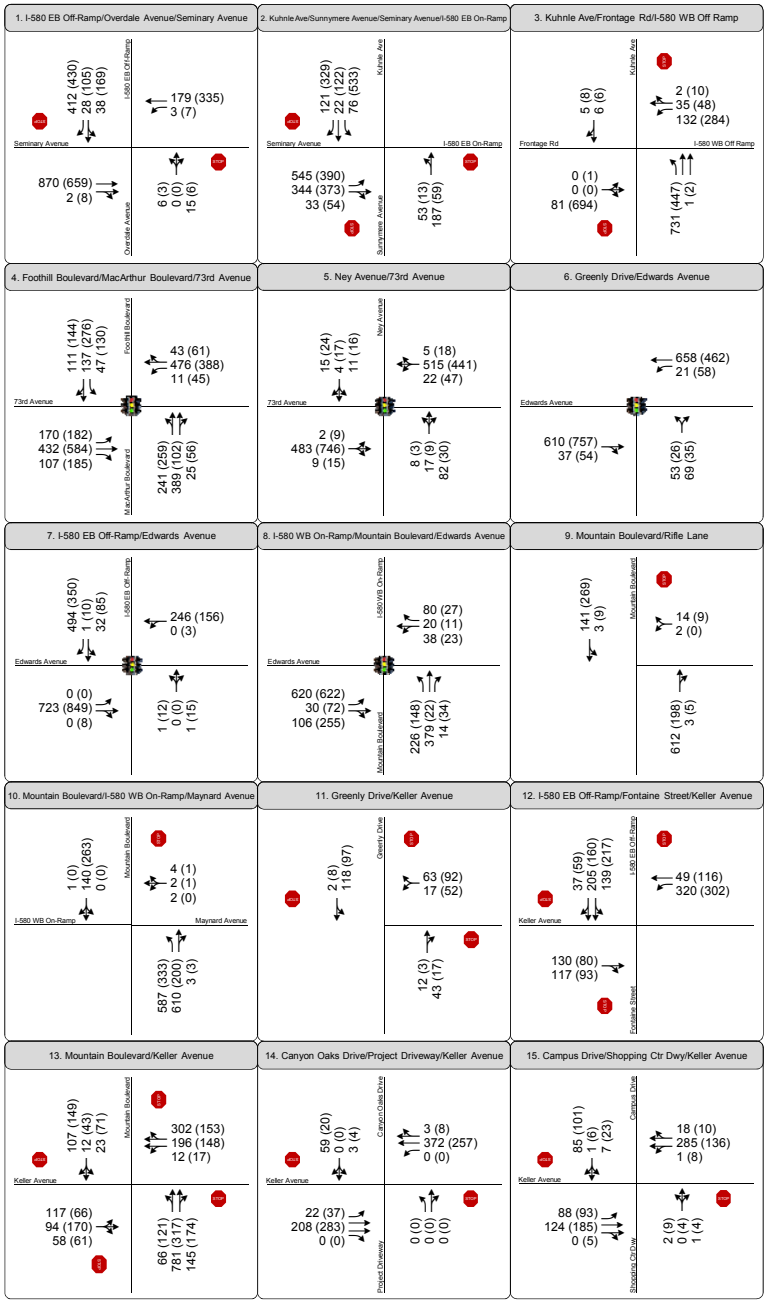
Southbound Peds = North Leg (traveling EB or WB)
Westbound Peds = East Leg (traveling NB or SB)
Northbound Peds = South Leg (traveling EB or WB)
Eastbound Peds = West Leg (traveling NB or SB)

APPENDIX V-B

INTERSECTION AND FREEWAY VOLUME FIGURES





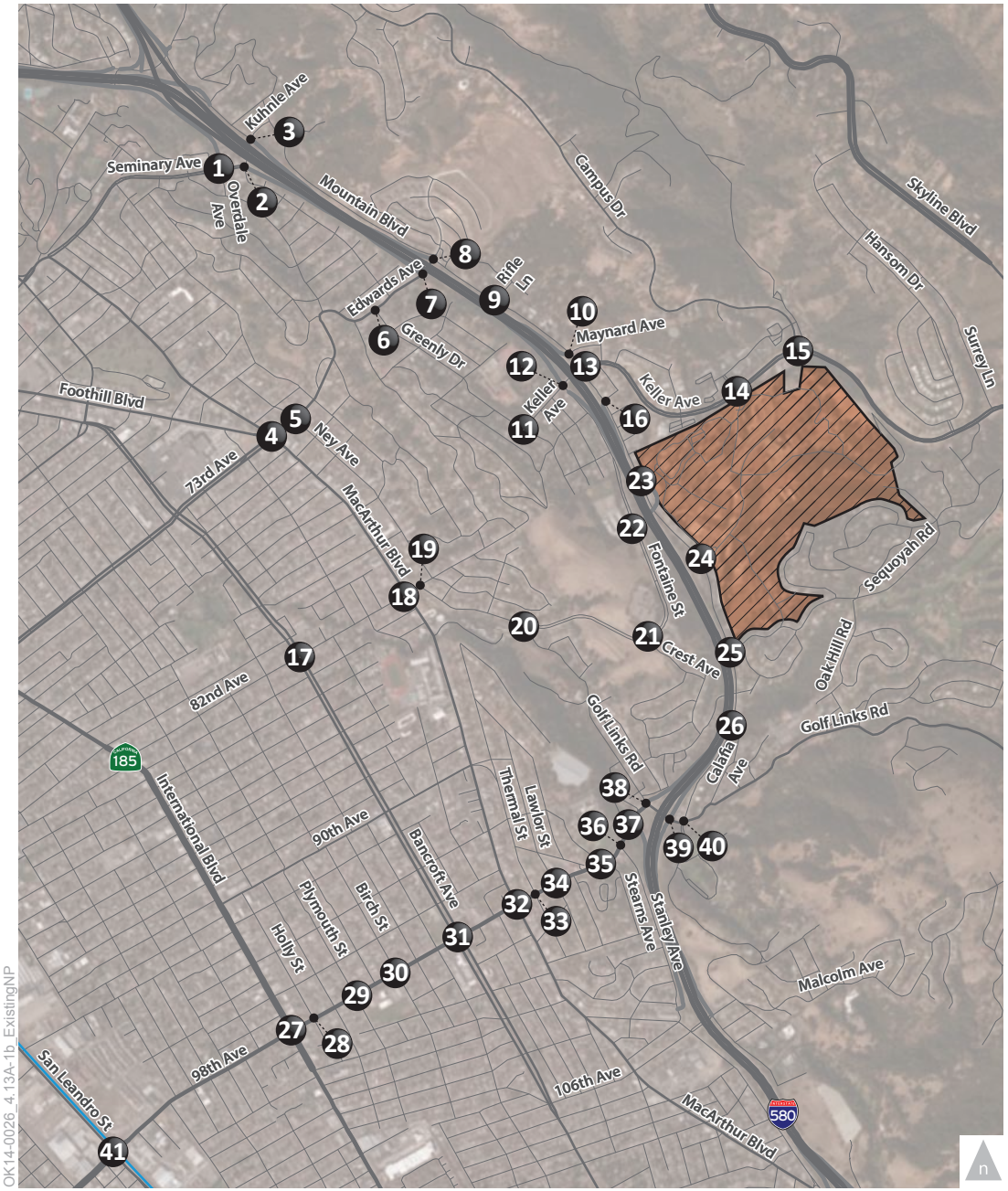


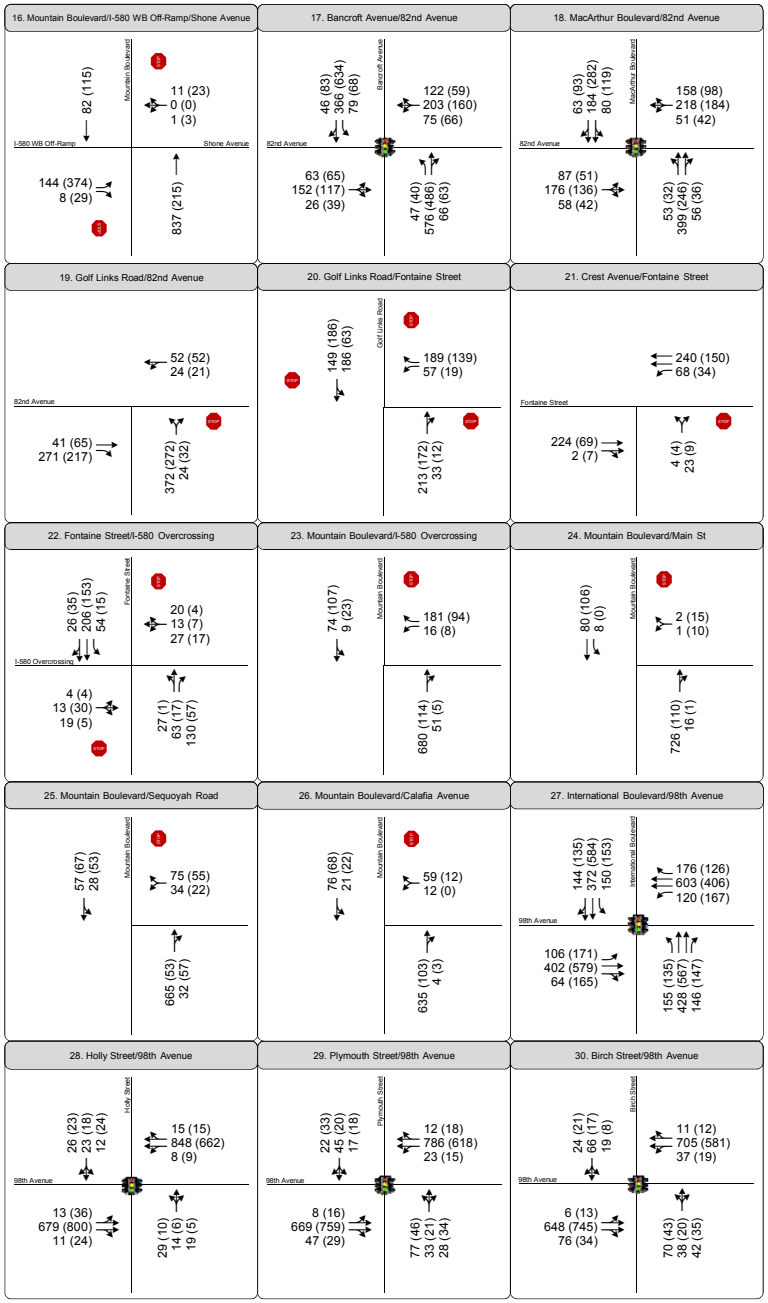
OK14-0026_4.13A-1a_ExistingNP

LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-1a

Existing
Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls



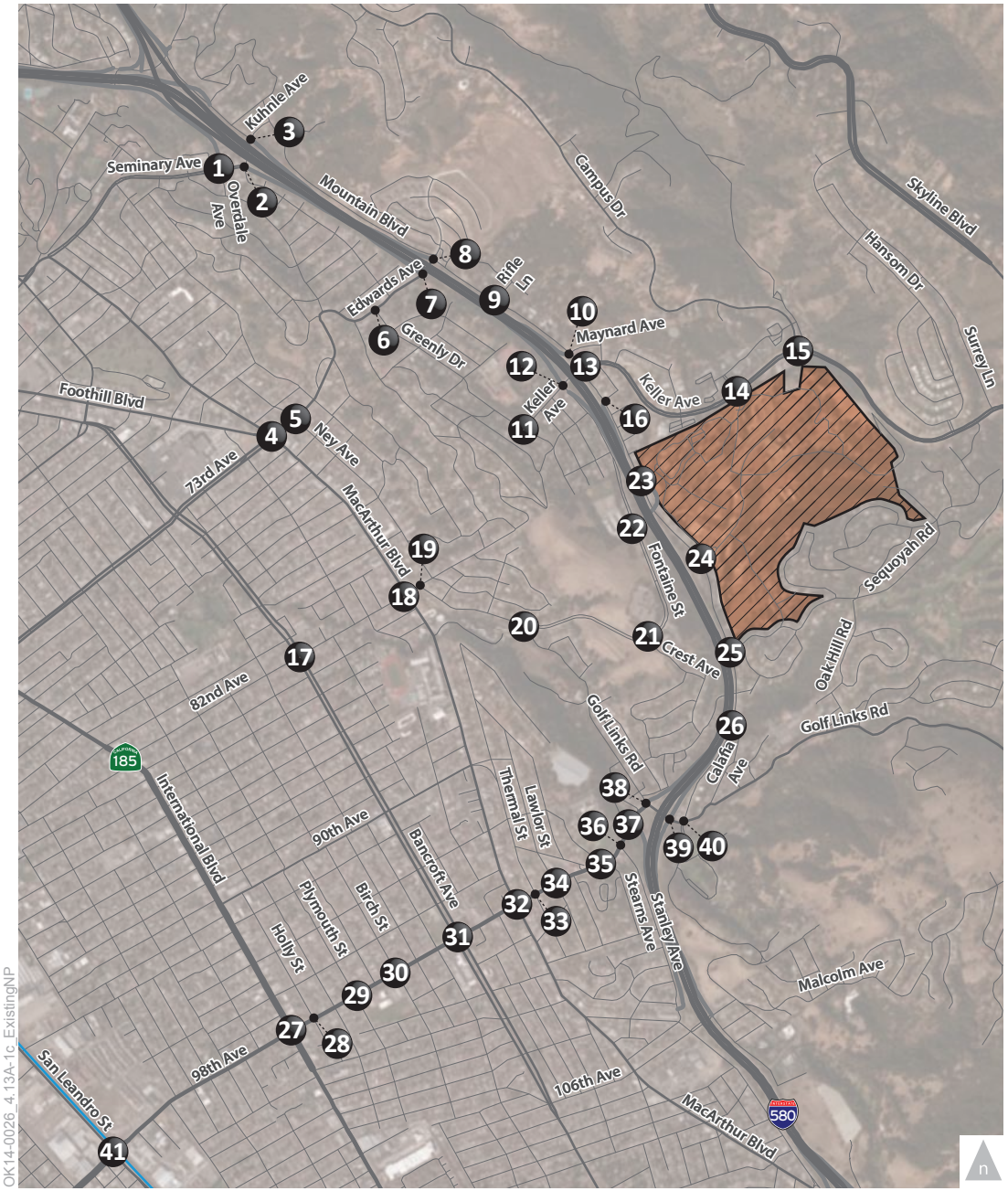


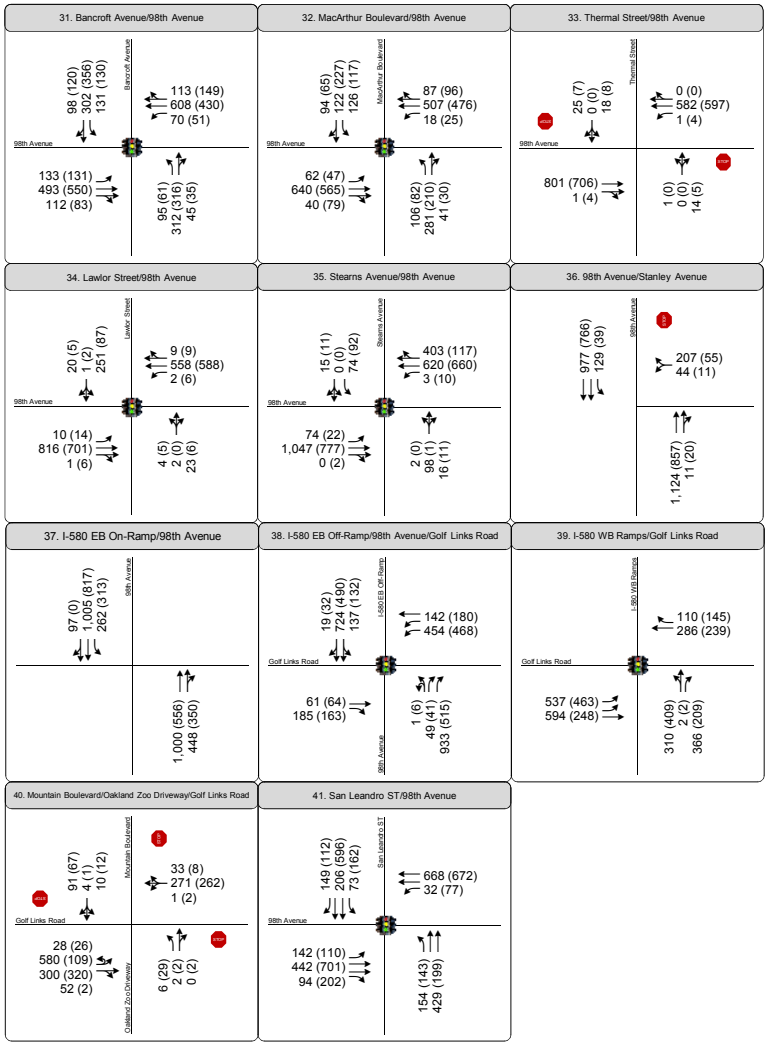
OK14-0026_4.13A-1b_ExistingNP

LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-1b

Existing
Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls



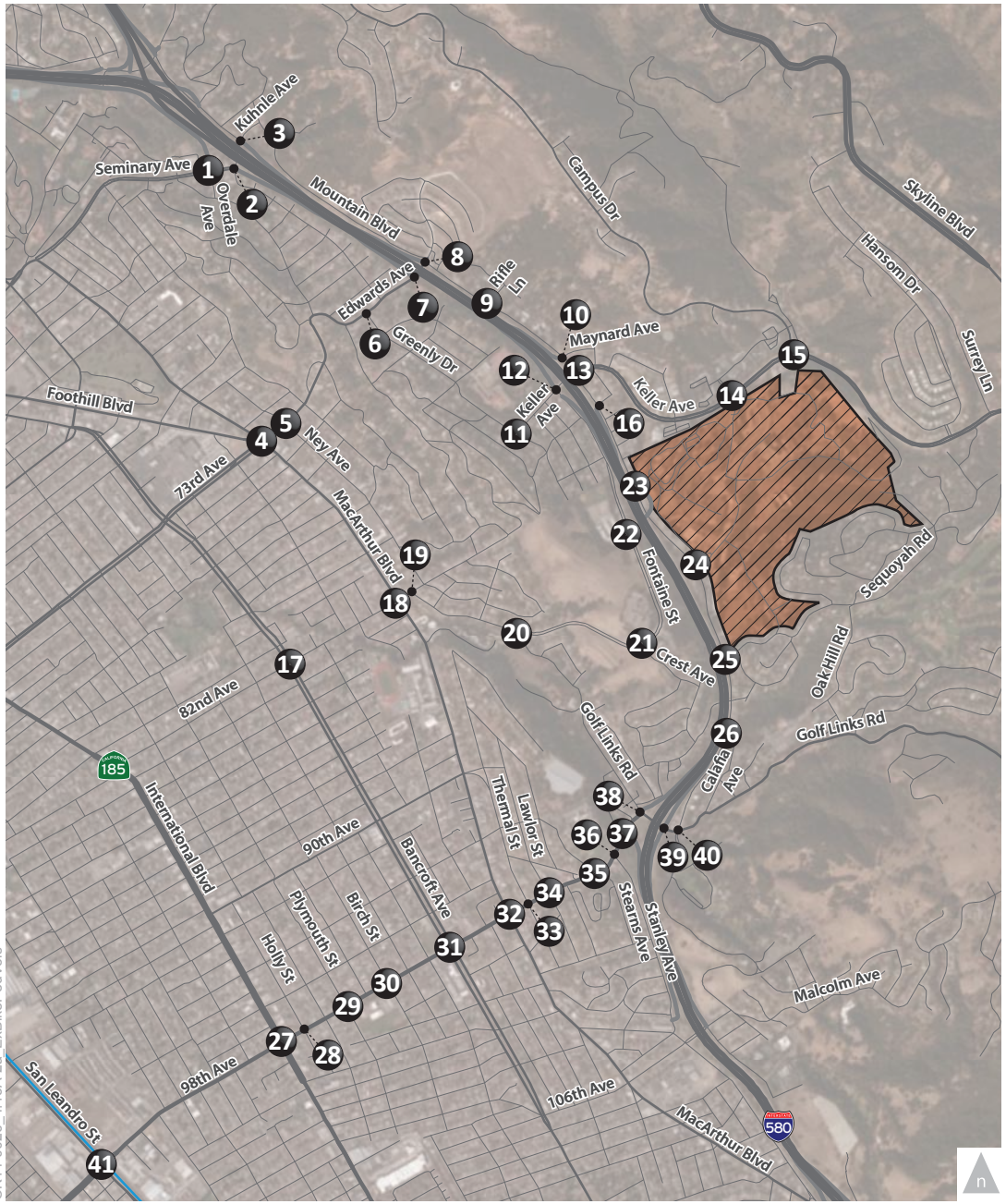


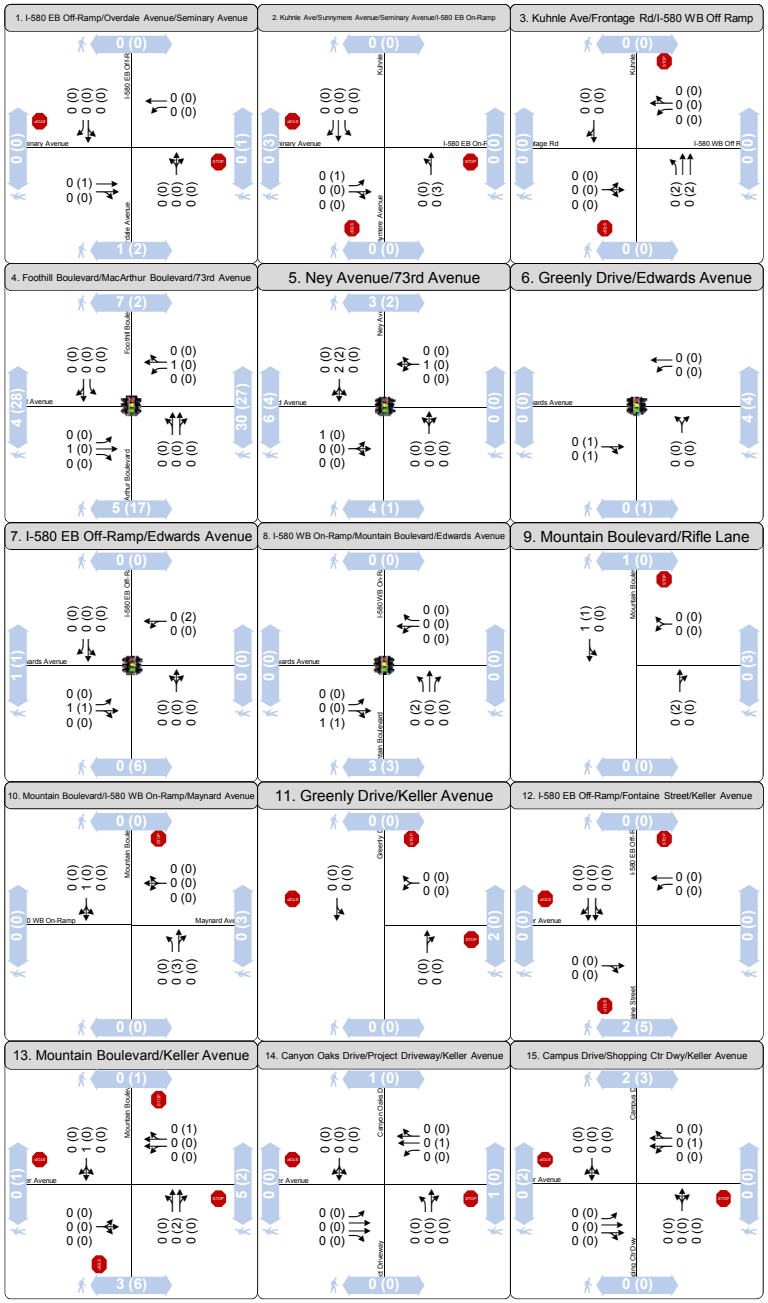
OK14-0026_4.13A-1c_ExistingNP

LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-1c

Existing
Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls





OK14-0026_4.13A-2a_ExBikePedVols

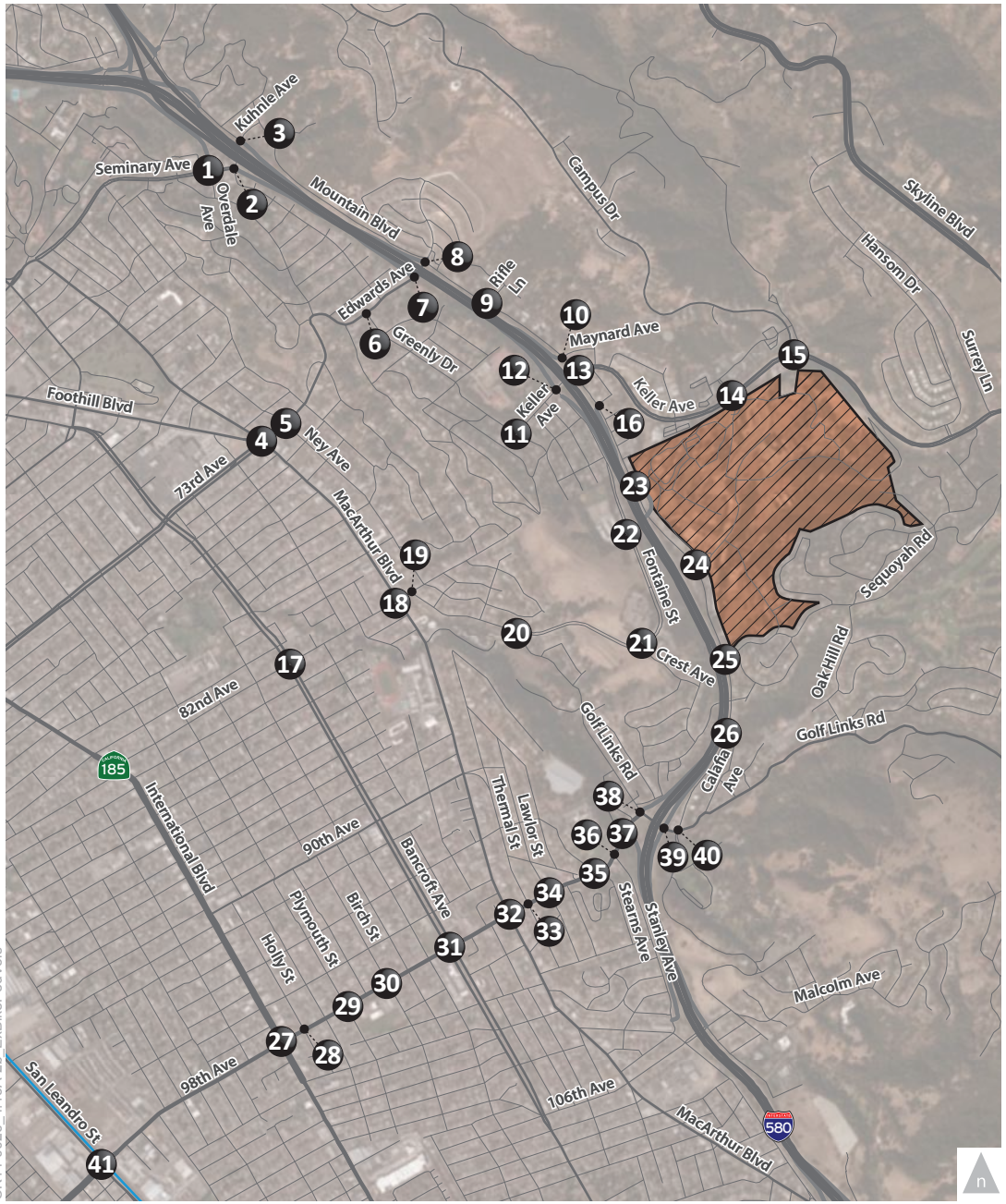
LEGEND XX (YY) AM (PM) Peak Hour Bicycle Volumes

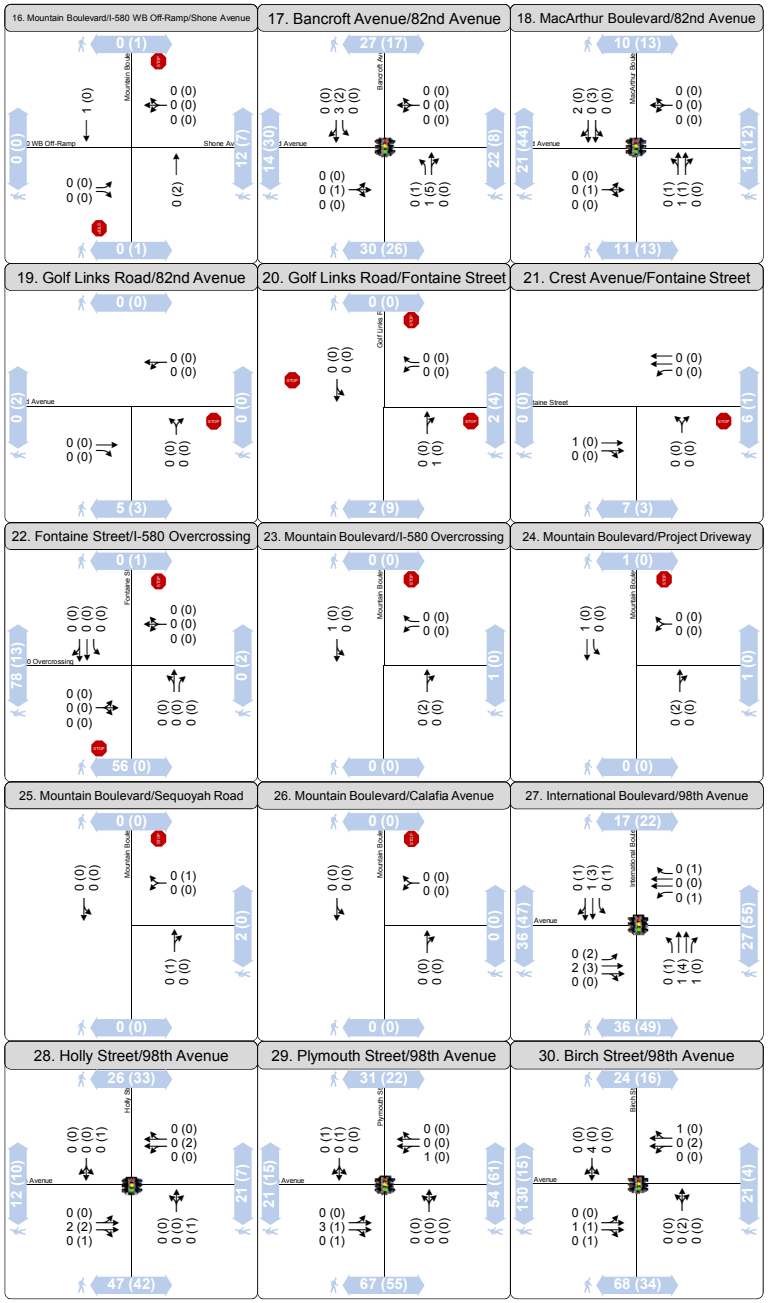
x (y) AM (PM) Peak Hour Pedestrian Volumes

Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-2a

Existing Bicycle and Pedestrian Peak Hour Volumes





OK14-0026_4.13A-2b_ExBikePedVols

LEGEND XX (YY) AM (PM) Peak Hour Bicycle Volumes

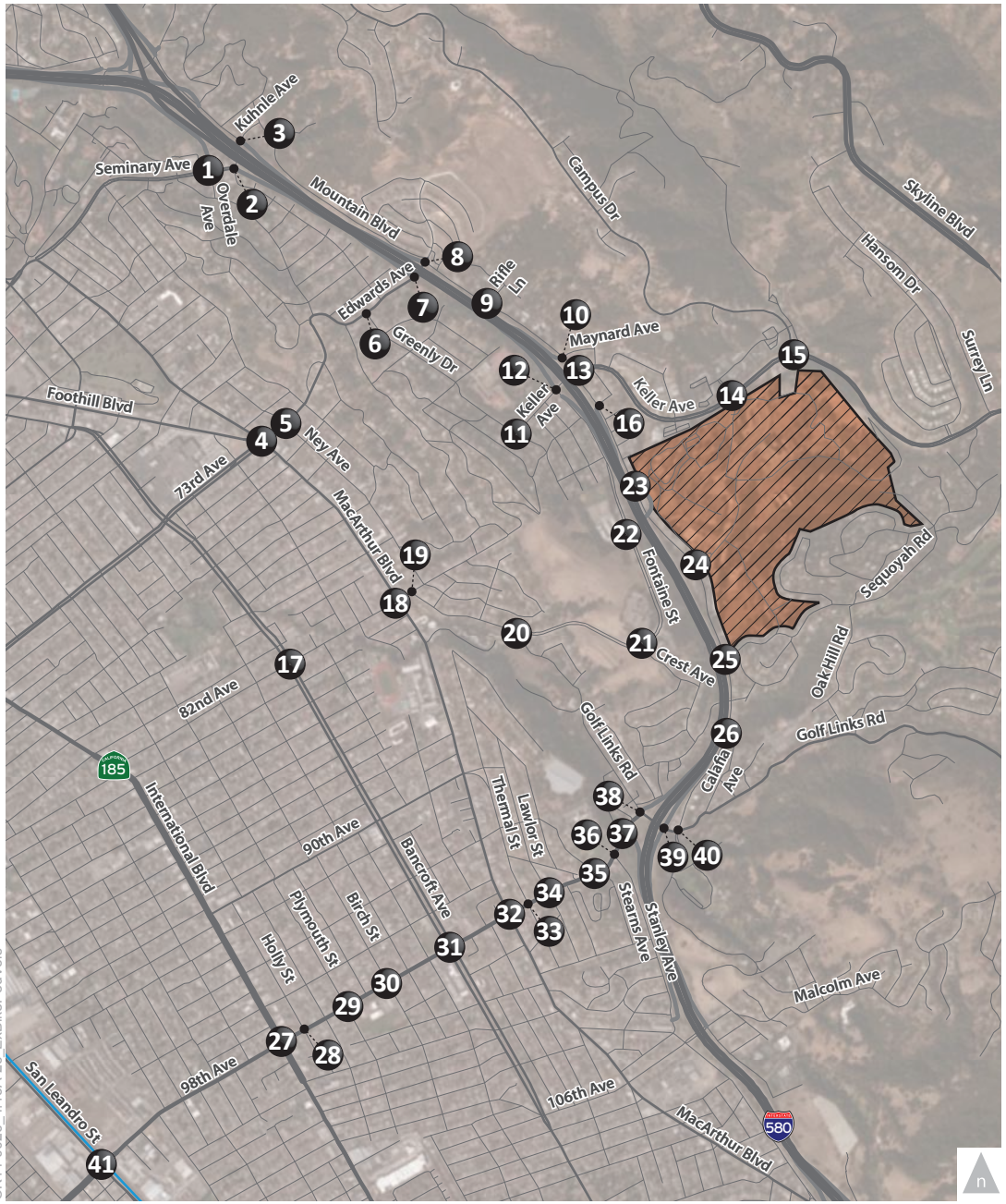
x (y) AM (PM) Peak Hour Pedestrian Volumes

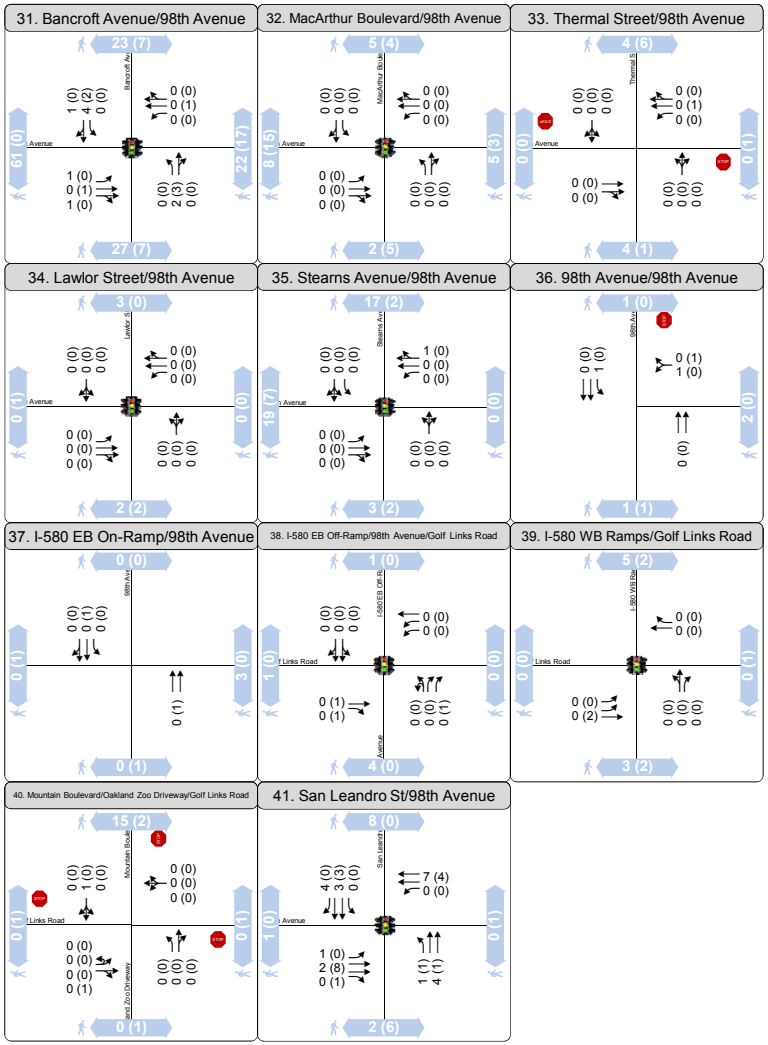
Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-2b

Existing

Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls



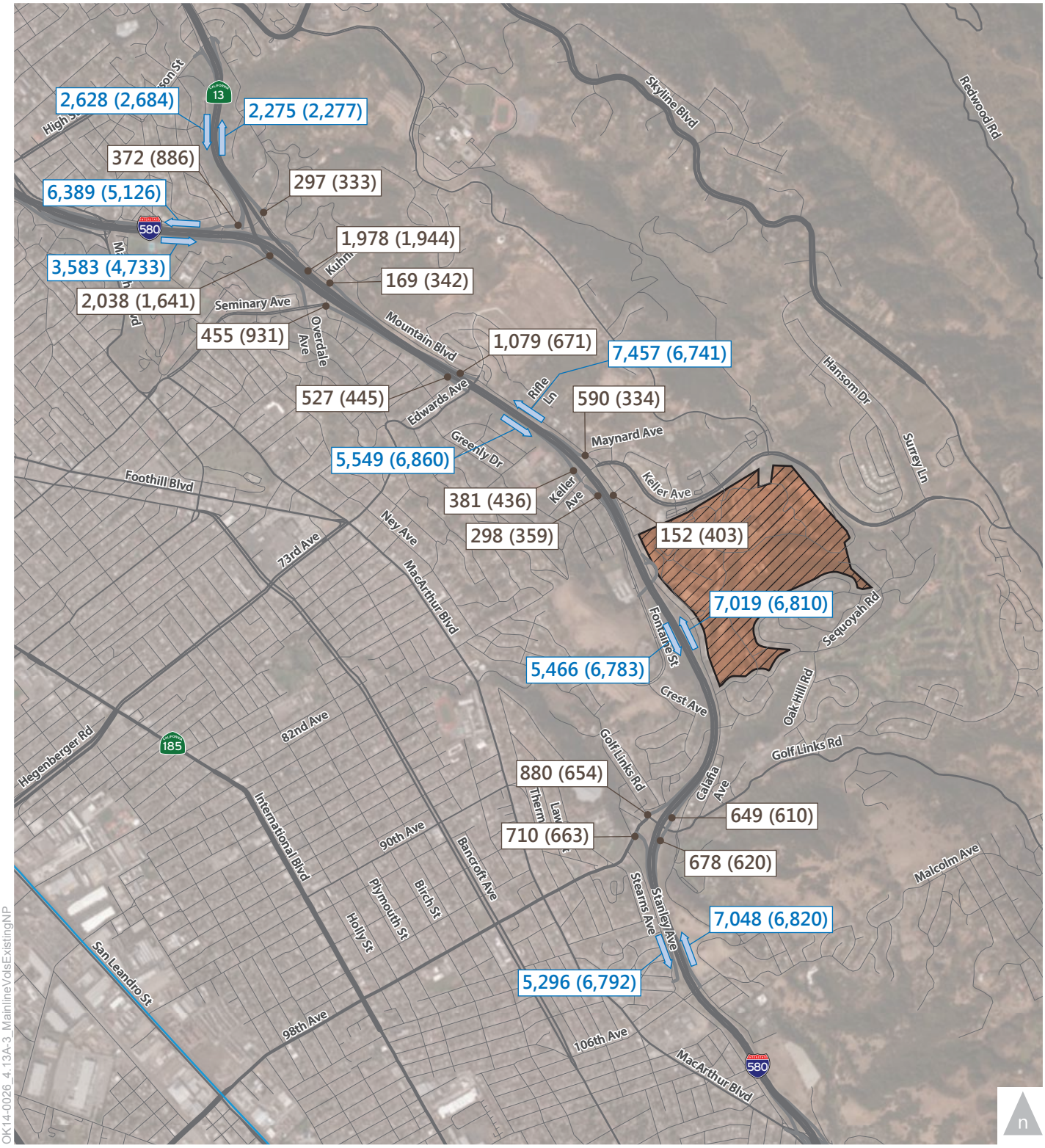


OK14-0026_4.13A-2c_ExBikePedVols

LEGEND XX (YY) AM (PM) Peak Hour Bicycle Volumes | x (y) AM (PM) Peak Hour Pedestrian Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-2c

Existing
Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls



OK14-0026_4.13A-3_MainlineVolsExistingNP

LEGEND

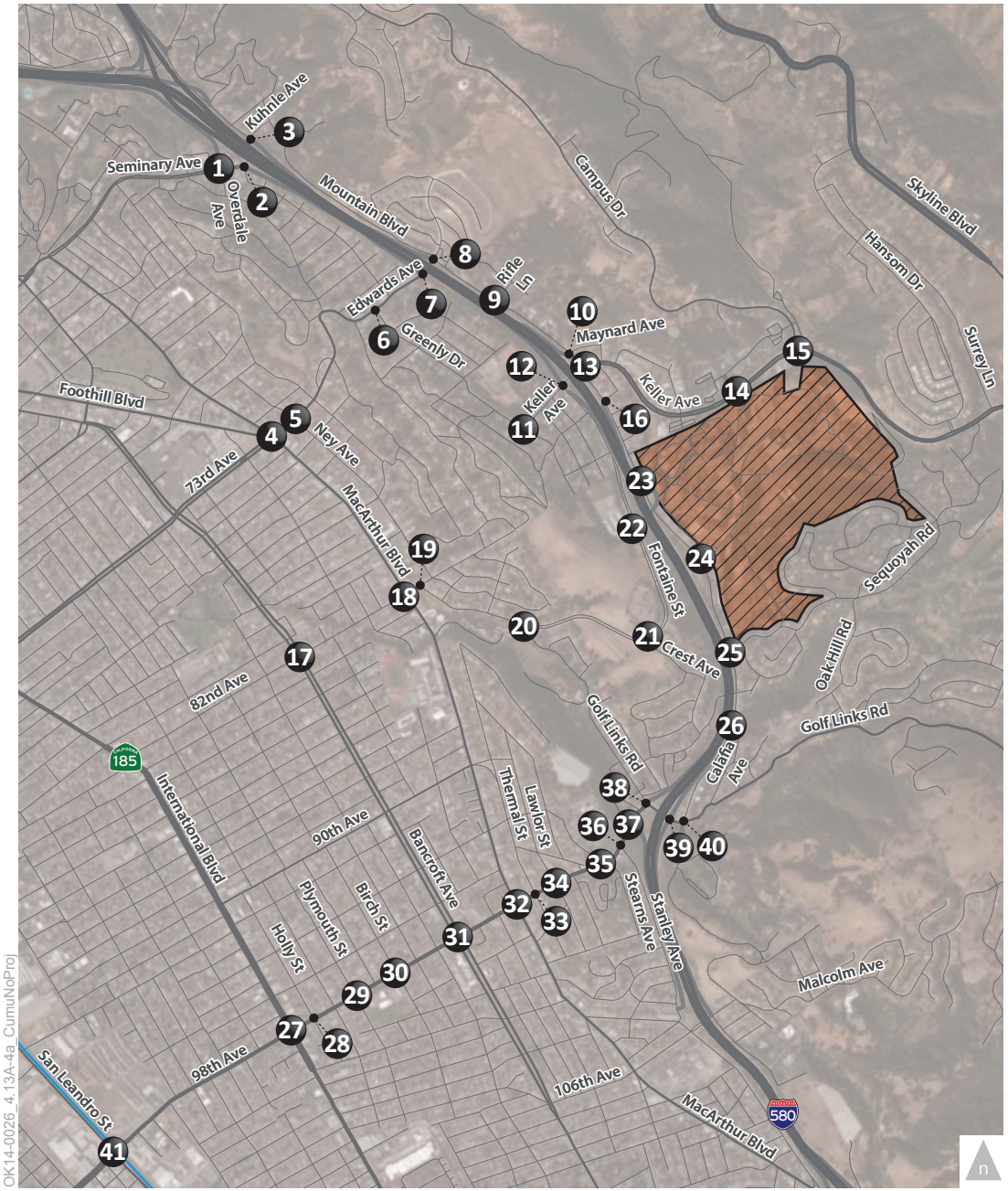
Project Site

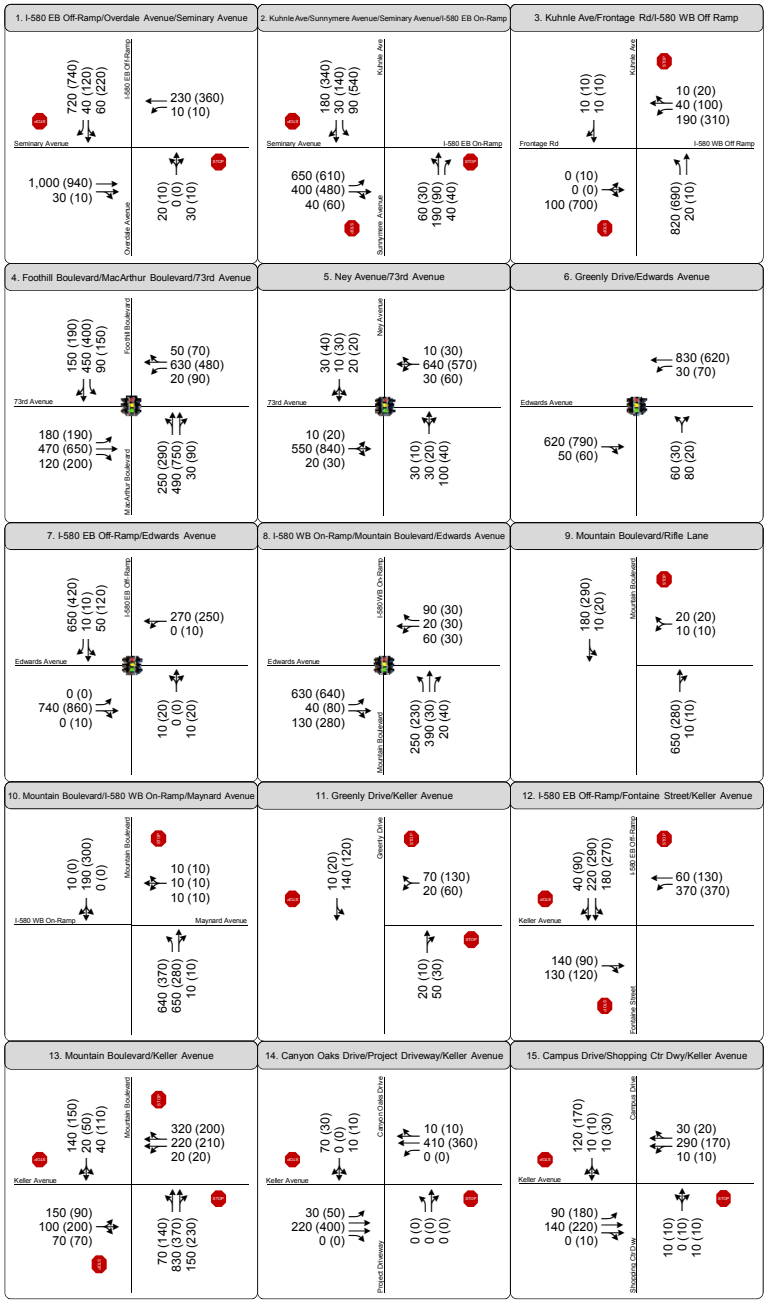
XX (YY) AM (PM) I-580 Mainline Volumes

XX (YY) AM (PM) I-580 Ramp Volumes

Figure 4.13A-3

Existing Mainline and Ramp Volumes





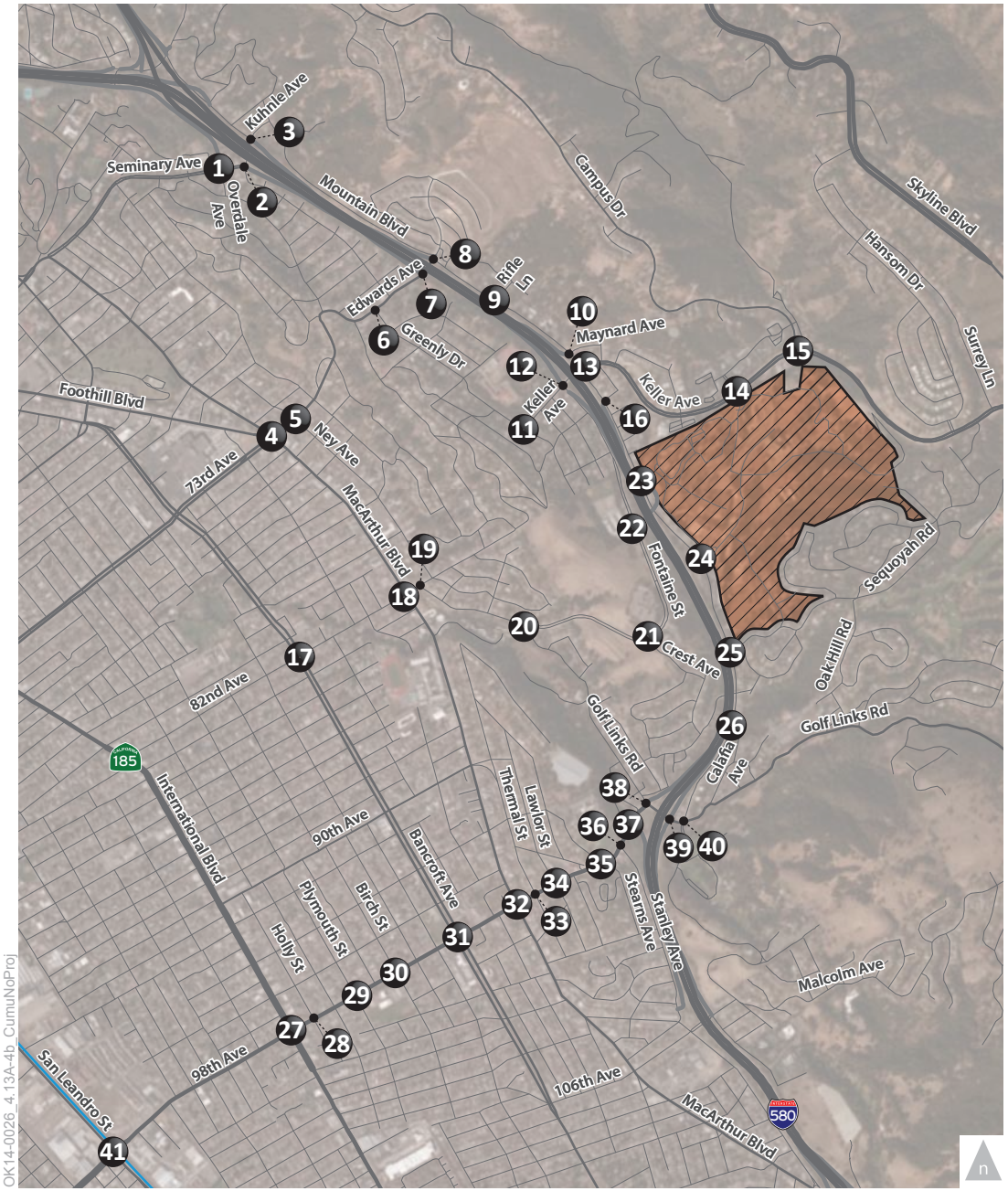
OK14-0026_4.13A-4a_CumuNoProj

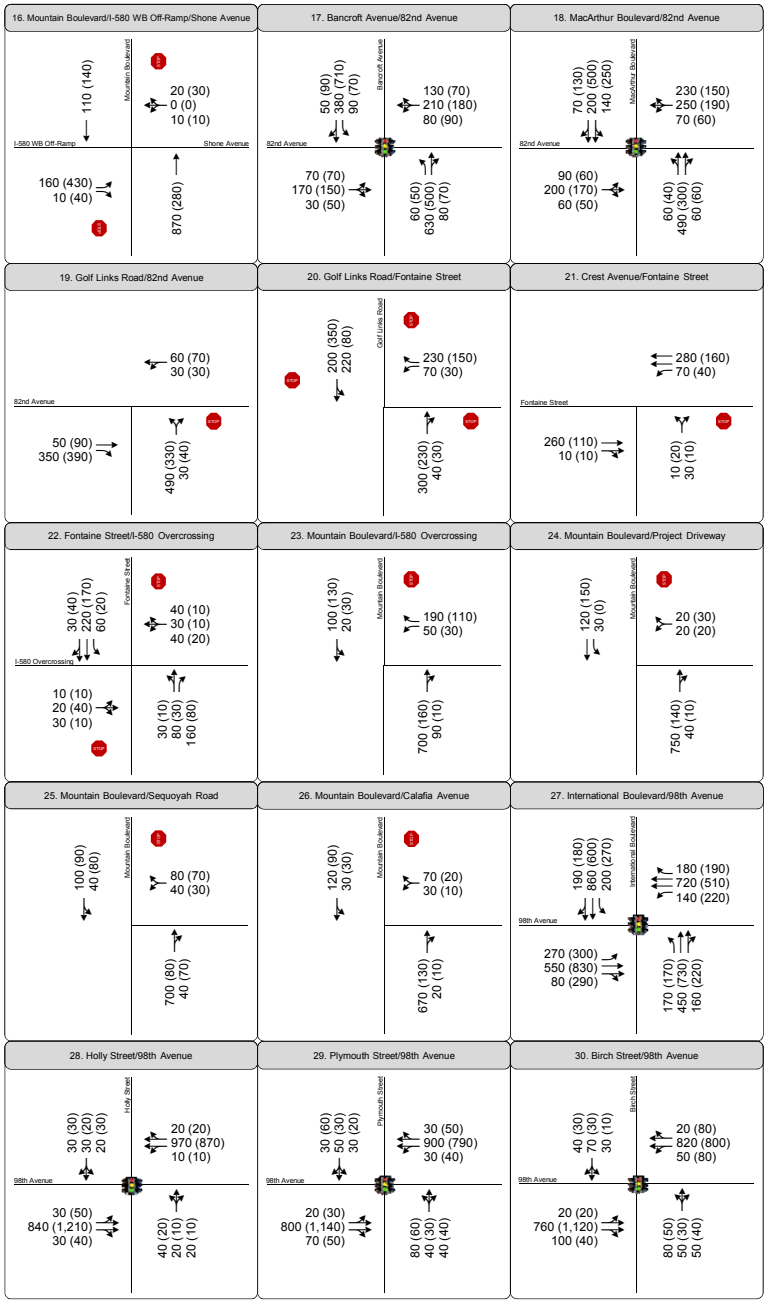
LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-4a

2040 No Project

Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls





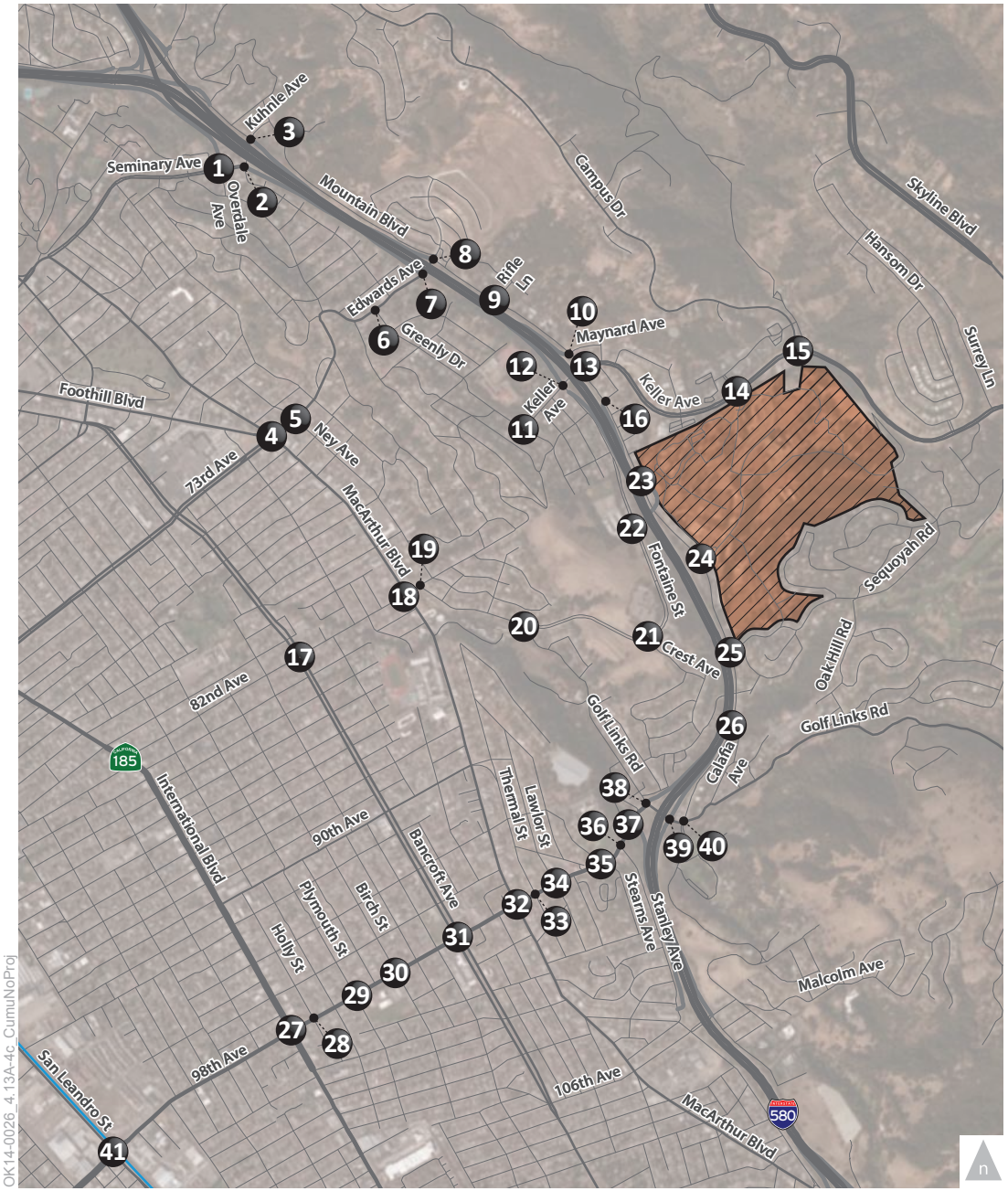
OK14-0026_4.13A-4b_CumuNoProj

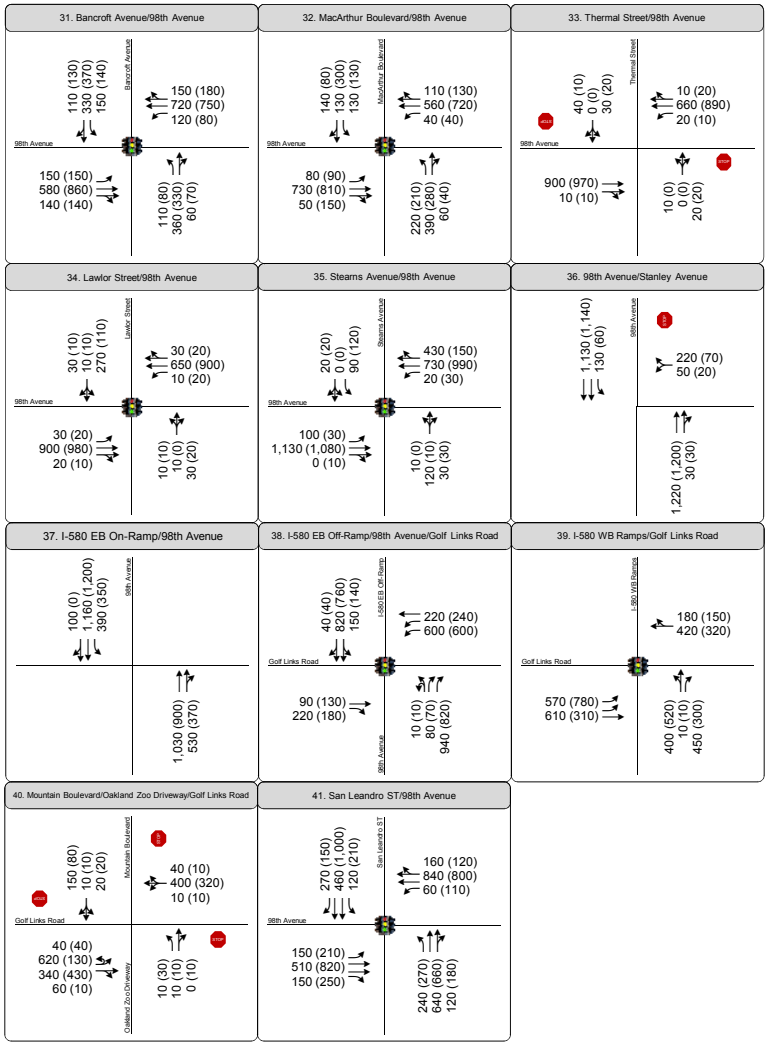
LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-4b

2040 No Project

Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls





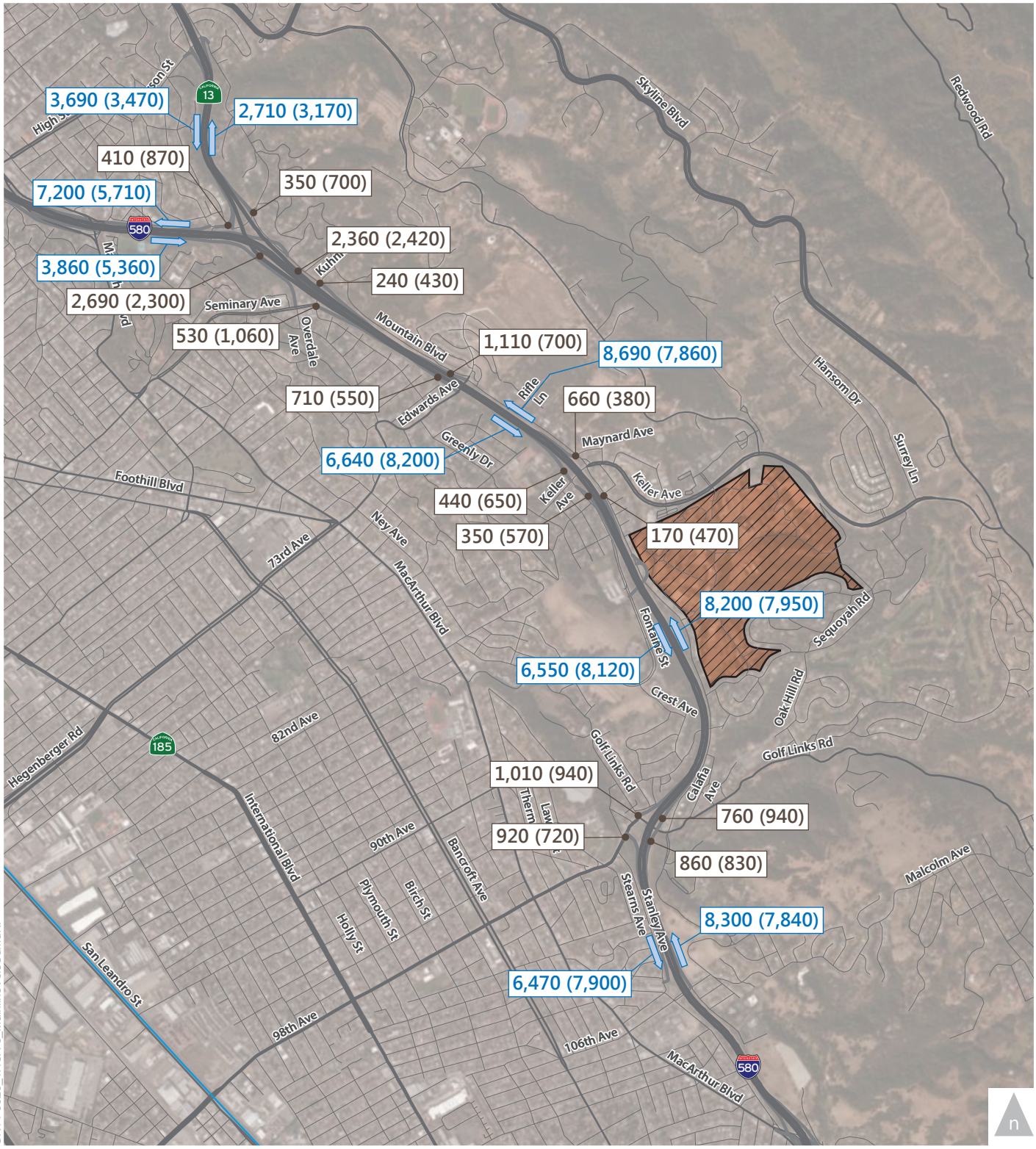
OK14-0026_4.13A-4c_CumuNoProj

LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-4c

2040 No Project

Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls



OK14-0026_4.13A-5_MainlineVolsCumuNP

LEGEND

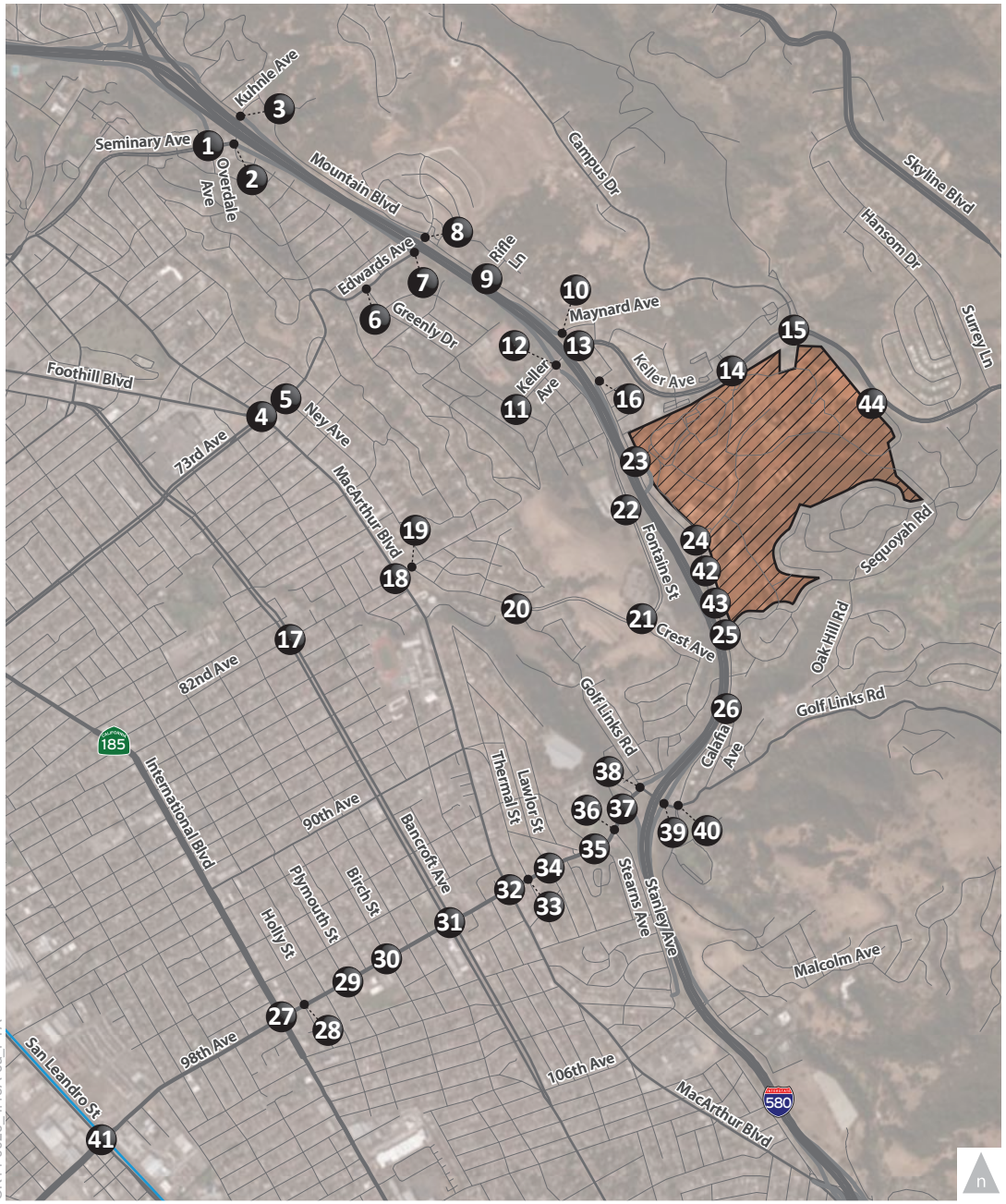
Project Site

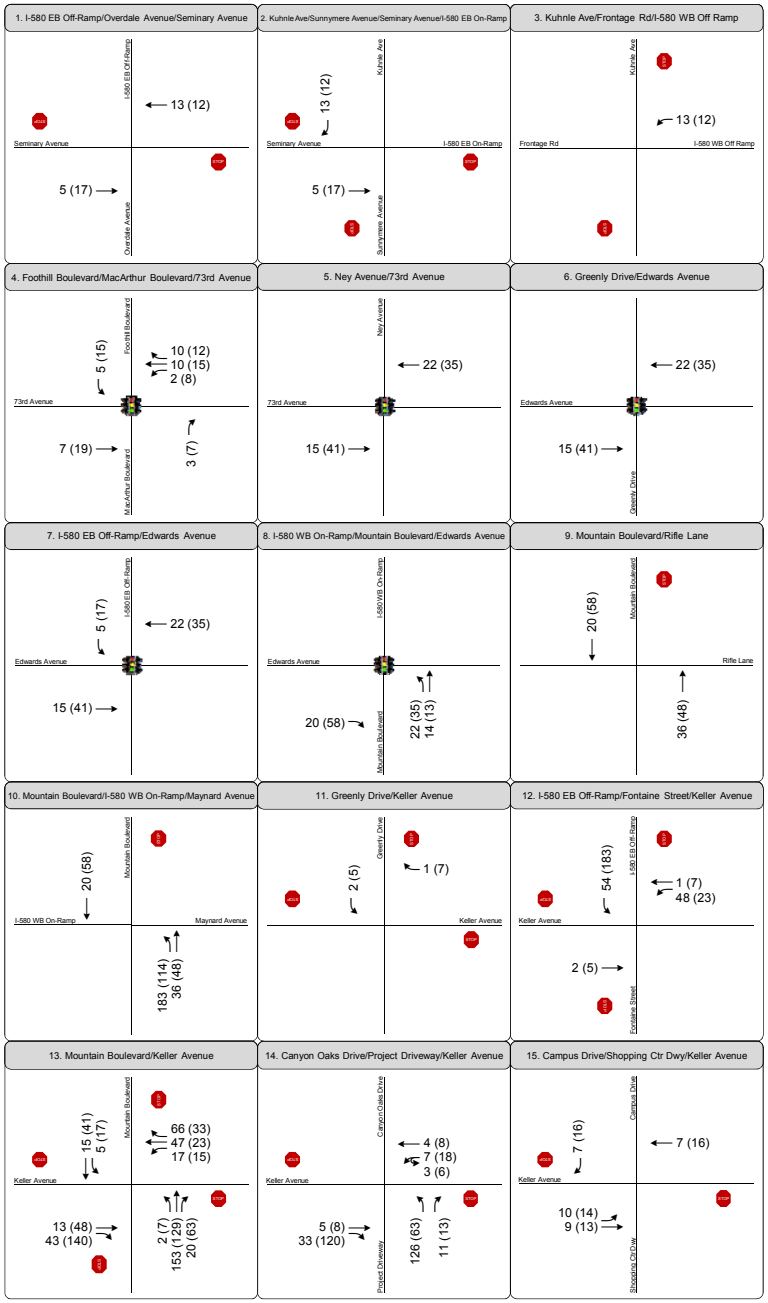
XX (YY) AM (PM) I-580 Mainline Volumes

XX (YY) AM (PM) I-580 Ramp Volumes

Figure 4.13A-5

2040 No Project Mainline and Ramp Volumes



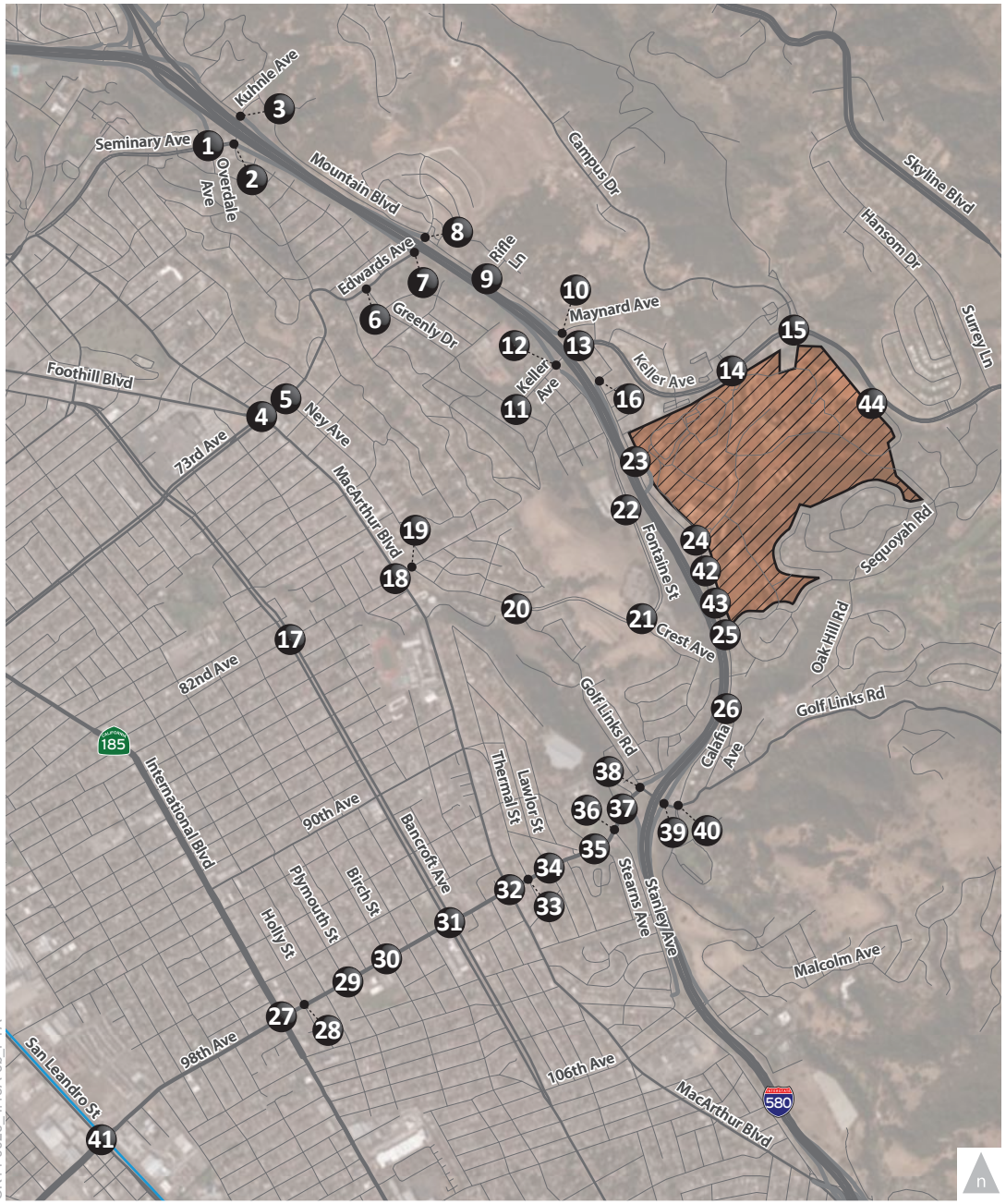


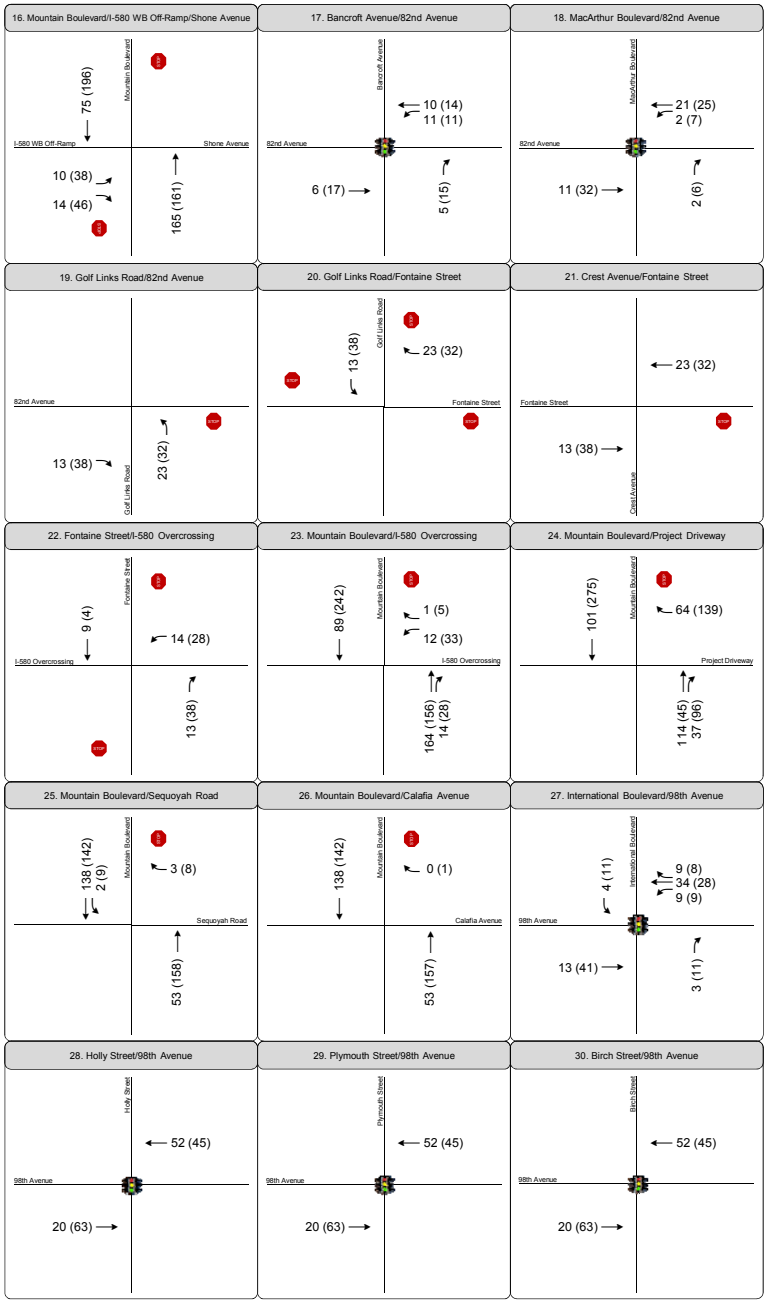
OK14-0026_4.13A-6a_PTA

LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes (#) Study Intersection Project Site

Figure 4.13A-6a

Intersection Peak Hour Project Trip Assignment



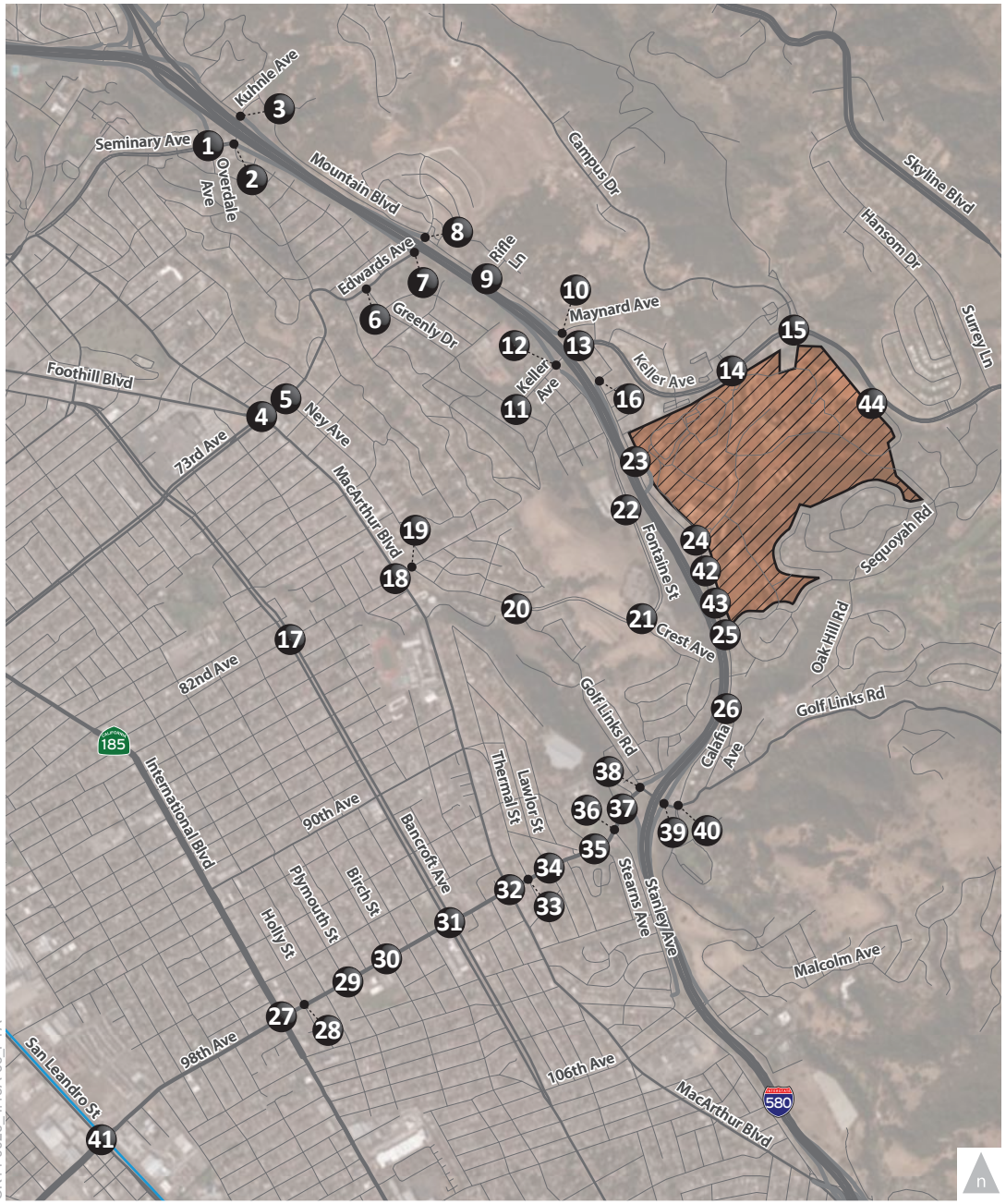


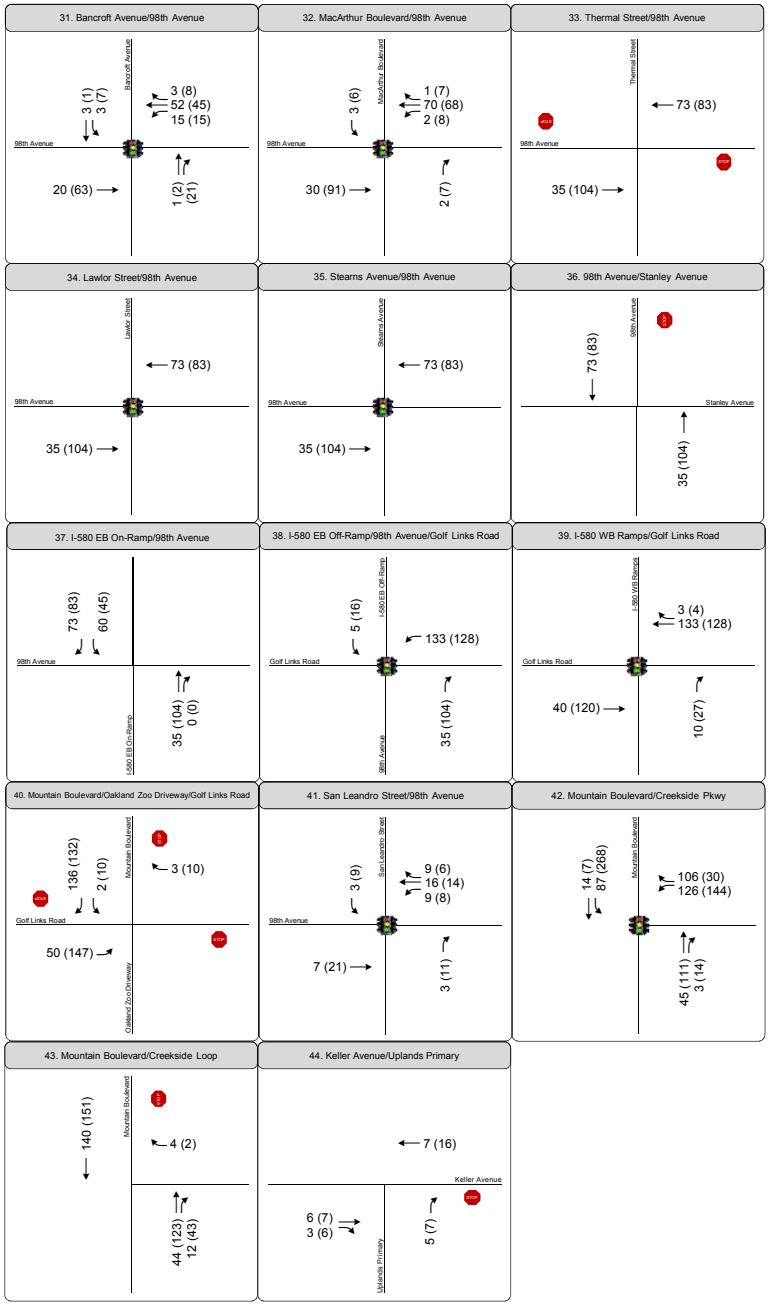
OK14-0026_4.13A-6b_PTA

LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes (#) Study Intersection Project Site

Figure 4.13A-6b

Intersection Peak Hour Project Trip Assignment



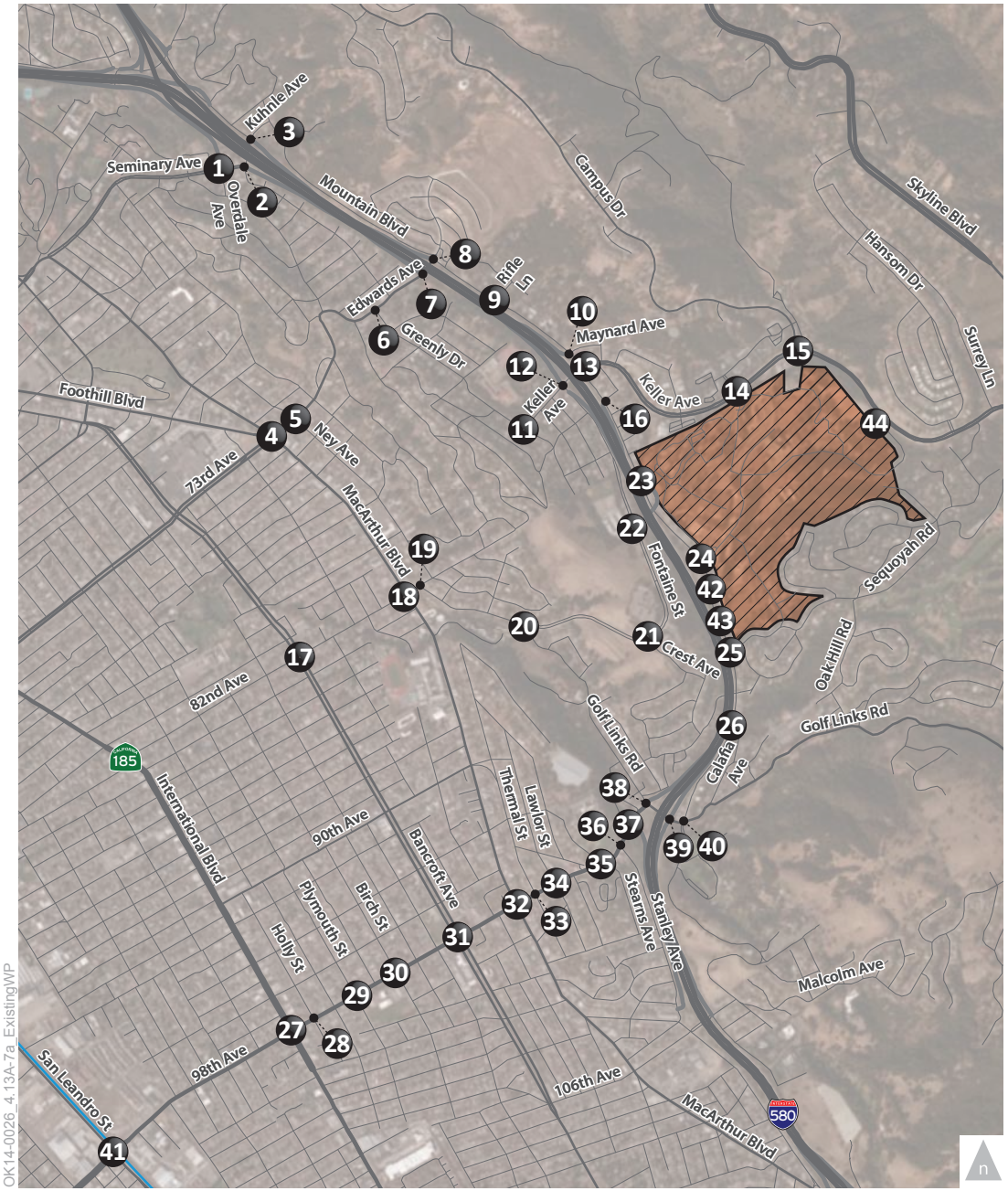


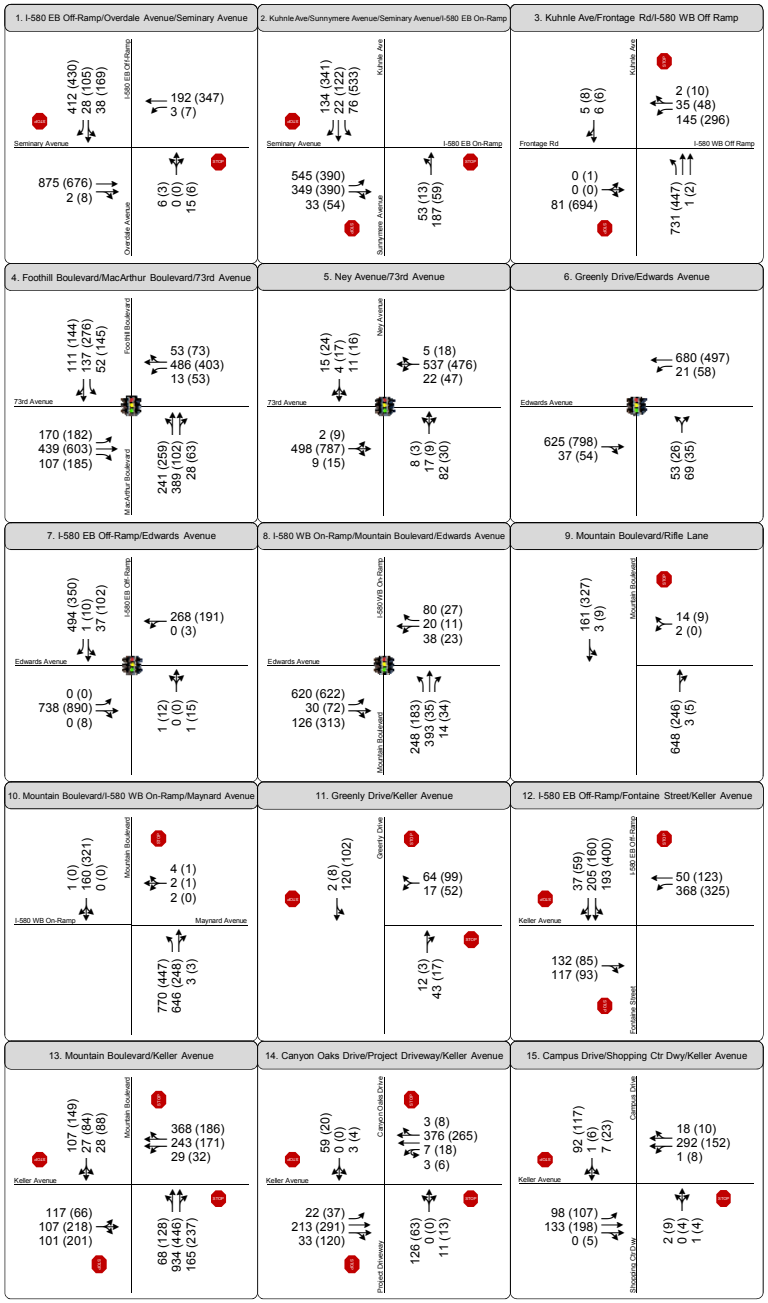
OK14-0026_4.13A-6c_PTA

LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes (#) Study Intersection Project Site

Figure 4.13A-6c

Intersection Peak Hour Project Trip Assignment





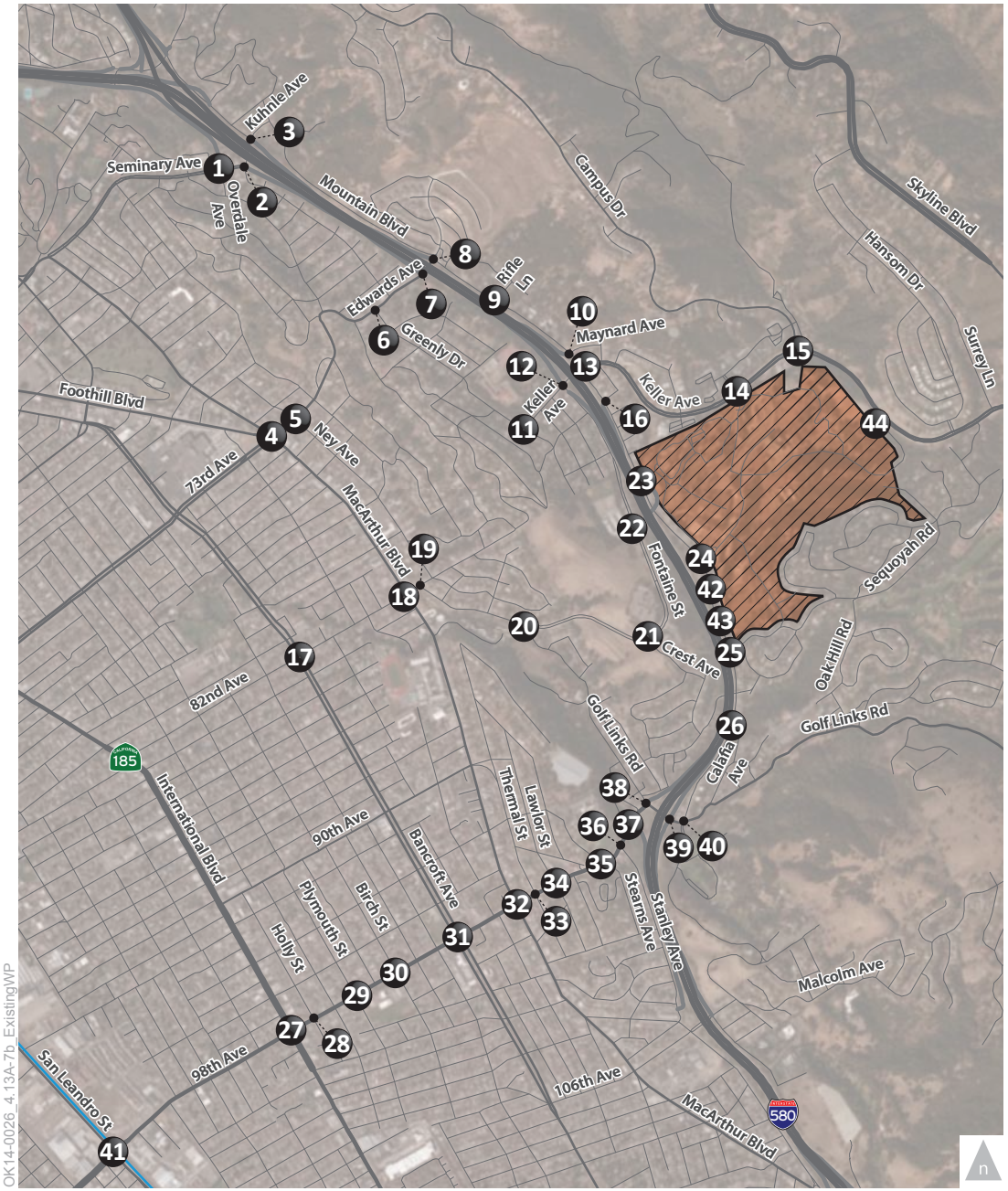
OK14-0026_4.13A-7a_ExistingWP

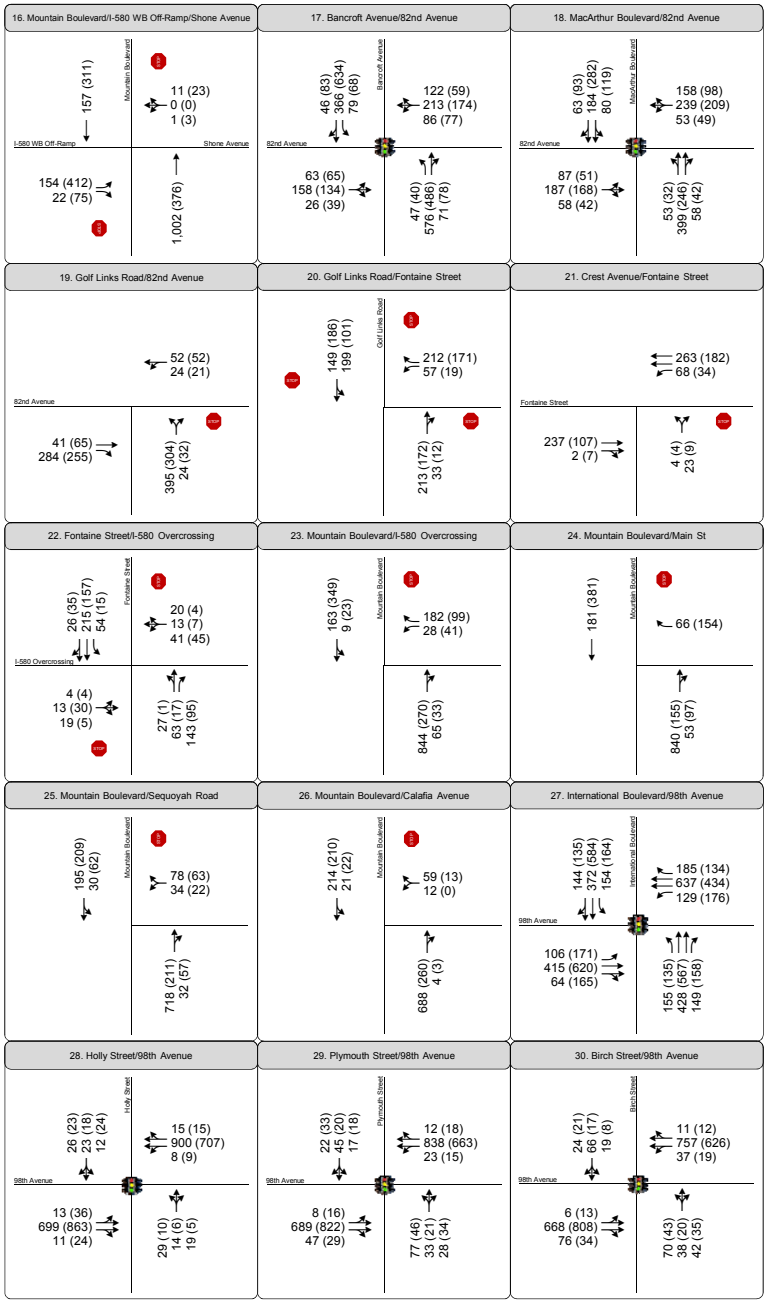
LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-7a

Existing Plus Project

Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls





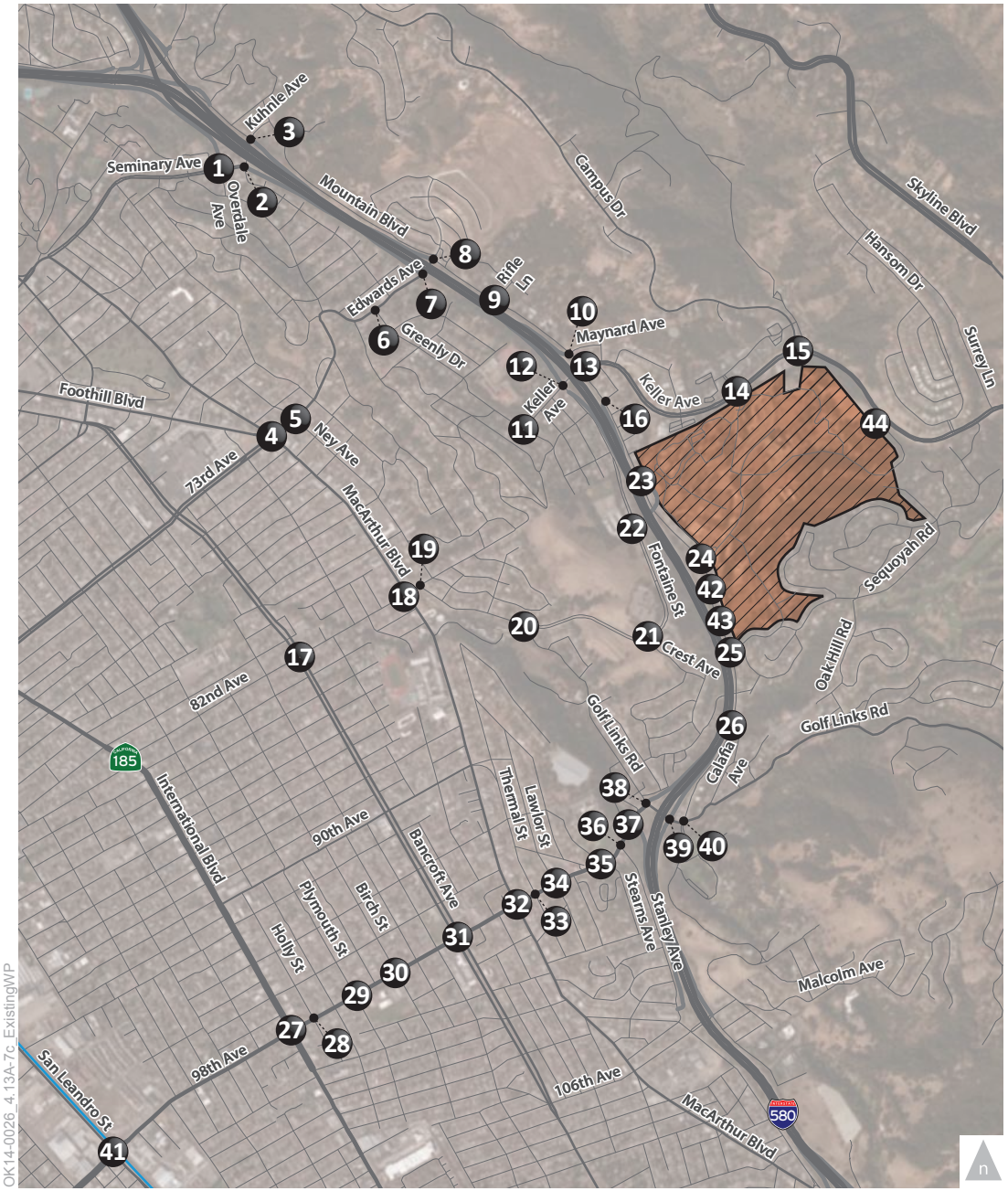
OK14-0026_4.13A-7b_ExistingWP

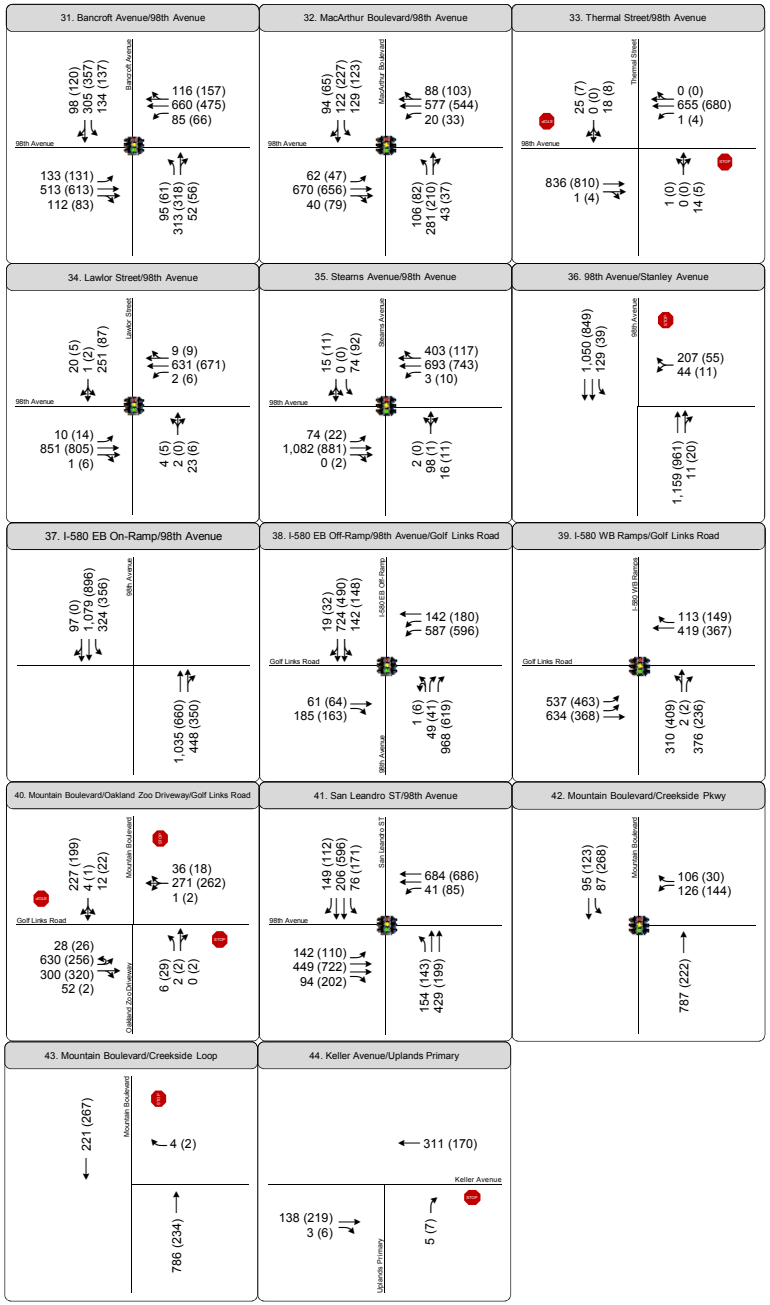
LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-7b

Existing Plus Project

Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls



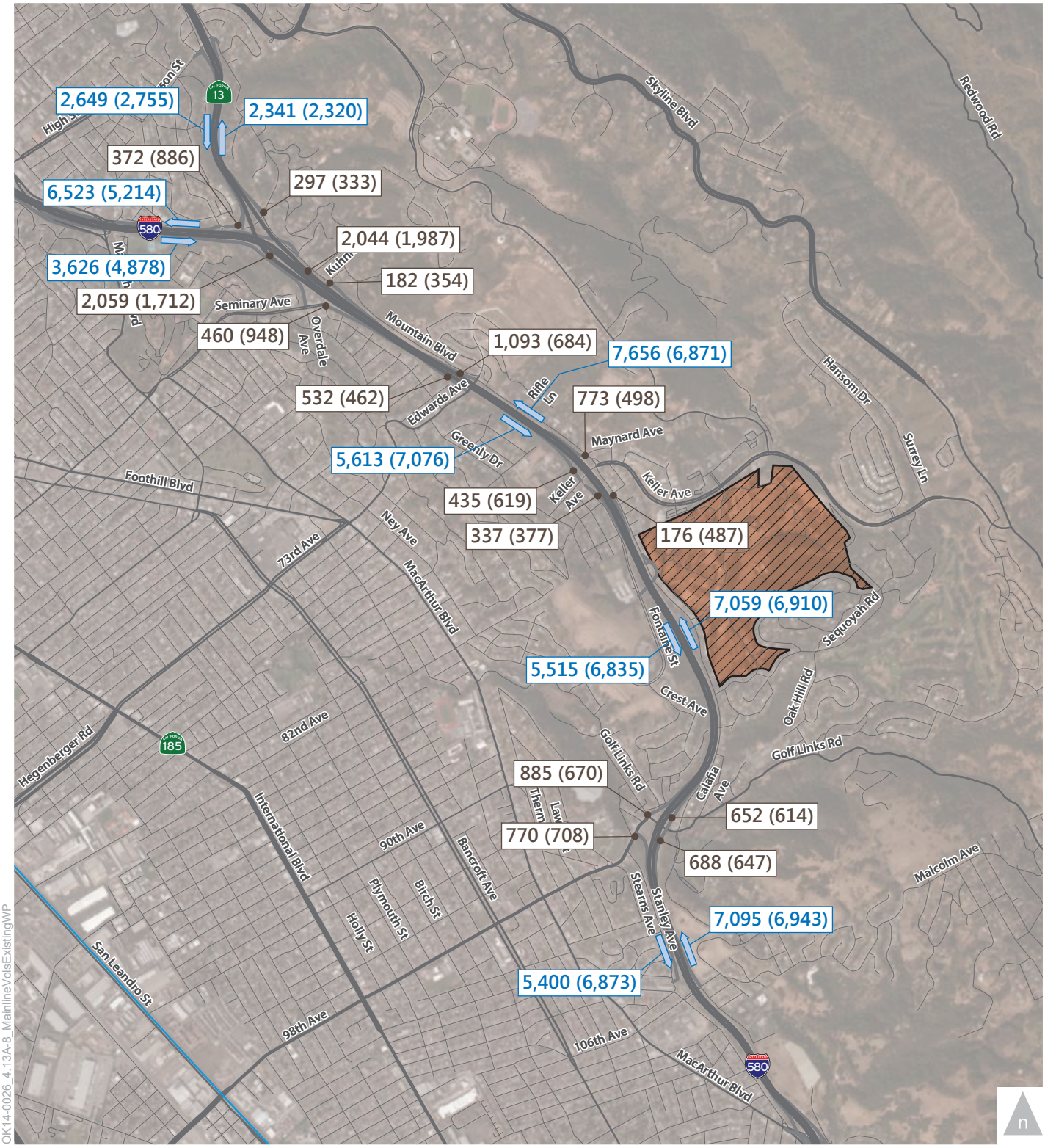


OK14-0026_4.13A-7c_ExistingWP

LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-7c

Existing Plus Project
Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls



OK14-0026_4.13A-8_MainlineVolsExistingWP

LEGEND

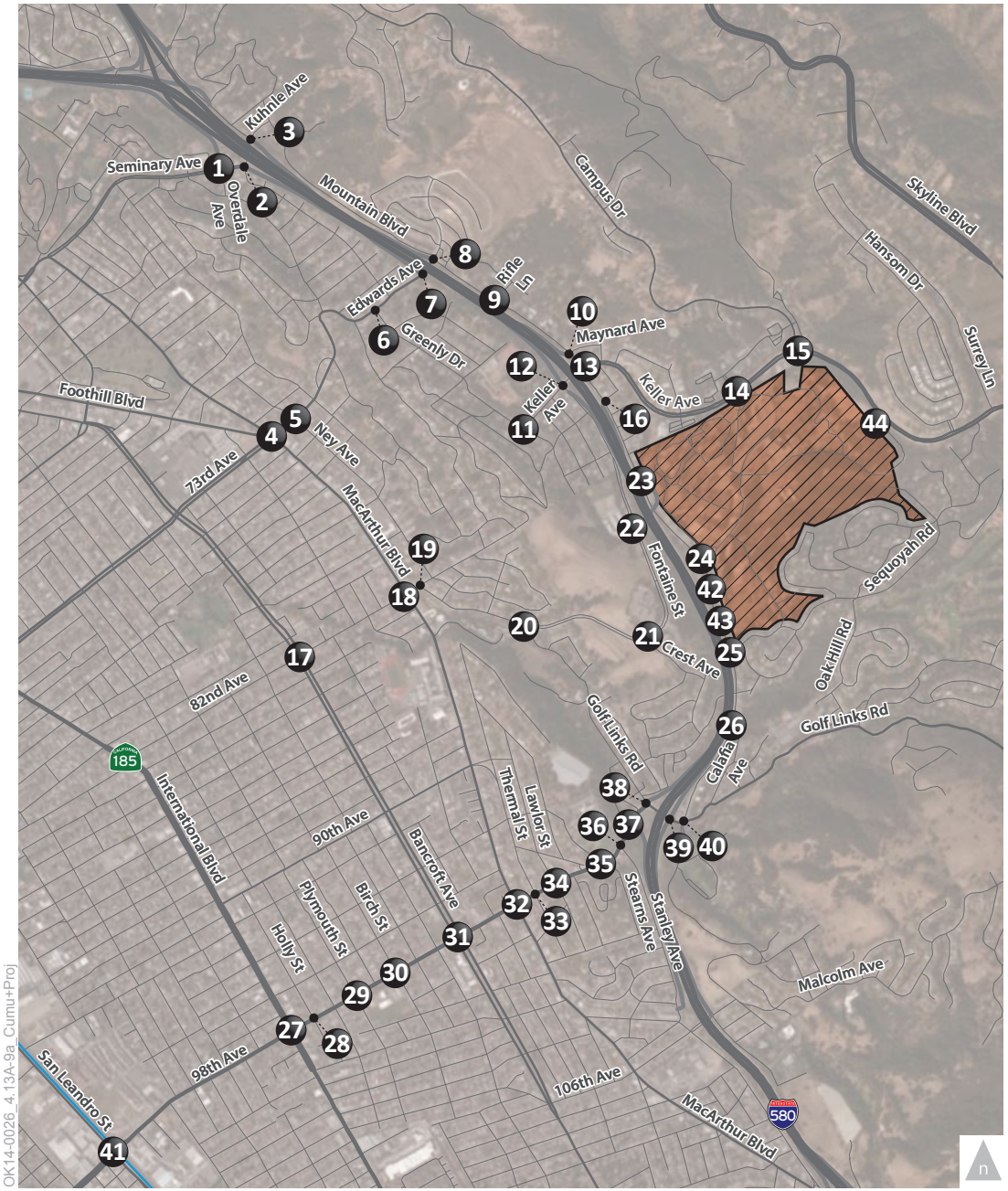
Project Site

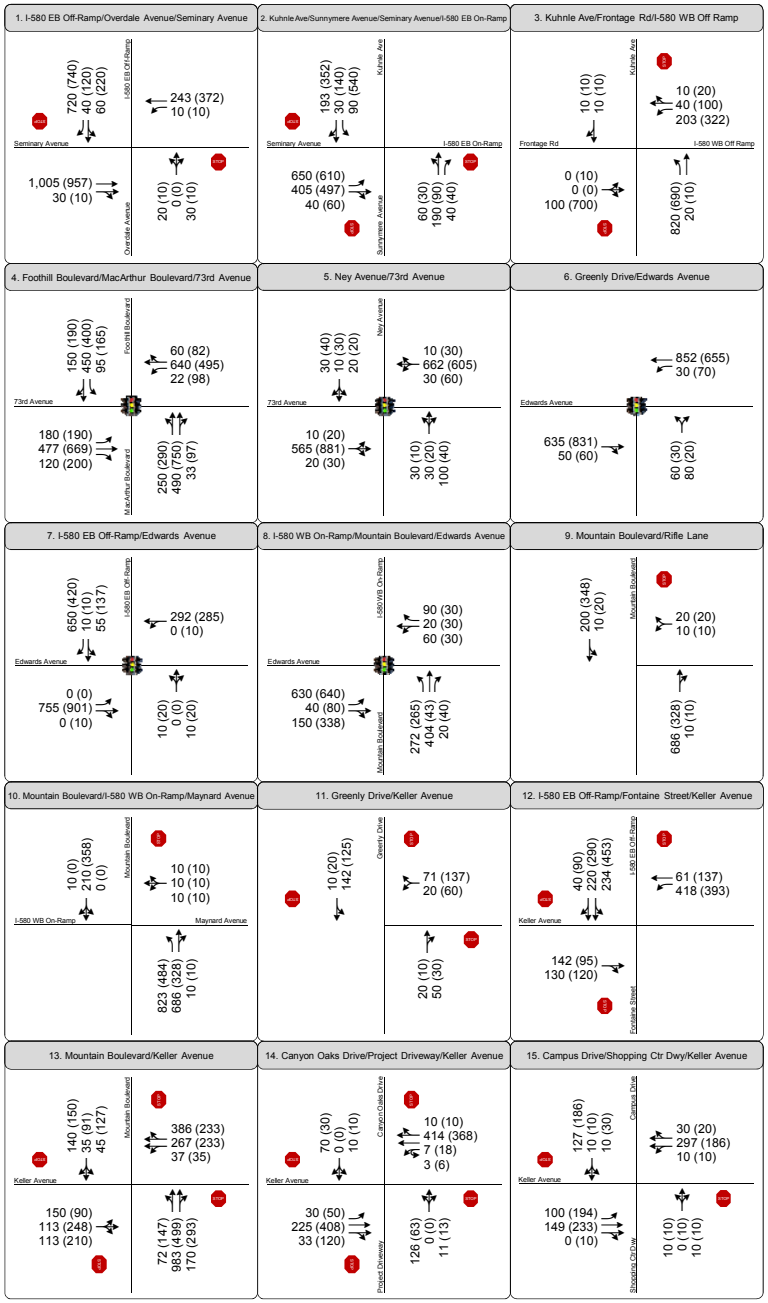
XX (YY) AM (PM) I-580 Mainline Volumes

XX (YY) AM (PM) I-580 Ramp Volumes

Figure 4.13A-8

Existing Plus Project Mainline and Ramp Volumes





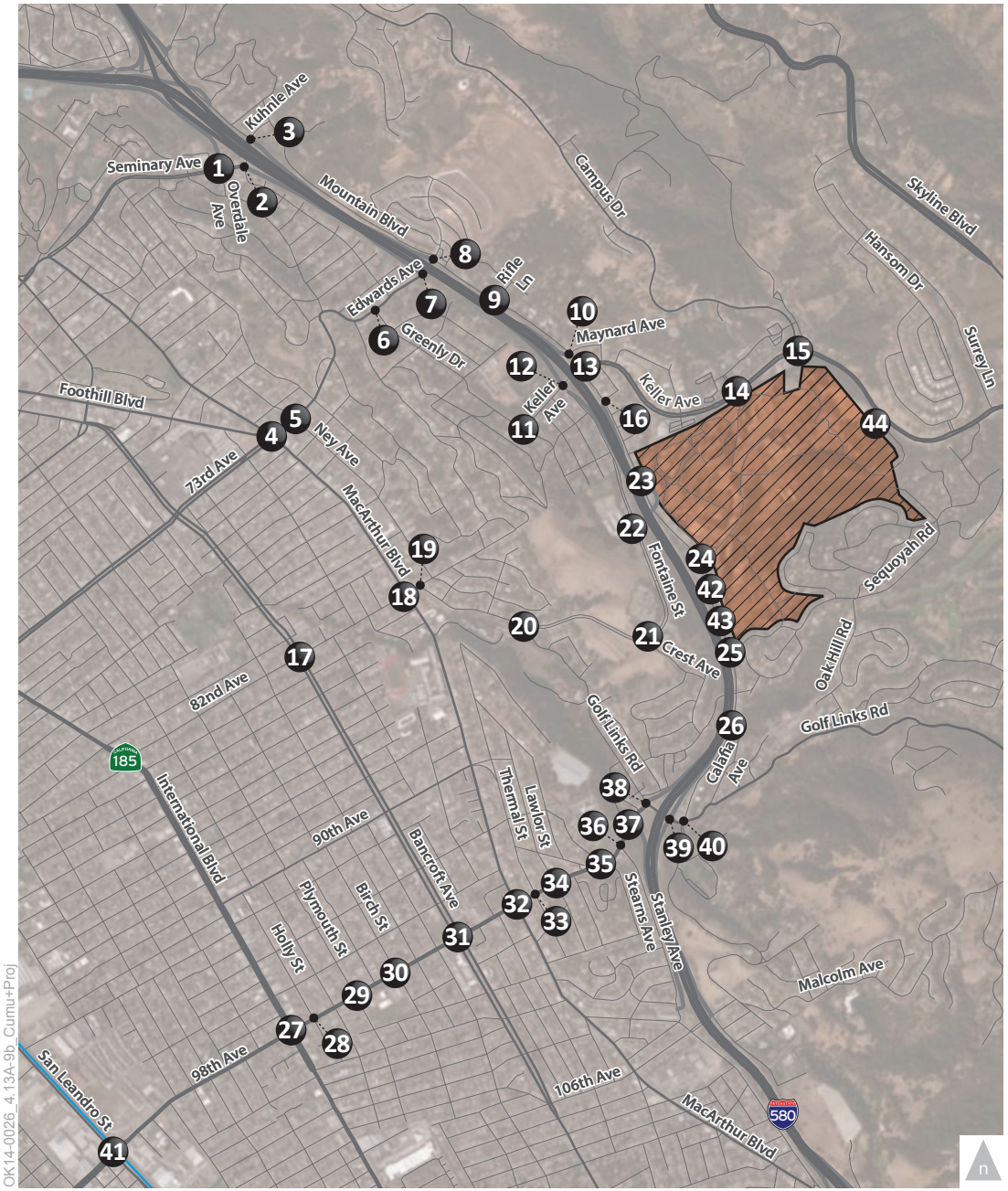
OK14-0026_4.13A-9a_Cumu+Proj

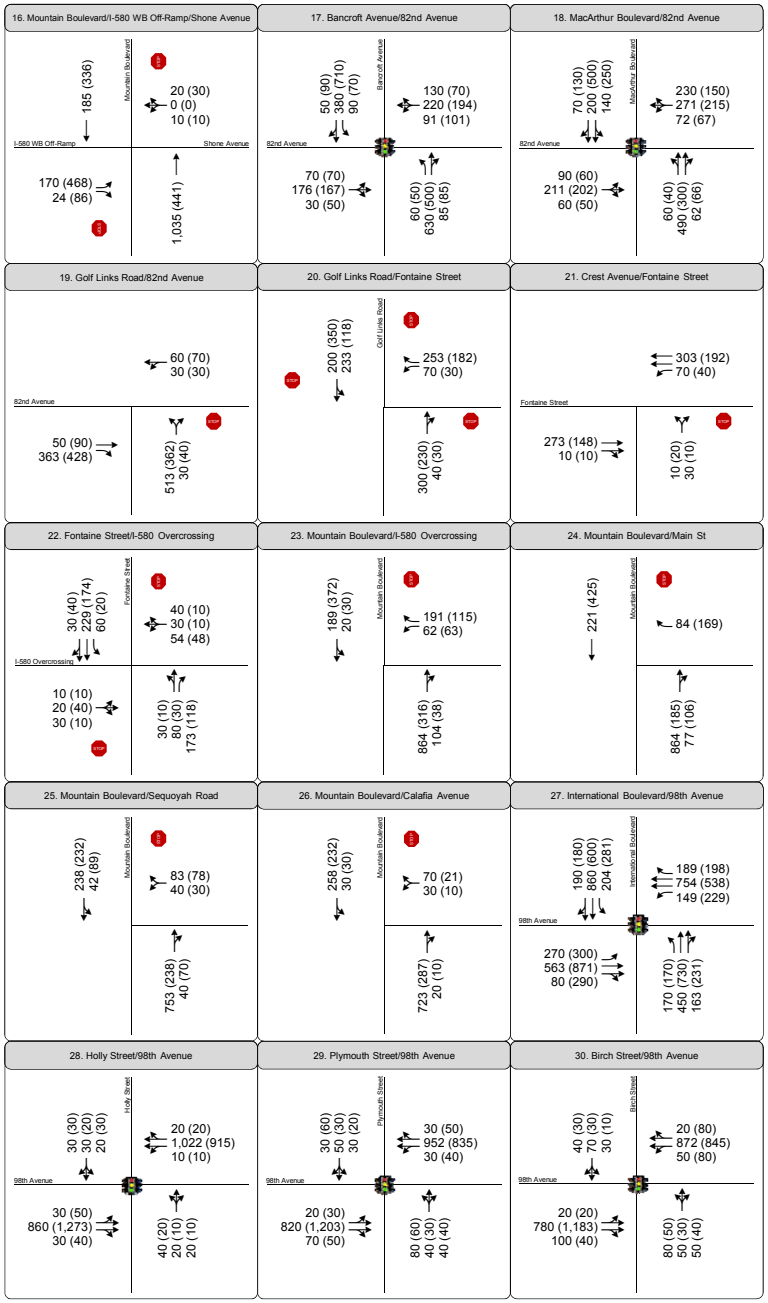
LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-9a

2040 Plus Project

Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls





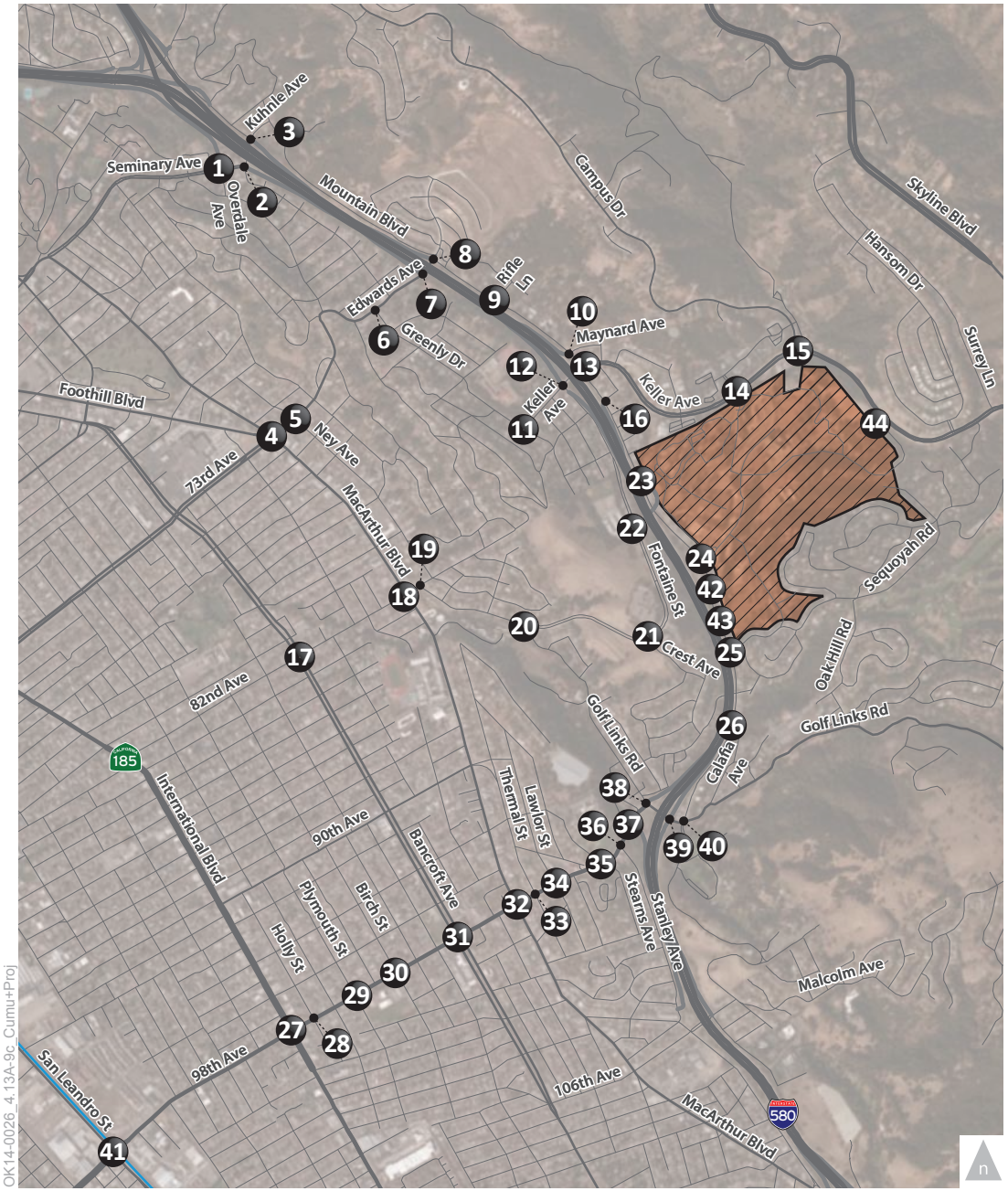
OK14-0026_4.13A-9b_Cumu+Proj

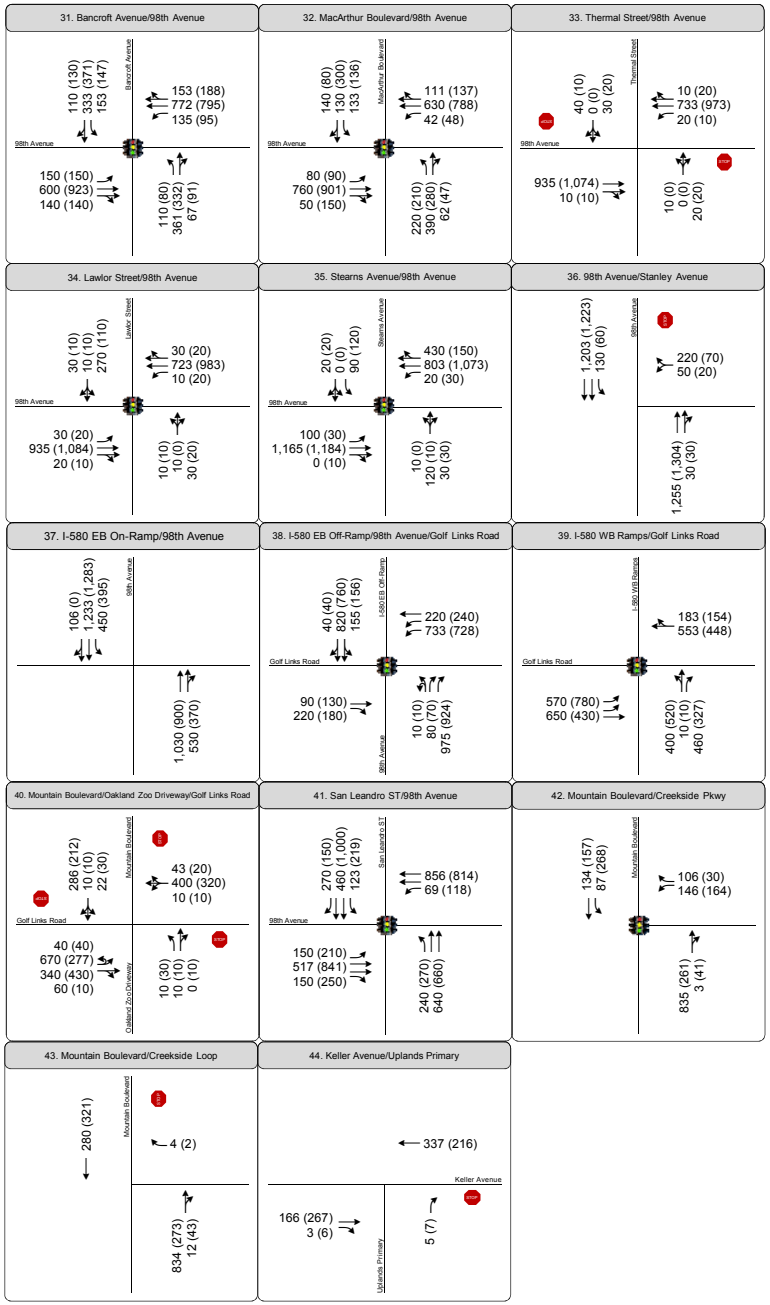
LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-9b

2040 Plus Project

Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls





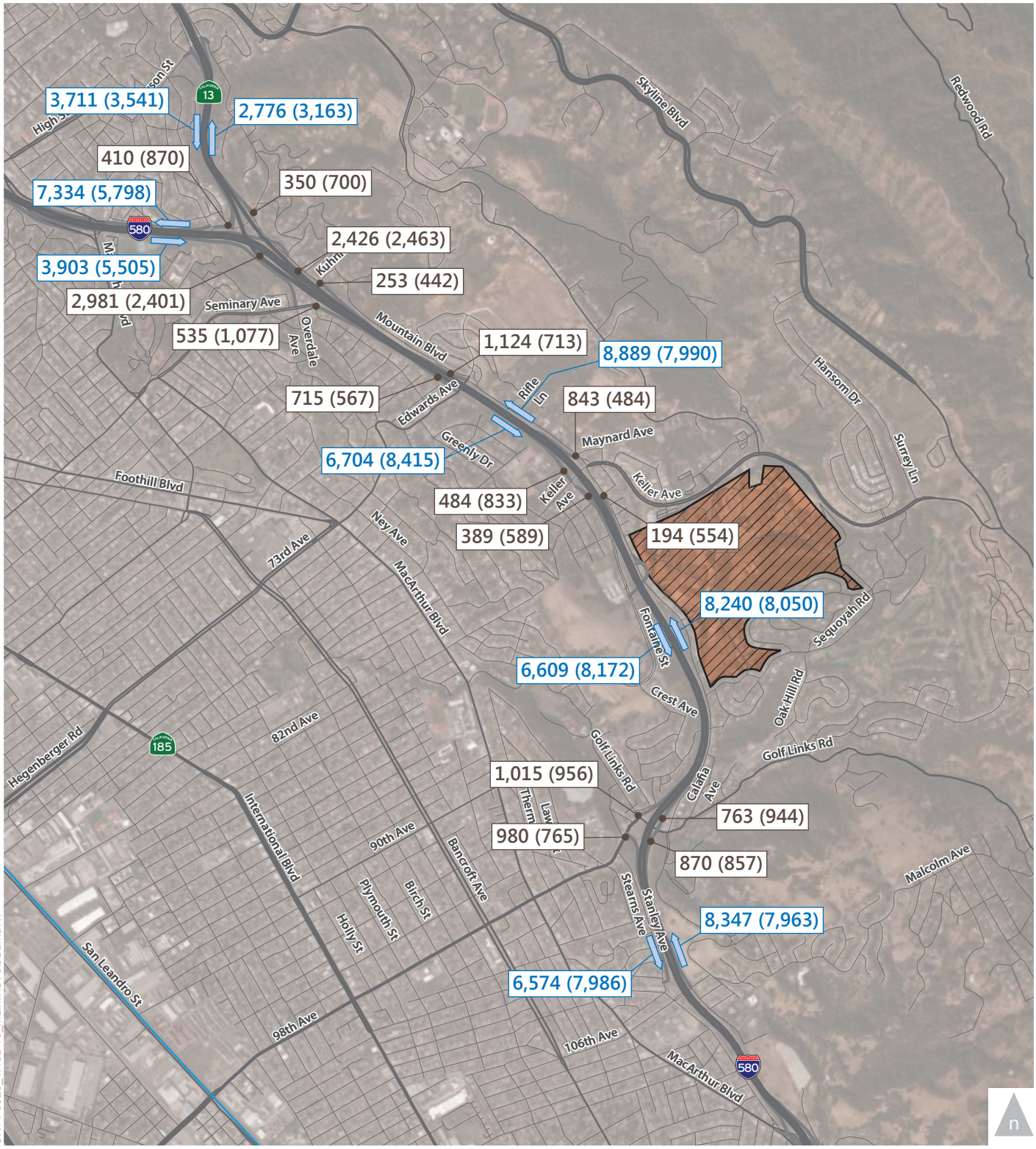
OK14-0026_4.13A-9c_Cumu+Proj

LEGEND XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign | # Study Intersection | Project Site

Figure 4.13A-9c

2040 Plus Project

Intersection Peak Hour Traffic Volumes, Lane Configurations and Traffic Controls



OK14-0026_4.13a-10_MainlineVolsCumuWP

LEGEND

Project Site

XX (YY) AM (PM) I-580 Mainline Volumes

XX (YY) AM (PM) I-580 Ramp Volumes

Figure 4.13A-10

2040 Plus Project Mainline and Ramp Volumes

APPENDIX V-C

EXISTING CONDITIONS ANALYSIS WORKSHEETS



Intersection Analysis Worksheets

FEHR PEERS

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	870	2	3	179	0	6	0	15	38	28	412
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	870	2	3	179	0	6	0	15	38	28	412

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	179	0	0	872	0	0	1070	1056	437	620	1057	180
Stage 1	-	-	-	-	-	-	871	871	-	185	185	-
Stage 2	-	-	-	-	-	-	199	185	-	435	872	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.218	-	-	2.22	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1397	-	-	769	-	-	187	225	568	386	224	862
Stage 1	-	-	-	-	-	-	313	368	-	816	746	-
Stage 2	-	-	-	-	-	-	802	746	-	571	367	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1396	-	-	768	-	-	88	224	568	374	223	861
Mov Cap-2 Maneuver	-	-	-	-	-	-	88	224	-	374	223	-
Stage 1	-	-	-	-	-	-	313	368	-	816	743	-
Stage 2	-	-	-	-	-	-	401	743	-	555	367	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	22.9	14.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	222	1396	-	-	768	-	-	291	861
HCM Lane V/C Ratio	0.095	-	-	-	0.004	-	-	0.227	0.479
HCM Control Delay (s)	22.9	0	-	-	9.7	-	-	21	13
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.9	2.6

Intersection	
Intersection Delay, s/veh	36.7
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	545	344	33	0	0	0	0	0	53	187	35
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	545	344	33	0	0	0	0	0	53	187	35
Number of Lanes	0	1	1	0	0	0	0	0	0	0	1	0

Approach	EB	NB
Opposing Approach		SB
Opposing Lanes	0	3
Conflicting Approach Left	SB	EB
Conflicting Lanes Left	3	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	47.5	20.6
HCM LOS	E	C

Lane	NBLn1	EBLn1	EBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	19%	100%	0%	100%	0%	0%
Vol Thru, %	68%	0%	91%	0%	100%	0%
Vol Right, %	13%	0%	9%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	275	545	377	76	22	121
LT Vol	53	545	0	76	0	0
Through Vol	187	0	344	0	22	0
RT Vol	35	0	33	0	0	121
Lane Flow Rate	275	545	377	76	22	121
Geometry Grp	8	8	8	7	7	7
Degree of Util (X)	0.584	1	0.669	0.167	0.045	0.225
Departure Headway (Hd)	7.639	6.957	6.391	7.904	7.405	6.706
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	473	523	566	455	485	537
Service Time	5.37	4.689	4.122	5.625	5.125	4.426
HCM Lane V/C Ratio	0.581	1.042	0.666	0.167	0.045	0.225
HCM Control Delay	20.6	65.8	21.1	12.2	10.5	11.4
HCM Lane LOS	C	F	C	B	B	B
HCM 95th-tile Q	3.7	13.9	5	0.6	0.1	0.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	76	22	121
Peak Hour Factor	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	76	22	121
Number of Lanes	0	1	1	1

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	
Conflicting Lanes Left	0
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	11.6
HCM LOS	B

Lane

Intersection	
Int Delay, s/veh	120

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	81	132	35	2	731	1	0	0	6	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	300	125	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	81	132	35	2	731	1	0	0	6	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1489	1472	9	1512	1474	1	11	0	0	1	0	0
Stage 1	9	9	-	1463	1463	-	-	-	-	-	-	-
Stage 2	1480	1463	-	49	11	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.218	-	-	2.22	-	-
Pot Cap-1 Maneuver	94	126	1072	~ 90	126	1083	1608	-	-	1620	-	-
Stage 1	1012	888	-	135	192	-	-	-	-	-	-	-
Stage 2	132	192	-	964	886	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	38	69	1072	~ 54	69	1083	1608	-	-	1620	-	-
Mov Cap-2 Maneuver	38	69	-	~ 54	69	-	-	-	-	-	-	-
Stage 1	552	888	-	~ 74	105	-	-	-	-	-	-	-
Stage 2	48	105	-	891	886	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	$ 661.4	9.1	0
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1608	-	-	1072	54	73	1620	-	-
HCM Lane V/C Ratio	0.455	-	-	0.076	2.444	0.507	-	-	-
HCM Control Delay (s)	9.1	-	-	8.6	$ 819.7	96.8	0	-	-
HCM Lane LOS	A	-	-	A	F	F	A	-	-
HCM 95th %tile Q(veh)	2.4	-	-	0.2	13.4	2.1	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	170	432	107	11	476	43	241	389	25	47	137	111
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	170	432	48	11	476	40	241	389	23	47	137	0
Adj No. of Lanes	1	1	1	1	1	0	0	2	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	933	773	18	676	57	267	464	28	198	208	0
Arrive On Green	0.11	0.50	0.50	0.01	0.40	0.40	0.22	0.21	0.21	0.11	0.11	0.00
Sat Flow, veh/h	1774	1863	1543	1774	1692	142	1279	2220	134	1774	1863	0
Grp Volume(v), veh/h	170	432	48	11	0	516	339	0	314	47	137	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1543	1774	0	1835	1799	0	1834	1774	1863	0
Q Serve(g_s), s	10.9	17.5	1.9	0.7	0.0	27.3	21.3	0.0	19.0	2.8	8.2	0.0
Cycle Q Clear(g_c), s	10.9	17.5	1.9	0.7	0.0	27.3	21.3	0.0	19.0	2.8	8.2	0.0
Prop In Lane	1.00		1.00	1.00		0.08	0.71		0.07	1.00		0.00
Lane Grp Cap(c), veh/h	199	933	773	18	0	732	376	0	383	198	208	0
V/C Ratio(X)	0.85	0.46	0.06	0.60	0.00	0.70	0.90	0.00	0.82	0.24	0.66	0.00
Avail Cap(c_a), veh/h	275	933	773	275	0	732	457	0	466	291	305	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.89	0.00	0.89	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.6	18.8	14.9	57.2	0.0	29.1	44.4	0.0	43.8	47.0	49.4	0.0
Incr Delay (d2), s/veh	13.1	1.7	0.2	10.1	0.0	5.0	16.8	0.0	7.8	0.2	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	9.4	0.8	0.4	0.0	14.8	12.3	0.0	10.4	1.4	4.3	0.0
LnGrp Delay(d),s/veh	63.7	20.4	15.1	67.3	0.0	34.2	61.2	0.0	51.6	47.2	50.7	0.0
LnGrp LOS	E	C	B	E		C	E		D	D	D	
Approach Vol, veh/h		650			527			653			184	
Approach Delay, s/veh		31.4			34.9			56.6			49.8	
Approach LOS		C			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	63.6		18.0	17.0	51.8		29.2
Change Period (Y+Rc), s	4.0	5.5		5.0	4.0	5.5		5.0
Max Green Setting (Gmax), s	18.0	30.0		19.0	18.0	30.0		29.5
Max Q Clear Time (g_c+I1), s	2.7	19.5		10.2	12.9	29.3		23.3
Green Ext Time (p_c), s	0.0	2.1		0.2	0.1	0.3		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	42.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	483	9	22	515	5	8	17	82	11	4	15
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	0.98		0.99	0.98		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	2	483	8	22	515	5	8	17	13	11	4	2
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	877	14	230	853	8	280	68	52	427	33	16
Arrive On Green	0.54	0.48	0.48	0.54	0.48	0.48	0.15	0.09	0.09	0.15	0.09	0.09
Sat Flow, veh/h	3	1821	30	35	1770	17	347	737	563	976	355	177
Grp Volume(v), veh/h	493	0	0	542	0	0	38	0	0	17	0	0
Grp Sat Flow(s),veh/h/ln	1854	0	0	1822	0	0	1647	0	0	1508	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.2	0.0	0.0	3.6	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0
Prop In Lane	0.00		0.02	0.04		0.01	0.21		0.34	0.65		0.12
Lane Grp Cap(c), veh/h	1204	0	0	1194	0	0	493	0	0	561	0	0
V/C Ratio(X)	0.41	0.00	0.00	0.45	0.00	0.00	0.08	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	6092	0	0	5908	0	0	2202	0	0	2092	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.2	0.0	0.0	3.3	0.0	0.0	7.3	0.0	0.0	7.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	1.6	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0
LnGrp Delay(d),s/veh	3.3	0.0	0.0	3.4	0.0	0.0	7.3	0.0	0.0	7.0	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h		493			542			38			17	
Approach Delay, s/veh		3.3			3.4			7.3			7.0	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		13.0		4.6		13.0		4.6
Change Period (Y+Rc), s		4.5		3.0		4.5		3.0
Max Green Setting (Gmax), s		55.0		20.0		55.0		20.0
Max Q Clear Time (g_c+I1), s		5.2		2.1		5.6		2.4
Green Ext Time (p_c), s		2.8		0.1		2.8		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	3.5
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	610	37	21	658	53	69
Number	6	16	5	2	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1900
Adj Flow Rate, veh/h	610	35	21	658	53	20
Adj No. of Lanes	1	0	1	1	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	836	48	450	1198	102	39
Arrive On Green	0.48	0.48	0.03	0.64	0.08	0.08
Sat Flow, veh/h	1745	100	1774	1863	1227	463
Grp Volume(v), veh/h	0	645	21	658	74	0
Grp Sat Flow(s),veh/h/ln	0	1845	1774	1863	1713	0
Q Serve(g_s), s	0.0	8.2	0.1	5.7	1.2	0.0
Cycle Q Clear(g_c), s	0.0	8.2	0.1	5.7	1.2	0.0
Prop In Lane		0.05	1.00		0.72	0.27
Lane Grp Cap(c), veh/h	0	884	450	1198	143	0
V/C Ratio(X)	0.00	0.73	0.05	0.55	0.52	0.00
Avail Cap(c_a), veh/h	0	4167	767	4845	938	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.1	4.5	2.9	12.8	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.1	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.0	0.1	2.8	0.6	0.0
LnGrp Delay(d),s/veh	0.0	6.5	4.5	3.0	13.9	0.0
LnGrp LOS		A	A	A	B	
Approach Vol, veh/h	645			679	74	
Approach Delay, s/veh	6.5			3.1	13.9	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		22.8		6.4	4.8	18.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		76.0		16.0	6.0	66.0		
Max Q Clear Time (g_c+I1), s		7.7		3.2	2.1	10.2		
Green Ext Time (p_c), s		3.8		0.1	0.0	3.8		

Intersection Summary	
HCM 2010 Ctrl Delay	5.2
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	723	0	0	246	0	1	0	1	32	1	494
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	0	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	0	723	0	0	246	0	1	0	0	32	1	103
Adj No. of Lanes	1	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	5	1036	0	0	1036	0	5	0	0	276	9	112
Arrive On Green	0.00	0.56	0.00	0.00	0.56	0.00	0.00	0.00	0.00	0.13	0.16	0.16
Sat Flow, veh/h	1774	1863	0	0	1863	0	1774	0	0	1723	54	1578
Grp Volume(v), veh/h	0	723	0	0	246	0	1	0	0	33	0	103
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1863	0	1774	0	0	1777	0	1578
Q Serve(g_s), s	0.0	9.5	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.6	0.0	5.2
Cycle Q Clear(g_c), s	0.0	9.5	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.6	0.0	5.2
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00	0.97		1.00
Lane Grp Cap(c), veh/h	5	1036	0	0	1036	0	5	0	0	285	0	112
V/C Ratio(X)	0.00	0.70	0.00	0.00	0.24	0.00	0.19	0.00	0.00	0.12	0.00	0.92
Avail Cap(c_a), veh/h	736	1821	0	0	1932	0	631	0	0	1000	0	748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.4	0.0	0.0	3.8	0.0	16.8	0.0	0.0	12.5	0.0	60.3
Incr Delay (d2), s/veh	0.0	1.2	0.0	0.0	0.2	0.0	6.3	0.0	0.0	0.1	0.0	11.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.3	0.0	3.4
LnGrp Delay(d),s/veh	0.0	6.7	0.0	0.0	4.0	0.0	23.1	0.0	0.0	12.6	0.0	71.3
LnGrp LOS		A			A		C			B		E
Approach Vol, veh/h		723			246			1			136	
Approach Delay, s/veh		6.7			4.0			23.1			57.1	
Approach LOS		A			A			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		22.3		8.4	0.0	22.3		3.1
Change Period (Y+Rc), s		3.5		3.0	3.0	3.5		3.0
Max Green Setting (Gmax), s		33.0		19.0	14.0	35.0		12.0
Max Q Clear Time (g_c+I1), s		11.5		7.2	0.0	4.3		2.0
Green Ext Time (p_c), s		7.3		0.2	0.0	8.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	620	30	106	38	20	80	226	379	14	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863			
Adj Flow Rate, veh/h	620	30	65	38	20	11	226	379	4			
Adj No. of Lanes	1	1	0	0	1	1	1	1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Cap, veh/h	725	312	676	225	94	221	441	463	394			
Arrive On Green	0.41	0.60	0.60	0.15	0.14	0.14	0.25	0.25	0.25			
Sat Flow, veh/h	1774	516	1118	823	670	1567	1774	1863	1583			
Grp Volume(v), veh/h	620	0	95	58	0	11	226	379	4			
Grp Sat Flow(s),veh/h/ln	1774	0	1634	1492	0	1567	1774	1863	1583			
Q Serve(g_s), s	17.3	0.0	1.3	0.6	0.0	0.3	6.0	10.5	0.1			
Cycle Q Clear(g_c), s	17.3	0.0	1.3	1.6	0.0	0.3	6.0	10.5	0.1			
Prop In Lane	1.00		0.68	0.66		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	725	0	988	333	0	221	441	463	394			
V/C Ratio(X)	0.85	0.00	0.10	0.17	0.00	0.05	0.51	0.82	0.01			
Avail Cap(c_a), veh/h	1269	0	988	605	0	517	748	786	668			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	14.6	0.0	4.5	20.6	0.0	20.3	17.6	19.3	15.4			
Incr Delay (d2), s/veh	3.0	0.0	0.1	0.1	0.0	0.0	0.3	1.4	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	9.0	0.0	0.6	0.8	0.0	0.1	2.9	5.5	0.1			
LnGrp Delay(d),s/veh	17.7	0.0	4.6	20.7	0.0	20.3	18.0	20.7	15.4			
LnGrp LOS	B		A	C		C	B	C	B			
Approach Vol, veh/h		715			69			609				
Approach Delay, s/veh		15.9			20.7			19.7				
Approach LOS		B			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		37.5		17.1	25.3	12.2		
Change Period (Y+Rc), s		* 4.5		3.5	3.0	4.5		
Max Green Setting (Gmax), s		* 23		23.0	39.0	18.0		
Max Q Clear Time (g_c+I1), s		3.3		12.5	19.3	3.6		
Green Ext Time (p_c), s		0.6		1.1	3.0	0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	17.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	2	14	612	3	3	141
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	14	612	3	3	141

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	762	615	0	0	616	0
Stage 1	615	-	-	-	-	-
Stage 2	147	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	373	491	-	-	964	-
Stage 1	539	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	372	491	-	-	964	-
Mov Cap-2 Maneuver	372	-	-	-	-	-
Stage 1	539	-	-	-	-	-
Stage 2	877	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	472	964	-
HCM Lane V/C Ratio	-	-	0.034	0.003	-
HCM Control Delay (s)	-	-	12.9	8.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	2	2	4	587	610	3	0	140	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	2	2	4	587	610	3	0	140	1

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1927	1927	612	141	0	0	613	0	0
Stage 1	1786	1786	-	-	-	-	-	-	-
Stage 2	141	141	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	73	67	493	1442	-	-	966	-	-
Stage 1	147	134	-	-	-	-	-	-	-
Stage 2	886	780	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	43	0	493	1442	-	-	966	-	-
Mov Cap-2 Maneuver	43	0	-	-	-	-	-	-	-
Stage 1	87	0	-	-	-	-	-	-	-
Stage 2	886	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	40.3	4.5	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1442	-	-	110	966	-	-
HCM Lane V/C Ratio	0.407	-	-	0.073	-	-	-
HCM Control Delay (s)	9.2	-	-	40.3	0	-	-
HCM Lane LOS	A	-	-	E	A	-	-
HCM 95th %tile Q(veh)	2	-	-	0.2	0	-	-

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	17	63	0	12	43	0	118	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	17	63	0	12	43	0	118	2
Number of Lanes	0	1	0	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.2	7	8.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	21%	98%
Vol Thru, %	22%	0%	2%
Vol Right, %	78%	79%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	55	80	120
LT Vol	0	17	118
Through Vol	12	0	2
RT Vol	43	63	0
Lane Flow Rate	55	80	120
Geometry Grp	1	1	1
Degree of Util (X)	0.056	0.085	0.144
Departure Headway (Hd)	3.696	3.804	4.313
Convergence, Y/N	Yes	Yes	Yes
Cap	959	927	830
Service Time	1.756	1.888	2.347
HCM Lane V/C Ratio	0.057	0.086	0.145
HCM Control Delay	7	7.2	8.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.5

Intersection	
Intersection Delay, s/veh	14.7
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	0	130	117	0	320	49	0	0	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	130	117	0	320	49	0	0	0	0	0
Number of Lanes	0	0	1	0	0	1	1	0	0	0	0	0

Approach	EB	WB
Opposing Approach	WB	EB
Opposing Lanes	2	1
Conflicting Approach Left	SB	
Conflicting Lanes Left	2	0
Conflicting Approach Right		SB
Conflicting Lanes Right	0	2
HCM Control Delay	13.3	17.1
HCM LOS	B	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	58%	0%
Vol Thru, %	53%	0%	100%	42%	73%
Vol Right, %	47%	0%	0%	0%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	247	320	49	242	140
LT Vol	0	320	0	139	0
Through Vol	130	0	49	103	103
RT Vol	117	0	0	0	37
Lane Flow Rate	247	320	49	242	140
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.413	0.586	0.083	0.446	0.239
Departure Headway (Hd)	6.024	6.595	6.088	6.65	6.171
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	598	547	588	541	582
Service Time	4.065	4.335	3.828	4.392	3.912
HCM Lane V/C Ratio	0.413	0.585	0.083	0.447	0.241
HCM Control Delay	13.3	18.3	9.4	14.7	10.9
HCM Lane LOS	B	C	A	B	B
HCM 95th-tile Q	2	3.7	0.3	2.3	0.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	139	205	37
Peak Hour Factor	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	139	205	37
Number of Lanes	0	0	2	0

Approach	SB
Opposing Approach	
Opposing Lanes	0
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	13.3
HCM LOS	B

Lane

Intersection	
Intersection Delay, s/veh	47.9
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	117	94	58	0	12	196	302	0	66	781	145
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	117	94	58	0	12	196	302	0	66	781	145
Number of Lanes	0	0	1	0	0	0	2	0	0	0	2	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	2	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	1	2
HCM Control Delay	23.2	31.9	67.4
HCM LOS	C	D	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	14%	0%	43%	11%	0%	16%
Vol Thru, %	86%	73%	35%	89%	24%	8%
Vol Right, %	0%	27%	22%	0%	76%	75%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	457	536	269	110	400	142
LT Vol	66	0	117	12	0	23
Through Vol	391	391	94	98	98	12
RT Vol	0	145	58	0	302	107
Lane Flow Rate	456	536	269	110	400	142
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	0.986	1	0.608	0.245	0.827	0.335
Departure Headway (Hd)	7.777	7.508	8.139	8.03	7.447	8.487
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	470	487	441	446	484	426
Service Time	5.485	5.216	6.234	5.809	5.226	6.487
HCM Lane V/C Ratio	0.97	1.101	0.61	0.247	0.826	0.333
HCM Control Delay	66.2	68.4	23.2	13.4	37	15.7
HCM Lane LOS	F	F	C	B	E	C
HCM 95th-tile Q	12.7	13.4	3.9	1	8.1	1.5

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	23	12	107
Peak Hour Factor	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	23	12	107
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	15.7
HCM LOS	C

Lane

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	22	208	0	0	372	3	0	0	0	3	0	59
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	150	75	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	208	0	0	372	3	0	0	0	3	0	59

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	376	0	0	209	0	0	440	629	106	524	628	190
Stage 1	-	-	-	-	-	-	253	253	-	375	375	-
Stage 2	-	-	-	-	-	-	187	376	-	149	253	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1179	-	-	1359	-	-	501	398	928	436	398	820
Stage 1	-	-	-	-	-	-	729	696	-	618	615	-
Stage 2	-	-	-	-	-	-	797	615	-	838	696	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1178	-	-	1358	-	-	458	390	926	429	390	819
Mov Cap-2 Maneuver	-	-	-	-	-	-	458	390	-	429	390	-
Stage 1	-	-	-	-	-	-	715	682	-	606	614	-
Stage 2	-	-	-	-	-	-	739	614	-	822	682	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0	0	10
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	1178	-	-	1358	-	-	784
HCM Lane V/C Ratio	-	-	0.019	-	-	-	-	-	0.079
HCM Control Delay (s)	0	0	8.1	-	-	0	-	-	10
HCM Lane LOS	A	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	88	124	0	1	285	18	2	0	1	7	1	85
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	88	124	0	1	285	18	2	0	1	7	1	85

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	303	0	0	124	0	0	445	605	64	534	596	154
Stage 1	-	-	-	-	-	-	300	300	-	296	296	-
Stage 2	-	-	-	-	-	-	145	305	-	238	300	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1255	-	-	1461	-	-	497	410	987	429	415	864
Stage 1	-	-	-	-	-	-	684	664	-	688	667	-
Stage 2	-	-	-	-	-	-	843	661	-	744	664	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1253	-	-	1459	-	-	422	381	985	405	385	863
Mov Cap-2 Maneuver	-	-	-	-	-	-	422	381	-	405	385	-
Stage 1	-	-	-	-	-	-	636	617	-	640	666	-
Stage 2	-	-	-	-	-	-	757	660	-	690	617	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.4	0	12	10.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	521	1253	-	-	1459	-	-	786
HCM Lane V/C Ratio	0.006	0.07	-	-	0.001	-	-	0.118
HCM Control Delay (s)	12	8.1	-	-	7.5	0	-	10.2
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0.2	-	-	0	-	-	0.4

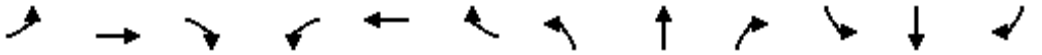
Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	144	0	8	1	0	11	0	837	0	0	82	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	12	12	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	144	0	8	1	0	11	0	837	0	0	82	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	925	919	94	919	919	849	82	0	0	837	0	0
Stage 1	82	82	-	837	837	-	-	-	-	-	-	-
Stage 2	843	837	-	82	82	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	250	271	963	252	271	361	1515	-	-	797	-	-
Stage 1	926	827	-	361	382	-	-	-	-	-	-	-
Stage 2	358	382	-	926	827	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	240	271	953	247	271	357	1500	-	-	789	-	-
Mov Cap-2 Maneuver	240	271	-	247	271	-	-	-	-	-	-	-
Stage 1	926	827	-	361	382	-	-	-	-	-	-	-
Stage 2	343	382	-	909	827	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.5	15.8	0	0
HCM LOS	E	C		

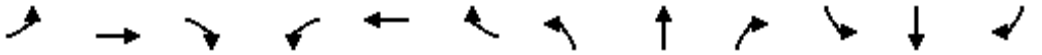
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1500	-	-	240	953	344	789	-	-
HCM Lane V/C Ratio	-	-	-	0.6	0.008	0.035	-	-	-
HCM Control Delay (s)	0	-	-	40.2	8.8	15.8	0	-	-
HCM Lane LOS	A	-	-	E	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	3.5	0	0.1	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	152	26	75	203	122	47	576	66	79	366	46
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.97		0.95	1.00		0.95	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	63	152	18	75	203	95	47	576	61	79	366	41
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	154	328	35	136	281	121	76	713	76	101	733	82
Arrive On Green	0.32	0.29	0.29	0.32	0.29	0.29	0.04	0.43	0.43	0.06	0.45	0.45
Sat Flow, veh/h	306	1136	121	256	974	420	1774	1648	174	1774	1638	184
Grp Volume(v), veh/h	233	0	0	373	0	0	47	0	637	79	0	407
Grp Sat Flow(s),veh/h/ln	1563	0	0	1650	0	0	1774	0	1822	1774	0	1822
Q Serve(g_s), s	0.0	0.0	0.0	5.9	0.0	0.0	1.8	0.0	21.3	3.1	0.0	11.1
Cycle Q Clear(g_c), s	7.7	0.0	0.0	13.7	0.0	0.0	1.8	0.0	21.3	3.1	0.0	11.1
Prop In Lane	0.27		0.08	0.20		0.25	1.00		0.10	1.00		0.10
Lane Grp Cap(c), veh/h	561	0	0	585	0	0	76	0	789	101	0	815
V/C Ratio(X)	0.42	0.00	0.00	0.64	0.00	0.00	0.62	0.00	0.81	0.78	0.00	0.50
Avail Cap(c_a), veh/h	763	0	0	795	0	0	177	0	789	177	0	815
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.71	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.1	0.0	0.0	22.2	0.0	0.0	32.9	0.0	17.3	32.6	0.0	13.8
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.0	0.0	3.0	0.0	8.7	4.8	0.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	0.0	6.1	0.0	0.0	1.0	0.0	12.5	1.6	0.0	6.0
LnGrp Delay(d),s/veh	20.3	0.0	0.0	22.5	0.0	0.0	36.0	0.0	26.0	37.4	0.0	15.9
LnGrp LOS	C			C			D		C	D		B
Approach Vol, veh/h		233			373			684			486	
Approach Delay, s/veh		20.3			22.5			26.7			19.4	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		25.2	7.0	37.8		25.2	8.0	36.8
Change Period (Y+Rc), s		5.0	4.0	6.5		5.0	4.0	6.5
Max Green Setting (Gmax), s		29.5	7.0	18.0		29.5	7.0	18.0
Max Q Clear Time (g_c+I1), s		9.7	3.8	13.1		15.7	5.1	23.3
Green Ext Time (p_c), s		1.6	0.0	1.4		1.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	87	176	58	51	218	158	53	399	56	80	184	63
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.99	0.99		0.94	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1937	1900	1900	1937	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	87	176	47	51	218	129	53	399	41	80	184	29
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	368	86	172	342	186	200	841	85	298	576	95
Arrive On Green	0.36	0.33	0.33	0.36	0.33	0.33	0.33	0.30	0.30	0.33	0.30	0.30
Sat Flow, veh/h	344	1120	261	138	1042	566	219	2846	287	421	1947	322
Grp Volume(v), veh/h	310	0	0	398	0	0	261	0	232	147	0	146
Grp Sat Flow(s),veh/h/ln	1725	0	0	1745	0	0	1727	0	1624	1066	0	1625
Q Serve(g_s), s	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	3.8	0.6	0.0	2.2
Cycle Q Clear(g_c), s	4.1	0.0	0.0	6.0	0.0	0.0	3.6	0.0	3.8	4.4	0.0	2.2
Prop In Lane	0.28		0.15	0.13		0.32	0.20		0.18	0.54		0.20
Lane Grp Cap(c), veh/h	765	0	0	755	0	0	700	0	480	523	0	480
V/C Ratio(X)	0.41	0.00	0.00	0.53	0.00	0.00	0.37	0.00	0.48	0.28	0.00	0.30
Avail Cap(c_a), veh/h	1706	0	0	1792	0	0	1972	0	1729	1450	0	1729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.5	0.0	0.0	9.1	0.0	0.0	9.1	0.0	9.2	8.7	0.0	8.7
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.3	0.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	2.8	0.0	0.0	1.7	0.0	1.7	1.0	0.0	1.0
LnGrp Delay(d),s/veh	8.6	0.0	0.0	9.3	0.0	0.0	9.2	0.0	9.5	8.8	0.0	8.8
LnGrp LOS	A			A			A		A	A		A
Approach Vol, veh/h		310			398			493			293	
Approach Delay, s/veh		8.6			9.3			9.4			8.8	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		15.4		16.5		15.4		16.5
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		30.0		34.0		30.0
Max Q Clear Time (g_c+I1), s		5.8		8.0		6.4		6.1
Green Ext Time (p_c), s		1.9		2.0		1.9		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	10.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	41	271	24	52	372	24
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	271	24	52	372	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	41	0	141	46
Stage 1	-	-	-	-	41	-
Stage 2	-	-	-	-	100	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1568	-	852	1023
Stage 1	-	0	-	-	981	-
Stage 2	-	0	-	-	924	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1561	-	838	1019
Mov Cap-2 Maneuver	-	-	-	-	838	-
Stage 1	-	-	-	-	981	-
Stage 2	-	-	-	-	909	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	847	-	1561	-
HCM Lane V/C Ratio	0.468	-	0.015	-
HCM Control Delay (s)	12.9	-	7.3	0
HCM Lane LOS	B	-	A	A
HCM 95th %tile Q(veh)	2.5	-	0	-

Intersection	
Intersection Delay, s/veh	11.1
Intersection LOS	B

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	57	189	0	213	33	0	186	149
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	57	189	0	213	33	0	186	149
Number of Lanes	0	1	1	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10	10.5	12.3
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	56%
Vol Thru, %	87%	0%	0%	44%
Vol Right, %	13%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	246	57	189	335
LT Vol	0	57	0	186
Through Vol	213	0	0	149
RT Vol	33	0	189	0
Lane Flow Rate	246	57	189	335
Geometry Grp	2	7	7	2
Degree of Util (X)	0.335	0.101	0.273	0.463
Departure Headway (Hd)	4.907	6.408	5.194	4.979
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	726	555	684	717
Service Time	2.986	4.201	2.986	3.053
HCM Lane V/C Ratio	0.339	0.103	0.276	0.467
HCM Control Delay	10.5	9.9	10	12.3
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	1.5	0.3	1.1	2.5

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	224	2	68	240	4	23
Conflicting Peds, #/hr	0	7	7	0	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	224	2	68	240	4	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	232	0	487	126
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	256	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1333	-	510	901
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1325	-	479	891
Mov Cap-2 Maneuver	-	-	-	-	479	-
Stage 1	-	-	-	-	781	-
Stage 2	-	-	-	-	720	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	790	-	-	1325	-
HCM Lane V/C Ratio	0.034	-	-	0.051	-
HCM Control Delay (s)	9.7	-	-	7.9	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	13	19	27	13	20	27	63	130	54	206	26
Conflicting Peds, #/hr	0	0	56	56	0	0	78	0	0	0	0	78
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	13	19	27	13	20	27	63	130	54	206	26

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	573	556	250	447	569	197	288	0	0	119	0	0
Stage 1	383	383	-	173	173	-	-	-	-	-	-	-
Stage 2	190	173	-	274	396	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.14	-	-	4.12	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.22	-	-	2.218	-	-
Pot Cap-1 Maneuver	416	439	751	508	431	843	1271	-	-	1469	-	-
Stage 1	612	611	-	828	755	-	-	-	-	-	-	-
Stage 2	811	755	-	709	603	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	334	373	669	407	367	751	1188	-	-	1374	-	-
Mov Cap-2 Maneuver	334	373	-	407	367	-	-	-	-	-	-	-
Stage 1	568	560	-	769	701	-	-	-	-	-	-	-
Stage 2	706	701	-	604	552	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.1	13.8	1	1.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1188	-	-	479	467	1374	-	-
HCM Lane V/C Ratio	0.023	-	-	0.075	0.128	0.039	-	-
HCM Control Delay (s)	8.1	0	-	13.1	13.8	7.7	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	16	181	680	51	9	74
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	181	680	51	9	74

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	798	707	0	0	731	0
Stage 1	706	-	-	-	-	-
Stage 2	92	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	355	435	-	-	873	-
Stage 1	489	-	-	-	-	-
Stage 2	932	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	351	435	-	-	872	-
Mov Cap-2 Maneuver	351	-	-	-	-	-
Stage 1	489	-	-	-	-	-
Stage 2	921	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.7	0	1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	351	435	872	-
HCM Lane V/C Ratio	-	-	0.046	0.416	0.01	-
HCM Control Delay (s)	-	-	15.7	19	9.2	0
HCM Lane LOS	-	-	C	C	A	A
HCM 95th %tile Q(veh)	-	-	0.1	2	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	1	2	726	16	8	80
Conflicting Peds, #/hr	0	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	2	726	16	8	80

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	823	728	0	-	727	0
Stage 1	727	-	-	-	-	-
Stage 2	96	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	343	423	-	0	876	-
Stage 1	478	-	-	0	-	-
Stage 2	928	-	-	0	-	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	340	422	-	-	875	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	478	-	-	-	-	-
Stage 2	920	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBL	SBT
Capacity (veh/h)	-	633	875	-
HCM Lane V/C Ratio	-	0.005	0.009	-
HCM Control Delay (s)	-	10.7	9.2	-
HCM Lane LOS	-	B	A	-
HCM 95th %tile Q(veh)	-	0	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	34	75	665	32	28	57
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	75	665	32	28	57

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	794	683	0	0	697	0
Stage 1	681	-	-	-	-	-
Stage 2	113	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	357	449	-	-	899	-
Stage 1	503	-	-	-	-	-
Stage 2	912	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	345	448	-	-	898	-
Mov Cap-2 Maneuver	345	-	-	-	-	-
Stage 1	503	-	-	-	-	-
Stage 2	881	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	410	898	-
HCM Lane V/C Ratio	-	-	0.266	0.031	-
HCM Control Delay (s)	-	-	16.9	9.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.1	-

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	12	59	635	4	21	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	59	635	4	21	76

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	755	637	0	0	639	0
Stage 1	637	-	-	-	-	-
Stage 2	118	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	376	477	-	-	945	-
Stage 1	527	-	-	-	-	-
Stage 2	907	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	367	477	-	-	945	-
Mov Cap-2 Maneuver	367	-	-	-	-	-
Stage 1	527	-	-	-	-	-
Stage 2	886	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.4	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	454	945	-
HCM Lane V/C Ratio	-	-	0.156	0.022	-
HCM Control Delay (s)	-	-	14.4	8.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	106	402	64	120	603	176	155	428	146	150	372	144
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.98	1.00		0.96	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	106	402	52	120	603	88	155	428	40	150	372	108
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	139	1033	132	155	1197	528	196	933	399	190	697	199
Arrive On Green	0.08	0.33	0.33	0.09	0.34	0.34	0.11	0.26	0.26	0.11	0.26	0.26
Sat Flow, veh/h	1774	3136	402	1774	3539	1559	1774	3539	1514	1774	2681	765
Grp Volume(v), veh/h	106	225	229	120	603	88	155	428	40	150	243	237
Grp Sat Flow(s),veh/h/ln	1774	1770	1769	1774	1770	1559	1774	1770	1514	1774	1770	1677
Q Serve(g_s), s	4.4	7.4	7.5	5.0	10.2	3.0	6.4	7.6	1.5	6.2	8.9	9.1
Cycle Q Clear(g_c), s	4.4	7.4	7.5	5.0	10.2	3.0	6.4	7.6	1.5	6.2	8.9	9.1
Prop In Lane	1.00		0.23	1.00		1.00	1.00		1.00	1.00		0.46
Lane Grp Cap(c), veh/h	139	583	582	155	1197	528	196	933	399	190	460	436
V/C Ratio(X)	0.76	0.39	0.39	0.78	0.50	0.17	0.79	0.46	0.10	0.79	0.53	0.54
Avail Cap(c_a), veh/h	472	777	777	354	1554	685	401	1178	504	354	589	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	19.4	19.4	33.6	19.8	17.4	32.6	23.2	20.9	32.7	23.8	23.9
Incr Delay (d2), s/veh	8.4	0.4	0.4	8.0	0.3	0.1	7.0	0.4	0.1	7.2	0.9	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	3.6	3.7	2.8	5.0	1.3	3.5	3.7	0.6	3.4	4.4	4.3
LnGrp Delay(d),s/veh	42.4	19.8	19.8	41.6	20.2	17.6	39.5	23.5	21.0	40.0	24.8	25.0
LnGrp LOS	D	B	B	D	C	B	D	C	C	D	C	C
Approach Vol, veh/h		560			811			623			630	
Approach Delay, s/veh		24.1			23.1			27.3			28.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	24.0	9.4	29.9	11.5	24.3	10.1	29.2
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	17.0	25.0	20.0	33.0	15.0	25.0	15.0	33.0
Max Q Clear Time (g_c+I1), s	8.4	11.1	6.4	12.2	8.2	9.6	7.0	9.5
Green Ext Time (p_c), s	0.2	5.1	0.2	7.5	0.2	5.4	0.2	7.8

Intersection Summary	
HCM 2010 Ctrl Delay	25.6
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	679	11	8	848	15	29	14	19	12	23	26
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	0.99		0.97	0.94		0.93	0.94		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	13	679	10	8	848	14	29	14	2	12	23	2
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	2782	41	42	2833	46	131	55	6	74	116	8
Arrive On Green	0.82	0.82	0.82	0.82	0.82	0.82	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	32	3402	50	10	3464	57	845	600	67	337	1267	92
Grp Volume(v), veh/h	363	0	339	455	0	415	45	0	0	37	0	0
Grp Sat Flow(s),veh/h/ln	1801	0	1683	1848	0	1683	1513	0	0	1696	0	0
Q Serve(g_s), s	0.0	0.0	5.0	0.0	0.0	6.5	0.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.9	0.0	5.0	6.5	0.0	6.5	2.7	0.0	0.0	2.1	0.0	0.0
Prop In Lane	0.04		0.03	0.02		0.03	0.64		0.04	0.32		0.05
Lane Grp Cap(c), veh/h	1507	0	1377	1544	0	1377	192	0	0	198	0	0
V/C Ratio(X)	0.24	0.00	0.25	0.29	0.00	0.30	0.23	0.00	0.00	0.19	0.00	0.00
Avail Cap(c_a), veh/h	1507	0	1377	1544	0	1377	322	0	0	345	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.00	0.90	0.95	0.00	0.95	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.3	0.0	2.3	2.4	0.0	2.4	46.6	0.0	0.0	46.4	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.4	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	2.4	3.3	0.0	3.0	1.3	0.0	0.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	2.6	0.0	2.7	2.5	0.0	2.5	46.8	0.0	0.0	46.5	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		702			870			45			37	
Approach Delay, s/veh		2.6			2.5			46.8			46.5	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		95.0		15.0		95.0		15.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		7.0		4.1		8.5		4.7
Green Ext Time (p_c), s		8.5		0.2		8.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	4.7
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	669	47	23	786	12	77	33	28	17	45	22
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	0.99		0.94	0.90		0.88	0.92		0.88
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	8	669	43	23	786	11	77	33	19	17	45	9
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	44	2515	160	80	2584	36	159	64	30	75	171	30
Arrive On Green	0.77	0.77	0.77	0.77	0.77	0.77	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	13	3260	208	59	3349	46	776	467	215	253	1243	217
Grp Volume(v), veh/h	380	0	340	421	0	399	129	0	0	71	0	0
Grp Sat Flow(s),veh/h/ln	1840	0	1642	1771	0	1683	1458	0	0	1713	0	0
Q Serve(g_s), s	0.0	0.0	6.6	0.0	0.0	7.8	4.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.4	0.0	6.6	7.3	0.0	7.8	8.8	0.0	0.0	3.9	0.0	0.0
Prop In Lane	0.02		0.13	0.05		0.03	0.60		0.15	0.24		0.13
Lane Grp Cap(c), veh/h	1453	0	1267	1401	0	1299	253	0	0	276	0	0
V/C Ratio(X)	0.26	0.00	0.27	0.30	0.00	0.31	0.51	0.00	0.00	0.26	0.00	0.00
Avail Cap(c_a), veh/h	1453	0	1267	1401	0	1299	350	0	0	391	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.00	0.98	0.96	0.00	0.96	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.6	0.0	3.6	3.7	0.0	3.8	44.4	0.0	0.0	42.6	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.5	0.0	0.0	0.0	0.6	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	3.1	3.8	0.0	3.6	3.7	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	4.0	0.0	4.1	3.8	0.0	3.8	45.0	0.0	0.0	42.8	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		720			820			129			71	
Approach Delay, s/veh		4.1			3.8			45.0			42.8	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.9		20.1		89.9		20.1
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		77.0		23.0		77.0		23.0
Max Q Clear Time (g_c+I1), s		8.6		5.9		9.8		10.8
Green Ext Time (p_c), s		8.3		0.7		8.3		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	648	76	37	705	11	70	38	42	19	66	24
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.94	0.98		0.94	0.80		0.73	0.84		0.72
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	6	648	70	37	705	10	70	38	28	19	66	14
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	2385	255	131	2431	34	136	70	41	65	179	34
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	8	3118	334	125	3179	45	601	482	281	180	1238	234
Grp Volume(v), veh/h	387	0	337	375	0	377	136	0	0	99	0	0
Grp Sat Flow(s),veh/h/ln	1851	0	1609	1664	0	1684	1364	0	0	1652	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0	0.0	5.8	0.0	0.0
Prop In Lane	0.02		0.21	0.10		0.03	0.51		0.21	0.19		0.14
Lane Grp Cap(c), veh/h	1449	0	1231	1309	0	1288	246	0	0	277	0	0
V/C Ratio(X)	0.27	0.00	0.27	0.29	0.00	0.29	0.55	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	1449	0	1231	1309	0	1288	326	0	0	376	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.97	0.82	0.00	0.82	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	44.1	0.0	0.0	42.7	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.5	0.0	0.0	0.0	0.7	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.0	0.0	0.0	3.9	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	0.4	0.0	0.5	0.0	0.0	0.0	44.8	0.0	0.0	43.0	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		724			752			136			99	
Approach Delay, s/veh		0.5			0.0			44.8			43.0	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.1		20.9		89.1		20.9
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		77.0		23.0		77.0		23.0
Max Q Clear Time (g_c+I1), s		2.0		7.8		2.0		11.7
Green Ext Time (p_c), s		8.0		0.9		8.0		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	6.3
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	133	493	112	70	608	113	95	312	45	131	302	98
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	1.00		0.96	1.00		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1937	1900	1863	1937	1900
Adj Flow Rate, veh/h	133	493	96	70	608	100	95	312	40	131	302	87
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	1228	238	90	1151	189	120	403	52	159	371	107
Arrive On Green	0.12	0.56	0.56	0.07	0.51	0.51	0.07	0.24	0.24	0.09	0.26	0.26
Sat Flow, veh/h	1774	2929	566	1774	3029	497	1774	1674	215	1774	1414	407
Grp Volume(v), veh/h	133	297	292	70	355	353	95	0	352	131	0	389
Grp Sat Flow(s),veh/h/ln	1774	1770	1725	1774	1770	1757	1774	0	1889	1774	0	1821
Q Serve(g_s), s	8.1	10.5	10.6	4.3	14.9	15.0	5.8	0.0	19.1	8.0	0.0	22.0
Cycle Q Clear(g_c), s	8.1	10.5	10.6	4.3	14.9	15.0	5.8	0.0	19.1	8.0	0.0	22.0
Prop In Lane	1.00		0.33	1.00		0.28	1.00		0.11	1.00		0.22
Lane Grp Cap(c), veh/h	160	742	724	90	672	667	120	0	454	159	0	478
V/C Ratio(X)	0.83	0.40	0.40	0.78	0.53	0.53	0.79	0.00	0.77	0.82	0.00	0.81
Avail Cap(c_a), veh/h	177	742	724	161	672	667	194	0	498	194	0	480
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.90	0.90	0.90	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.6	16.4	16.5	50.7	20.6	20.6	50.5	0.0	39.0	49.2	0.0	38.0
Incr Delay (d2), s/veh	22.4	1.5	1.6	4.9	2.7	2.7	4.4	0.0	5.9	17.7	0.0	9.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	5.4	5.4	2.2	7.7	7.6	3.0	0.0	10.7	4.7	0.0	12.3
LnGrp Delay(d),s/veh	70.0	18.0	18.1	55.6	23.2	23.3	55.0	0.0	44.9	66.9	0.0	47.6
LnGrp LOS	E	B	B	E	C	C	D		D	E		D
Approach Vol, veh/h		722			778			447			520	
Approach Delay, s/veh		27.6			26.2			47.1			52.5	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	53.1	14.8	31.5	14.9	48.8	12.4	33.9
Change Period (Y+Rc), s	5.0	7.0	5.0	5.0	5.0	7.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	37.0	12.0	29.0	11.0	36.0	12.0	29.0
Max Q Clear Time (g_c+I1), s	6.3	12.6	10.0	21.1	10.1	17.0	7.8	24.0
Green Ext Time (p_c), s	0.0	3.2	0.0	1.3	0.0	3.1	0.1	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	35.9
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	62	640	40	18	507	87	106	281	41	126	122	94
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	62	640	37	18	507	76	106	281	36	126	122	67
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	332	1643	95	48	996	149	133	328	42	154	242	133
Arrive On Green	0.37	0.97	0.97	0.01	0.11	0.11	0.07	0.20	0.20	0.09	0.22	0.22
Sat Flow, veh/h	1774	3401	196	1774	3086	461	1774	1616	207	1774	1127	619
Grp Volume(v), veh/h	62	333	344	18	290	293	106	0	317	126	0	189
Grp Sat Flow(s),veh/h/ln	1774	1770	1828	1774	1770	1777	1774	0	1823	1774	0	1745
Q Serve(g_s), s	2.6	1.1	1.1	1.1	17.0	17.1	6.5	0.0	18.5	7.7	0.0	10.5
Cycle Q Clear(g_c), s	2.6	1.1	1.1	1.1	17.0	17.1	6.5	0.0	18.5	7.7	0.0	10.5
Prop In Lane	1.00		0.11	1.00		0.26	1.00		0.11	1.00		0.35
Lane Grp Cap(c), veh/h	332	855	883	48	571	574	133	0	370	154	0	376
V/C Ratio(X)	0.19	0.39	0.39	0.38	0.51	0.51	0.80	0.00	0.86	0.82	0.00	0.50
Avail Cap(c_a), veh/h	332	855	883	153	571	574	234	0	472	234	0	452
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.8	1.0	1.0	53.6	40.9	40.9	50.1	0.0	42.3	49.4	0.0	38.0
Incr Delay (d2), s/veh	0.1	1.2	1.1	1.8	3.2	3.2	4.2	0.0	9.9	7.3	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.6	0.7	0.6	8.9	9.0	3.3	0.0	10.3	4.1	0.0	5.1
LnGrp Delay(d),s/veh	28.8	2.1	2.1	55.4	44.1	44.2	54.2	0.0	52.2	56.6	0.0	38.4
LnGrp LOS	C	A	A	E	D	D	D		D	E		D
Approach Vol, veh/h		739			601			423			315	
Approach Delay, s/veh		4.4			44.5			52.7			45.7	
Approach LOS		A			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.1	41.0	15.1	27.8	8.5	58.7	13.7	29.2
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	35.5	14.5	28.5	9.5	35.5	14.5	28.5
Max Q Clear Time (g_c+I1), s	4.6	19.1	9.7	20.5	3.1	3.1	8.5	12.5
Green Ext Time (p_c), s	0.1	1.2	0.1	0.8	0.0	1.7	0.1	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	32.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	801	1	1	582	0	1	0	14	18	0	25
Conflicting Peds, #/hr	4	0	4	4	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	801	1	1	582	0	1	0	14	18	0	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	582	0	0	802	0	0	1095	1386	405	985	1386	295
Stage 1	-	-	-	-	-	-	802	802	-	584	584	-
Stage 2	-	-	-	-	-	-	293	584	-	401	802	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	988	-	-	817	-	-	168	142	595	202	142	701
Stage 1	-	-	-	-	-	-	344	395	-	465	496	-
Stage 2	-	-	-	-	-	-	691	496	-	597	395	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	985	-	-	814	-	-	161	142	593	196	142	699
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	142	-	196	142	-
Stage 1	-	-	-	-	-	-	344	395	-	465	495	-
Stage 2	-	-	-	-	-	-	663	495	-	581	395	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	12.4	17.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	503	985	-	-	814	-	-	337
HCM Lane V/C Ratio	0.03	-	-	-	0.001	-	-	0.128
HCM Control Delay (s)	12.4	0	-	-	9.4	-	-	17.2
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	816	1	2	558	9	4	2	23	251	1	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	10	816	1	2	558	8	4	2	5	251	1	17
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	662	2572	3	414	2533	36	159	89	169	341	1	19
Arrive On Green	0.23	0.23	0.23	1.00	1.00	1.00	0.20	0.21	0.21	0.20	0.21	0.21
Sat Flow, veh/h	841	3627	4	666	3572	51	549	423	810	1328	5	90
Grp Volume(v), veh/h	10	398	419	2	276	290	11	0	0	269	0	0
Grp Sat Flow(s),veh/h/ln	841	1770	1862	666	1770	1854	1782	0	0	1424	0	0
Q Serve(g_s), s	1.0	20.5	20.5	0.1	0.0	0.0	0.0	0.0	0.0	19.9	0.0	0.0
Cycle Q Clear(g_c), s	1.0	20.5	20.5	20.6	0.0	0.0	0.6	0.0	0.0	20.5	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.03	0.36		0.45	0.93		0.06
Lane Grp Cap(c), veh/h	662	1255	1320	414	1255	1314	401	0	0	348	0	0
V/C Ratio(X)	0.02	0.32	0.32	0.00	0.22	0.22	0.03	0.00	0.00	0.77	0.00	0.00
Avail Cap(c_a), veh/h	662	1255	1320	414	1255	1314	570	0	0	509	0	0
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.82	0.82	0.82	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.6	20.1	20.1	2.7	0.0	0.0	34.8	0.0	0.0	42.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.6	0.0	0.3	0.3	0.0	0.0	0.0	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	10.3	10.8	0.0	0.1	0.1	0.3	0.0	0.0	8.4	0.0	0.0
LnGrp Delay(d),s/veh	12.7	20.8	20.7	2.7	0.3	0.3	34.8	0.0	0.0	45.2	0.0	0.0
LnGrp LOS	B	C	C	A	A	A	C			D		
Approach Vol, veh/h		827			568			11			269	
Approach Delay, s/veh		20.7			0.3			34.8			45.2	
Approach LOS		C			A			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		83.0		27.0		83.0		27.0
Change Period (Y+Rc), s		5.0		4.0		5.0		* 4
Max Green Setting (Gmax), s		66.0		35.0		43.0		* 36
Max Q Clear Time (g_c+I1), s		22.5		2.6		22.6		22.5
Green Ext Time (p_c), s		3.4		0.6		3.3		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	74	1047	0	3	620	403	2	98	16	74	0	15
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	0.94		0.95	0.94		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	74	1047	0	3	620	330	2	98	11	74	0	0
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	2	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	2769	0	8	1618	861	34	169	19	356	193	0
Arrive On Green	0.11	1.00	0.00	0.00	0.73	0.73	0.09	0.10	0.10	0.10	0.00	0.00
Sat Flow, veh/h	1774	3632	0	1774	2206	1174	8	1628	180	2414	1863	0
Grp Volume(v), veh/h	74	1047	0	3	497	453	111	0	0	74	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	0	1774	1770	1610	1815	0	0	1207	1863	0
Q Serve(g_s), s	4.5	0.0	0.0	0.2	11.5	11.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.5	0.0	0.0	0.2	11.5	11.5	6.4	0.0	0.0	3.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.73	0.02		0.10	1.00		0.00
Lane Grp Cap(c), veh/h	95	2769	0	8	1298	1181	205	0	0	356	193	0
V/C Ratio(X)	0.78	0.38	0.00	0.35	0.38	0.38	0.54	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	202	2769	0	202	1298	1181	207	0	0	709	466	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	48.5	0.0	0.0	54.6	5.4	5.4	47.1	0.0	0.0	45.9	0.0	0.0
Incr Delay (d2), s/veh	12.4	0.4	0.0	23.3	0.9	0.9	2.8	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.1	0.0	0.1	5.8	5.3	3.4	0.0	0.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	60.9	0.4	0.0	77.8	6.3	6.4	49.9	0.0	0.0	46.2	0.0	0.0
LnGrp LOS	E	A		E	A	A	D			D		
Approach Vol, veh/h		1121			953			111			74	
Approach Delay, s/veh		4.4			6.5			49.9			46.2	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.0	91.1		14.9	9.4	85.7		14.9
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5
Max Green Setting (Gmax), s	12.5	43.0		27.5	12.5	43.0		11.5
Max Q Clear Time (g_c+I1), s	2.2	2.0		5.8	6.5	13.5		8.4
Green Ext Time (p_c), s	0.0	14.4		0.7	0.1	12.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	23.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	44	207	1124	11	129	977
Conflicting Peds, #/hr	1	1	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	207	1124	11	129	977

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1878	571	0	0	1136	0
Stage 1	1131	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	63	464	-	-	611	-
Stage 1	270	-	-	-	-	-
Stage 2	429	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	50	463	-	-	610	-
Mov Cap-2 Maneuver	50	-	-	-	-	-
Stage 1	270	-	-	-	-	-
Stage 2	338	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	227.6	0	1.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	189	610	-
HCM Lane V/C Ratio	-	-	1.328	0.211	-
HCM Control Delay (s)	-	-	227.6	12.5	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	14.3	0.8	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	0	0	0	0	1000	448	262	1005	97
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	1000	448	262	1005	97

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	2078	2578	551	1102	0	-	1000	0	0
Stage 1	1578	1578	-	-	-	-	-	-	-
Stage 2	500	1000	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	46	25	478	629	-	0	688	-	-
Stage 1	155	168	-	-	-	0	-	-	-
Stage 2	575	319	-	-	-	0	-	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	28	0	478	629	-	-	686	-	-
Mov Cap-2 Maneuver	76	0	-	-	-	-	-	-	-
Stage 1	96	0	-	-	-	-	-	-	-
Stage 2	575	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	2.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	629	-	-	686	-	-
HCM Lane V/C Ratio	-	-	-	0.382	-	-
HCM Control Delay (s)	0	-	0	13.5	-	-
HCM Lane LOS	A	-	A	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.8	-	-

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing**
Volume and Delay by Movement **AM Peak Hour**

Intersection 38 **I-580 EB Off-Ramp-98th Avenue/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn	1	1	90.0%	1.1	0	3	0.1	8.8	27.7	0.0	31.0	A
	Second Left												
	Left Turn	49	52	105.9%	5.2	42	59	0.4	44.5	8.8	32.2	54.1	D
	Through												
	Right Turn	933	948	101.6%	29.0	920	992	0.5	3.3	1.2	1.9	3.4	A
	Second Right												
	Subtotal	983	1,001	101.8%	28.1	971	1,044	0.6	5.4	1.0	4.1	5.1	A
SB	U Turn												
	Second Left												
	Left Turn	137	137	99.9%	14.7	114	157	0.0	32.8	6.2	22.5	46.7	C
	Through	724	734	101.4%	18.6	707	767	0.4	31.9	3.3	27.3	51.1	C
	Right Turn	19	19	97.4%	3.9	11	24	0.1	20.4	10.7	10.5	46.7	C
	Second Right												
	Subtotal	880	889	101.1%	24.9	839	924	0.3	31.7	3.5	27.4	49.9	C
EB	U Turn												
	Second Left												
	Left Turn												
	Through	61	55	89.5%	8.2	45	64	0.8	45.0	5.1	37.2	56.8	D
	Right Turn	185	186	100.7%	11.8	177	216	0.1	13.2	1.8	11.1	17.8	B
	Second Right												
	Subtotal	246	241	97.9%	16.7	222	276	0.3	21.6	2.9	18.3	22.2	C
WB	U Turn												
	Second Left												
	Left Turn	454	422	93.0%	15.9	395	447	1.5	43.5	4.1	38.4	51.9	D
	Through	142	130	91.8%	9.3	118	149	1.0	23.7	3.0	17.8	27.2	C
	Right Turn												
	Second Right												
	Subtotal	596	553	92.7%	15.3	535	575	1.8	39.4	3.4	34.4	46.0	D
Total		2,705	2,684	99.2%	36.5	2,623	2,723	0.4	22.6	1.3	19.9	30.7	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing**
Volume and Delay by Movement **AM Peak Hour**

Intersection 39 **I-580 Ramps/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	310	311	100.2%	16.4	282	333	0.0	28.2	3.0	23.4	34.1	C
	Through	2	2	90.0%	1.3	0	4	0.1	11.4	22.3	0.0	63.1	B
	Right Turn	366	354	96.7%	13.1	335	373	0.6	20.5	4.6	13.2	30.8	C
	Second Right												
	Subtotal	678	666	98.3%	16.1	632	685	0.4	24.3	2.3	21.4	29.3	C
SB	U Turn												
	Second Left												
	Left Turn												
	Through												
	Right Turn												
	Second Right												
	Subtotal												
EB	U Turn												
	Second Left												
	Left Turn	537	535	99.6%	27.6	489	567	0.1	45.7	1.6	43.7	48.8	D
	Through	594	597	100.5%	11.4	578	614	0.1	22.2	3.7	17.1	27.0	C
	Right Turn												
	Second Right												
	Subtotal	1,131	1,132	100.1%	34.9	1,084	1,169	0.0	33.1	1.8	30.5	35.4	C
WB	U Turn												
	Second Left												
	Left Turn												
	Through	286	252	88.0%	8.6	240	270	2.1	41.3	3.1	38.5	47.6	D
	Right Turn	110	101	91.5%	10.1	88	120	0.9	8.8	1.8	6.1	12.5	A
	Second Right												
	Subtotal	396	352	89.0%	14.8	336	390	2.3	32.5	2.8	28.5	37.3	C
Total		2,205	2,151	97.5%	42.8	2,067	2,189	1.2	30.3	1.2	29.0	32.1	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing**
Volume and Delay by Movement **AM Peak Hour**

Intersection 40 **Mountain Boulevard-Oakland Zoo Driveway/Golf Links Road** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	6	5	88.3%	2.2	1	8	0.3	23.3	21.4	0.0	47.3	C
	Through	2	2	120.0%	1.3	0	4	0.3	10.4	13.2	0.0	28.9	B
	Right Turn												
	Second Right												
	Subtotal	8	8	96.3%	3.1	3	12	0.1	24.3	18.0	0.0	44.1	C
SB	U Turn												
	Second Left												
	Left Turn	10	10	97.0%	4.0	2	16	0.1	34.0	20.5	0.0	58.7	D
	Through	4	5	112.5%	2.4	1	8	0.2	11.5	11.6	0.0	28.1	B
	Right Turn	91	96	105.1%	9.7	80	113	0.5	21.9	12.5	9.4	52.3	C
	Second Right												
	Subtotal	105	110	104.6%	7.5	92	120	0.5	23.2	12.6	9.9	52.8	C
EB	U Turn	28	25	88.9%	4.9	18	30	0.6	1.0	0.5	0.1	1.7	A
	Second Left												
	Left Turn	580	576	99.3%	19.6	550	601	0.2	1.4	0.1	1.2	1.6	A
	Through	300	299	99.6%	6.3	290	307	0.1	1.9	0.3	1.5	2.4	A
	Right Turn	52	51	98.1%	6.7	38	58	0.1	0.9	0.4	0.4	1.5	A
	Second Right												
	Subtotal	960	950	99.0%	13.3	931	966	0.3	1.5	0.1	1.4	1.8	A
WB	U Turn												
	Second Left												
	Left Turn	1	1	80.0%	1.1	0	3	0.2	34.3	72.4	0.0	174.4	D
	Through	271	230	84.7%	11.8	209	251	2.6	201.5	17.7	164.6	221.9	F
	Right Turn	33	28	86.1%	7.4	20	39	0.8	198.9	41.6	136.8	279.4	F
	Second Right												
	Subtotal	305	259	84.8%	13.3	229	280	2.8	201.4	18.2	164.5	226.9	F
Total		1,378	1,327	96.3%	17.9	1,302	1,359	1.4	44.5	2.3	41.5	48.9	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	442	94	32	668	125	154	429	57	73	206	149
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	142	442	33	32	668	111	154	429	49	73	206	49
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	169	1157	517	49	785	130	181	939	107	327	1358	597
Arrive On Green	0.10	0.33	0.33	0.03	0.26	0.26	0.10	0.29	0.29	0.18	0.38	0.38
Sat Flow, veh/h	1774	3539	1580	1774	3027	502	1774	3204	364	1774	3539	1556
Grp Volume(v), veh/h	142	442	33	32	390	389	154	236	242	73	206	49
Grp Sat Flow(s),veh/h/ln	1774	1770	1580	1774	1770	1760	1774	1770	1798	1774	1770	1556
Q Serve(g_s), s	9.1	11.1	1.7	2.1	24.3	24.4	9.9	12.6	12.7	4.1	4.4	2.3
Cycle Q Clear(g_c), s	9.1	11.1	1.7	2.1	24.3	24.4	9.9	12.6	12.7	4.1	4.4	2.3
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	169	1157	517	49	459	457	181	519	527	327	1358	597
V/C Ratio(X)	0.84	0.38	0.06	0.65	0.85	0.85	0.85	0.45	0.46	0.22	0.15	0.08
Avail Cap(c_a), veh/h	184	1157	517	321	572	569	199	519	527	327	1358	597
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.6	30.0	26.8	55.8	40.8	40.8	51.2	33.4	33.5	40.3	23.4	22.7
Incr Delay (d2), s/veh	26.5	0.2	0.1	13.5	9.7	9.9	26.1	2.9	2.9	0.3	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	5.5	0.7	1.2	13.2	13.1	6.2	6.6	6.7	2.0	2.2	1.0
LnGrp Delay(d),s/veh	78.1	30.2	26.9	69.4	50.5	50.8	77.3	36.3	36.4	40.6	23.6	23.0
LnGrp LOS	E	C	C	E	D	D	E	D	D	D	C	C
Approach Vol, veh/h		617			811			632			328	
Approach Delay, s/veh		41.1			51.4			46.3			27.3	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.4	39.0	7.2	43.4	15.9	49.5	15.0	35.6
Change Period (Y+Rc), s	5.0	* 5	4.0	5.5	4.0	5.0	4.0	5.5
Max Green Setting (Gmax), s	14.0	* 34	21.0	28.5	13.0	35.0	12.0	37.5
Max Q Clear Time (g_c+I1), s	6.1	14.7	4.1	13.1	11.9	6.4	11.1	26.4
Green Ext Time (p_c), s	1.0	2.8	0.0	7.2	0.0	1.7	0.0	3.7

Intersection Summary	
HCM 2010 Ctrl Delay	44.1
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	17

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	659	8	7	335	0	3	0	6	169	105	430
Conflicting Peds, #/hr	0	0	2	2	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	659	8	7	335	0	3	0	6	169	105	430

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	336	0	0	668	0	0	1067	1014	337	681	1018	338
Stage 1	-	-	-	-	-	-	664	664	-	350	350	-
Stage 2	-	-	-	-	-	-	403	350	-	331	668	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.218	-	-	2.22	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1223	-	-	918	-	-	188	238	660	350	237	703
Stage 1	-	-	-	-	-	-	417	457	-	666	632	-
Stage 2	-	-	-	-	-	-	623	632	-	657	455	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1221	-	-	916	-	-	47	236	658	344	235	701
Mov Cap-2 Maneuver	-	-	-	-	-	-	47	236	-	344	235	-
Stage 1	-	-	-	-	-	-	417	457	-	665	627	-
Stage 2	-	-	-	-	-	-	199	627	-	650	455	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	36.6	40.9
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	123	1221	-	-	916	-	-	292	701
HCM Lane V/C Ratio	0.073	-	-	-	0.008	-	-	0.938	0.613
HCM Control Delay (s)	36.6	0	-	-	9	-	-	76.9	17.9
HCM Lane LOS	E	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	9.1	4.2

Intersection	
Intersection Delay, s/veh	43
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	390	373	54	0	0	0	0	0	13	59	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	390	373	54	0	0	0	0	0	13	59	25
Number of Lanes	0	1	1	0	0	0	0	0	0	0	1	0

Approach	EB	NB
Opposing Approach		SB
Opposing Lanes	0	3
Conflicting Approach Left	SB	EB
Conflicting Lanes Left	3	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	43.5	15.2
HCM LOS	E	C

Lane	NBLn1	EBLn1	EBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	13%	100%	0%	100%	0%	0%
Vol Thru, %	61%	0%	87%	0%	100%	0%
Vol Right, %	26%	0%	13%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	97	390	427	533	122	329
LT Vol	13	390	0	533	0	0
Through Vol	59	0	373	0	122	0
RT Vol	25	0	54	0	0	329
Lane Flow Rate	97	390	427	533	122	329
Geometry Grp	8	8	8	7	7	7
Degree of Util (X)	0.25	0.864	0.877	1	0.245	0.595
Departure Headway (Hd)	9.283	7.978	7.393	7.738	7.229	6.515
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	385	456	491	469	497	553
Service Time	7.076	5.717	5.132	5.48	4.971	4.257
HCM Lane V/C Ratio	0.252	0.855	0.87	1.136	0.245	0.595
HCM Control Delay	15.2	43.8	43.3	69.6	12.3	18.4
HCM Lane LOS	C	E	E	F	B	C
HCM 95th-tile Q	1	8.8	9.4	13.2	1	3.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	533	122	329
Peak Hour Factor	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	533	122	329
Number of Lanes	0	1	1	1

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	
Conflicting Lanes Left	0
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	45.4
HCM LOS	E

Lane

Intersection	
Int Delay, s/veh	600.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	0	694	284	48	10	447	2	0	0	6	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	300	125	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	694	284	48	10	447	2	0	0	6	8

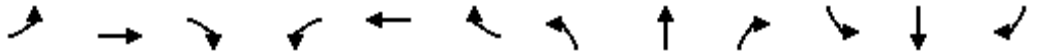
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	929	906	10	1253	910	1	14	0	0	2	0	0
Stage 1	10	10	-	896	896	-	-	-	-	-	-	-
Stage 2	919	896	-	357	14	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.218	-	-	2.22	-	-
Pot Cap-1 Maneuver	235	275	1071	~ 138	274	1083	1604	-	-	1619	-	-
Stage 1	1011	887	-	302	358	-	-	-	-	-	-	-
Stage 2	293	358	-	660	884	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	150	198	1071	~ 38	198	1083	1604	-	-	1619	-	-
Mov Cap-2 Maneuver	150	198	-	~ 38	198	-	-	-	-	-	-	-
Stage 1	729	887	-	~ 218	258	-	-	-	-	-	-	-
Stage 2	170	258	-	~ 232	884	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.6	$ 2593.9	8.1	0
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1604	-	-	1062	38	230	1619	-	-
HCM Lane V/C Ratio	0.279	-	-	0.654	7.474	0.252	-	-	-
HCM Control Delay (s)	8.1	-	-	14.5	$ 3118.4	25.9	0	-	-
HCM Lane LOS	A	-	-	B	F	D	A	-	-
HCM 95th %tile Q(veh)	1.2	-	-	5.1	33.9	1	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	182	584	185	45	388	61	259	102	56	130	276	144
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.98	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	182	584	115	45	388	57	259	102	45	130	276	0
Adj No. of Lanes	1	1	1	1	1	0	0	2	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	927	751	58	652	96	291	197	87	268	281	0
Arrive On Green	0.12	0.50	0.50	0.03	0.41	0.41	0.17	0.16	0.16	0.15	0.15	0.00
Sat Flow, veh/h	1774	1863	1508	1774	1583	233	1774	1204	531	1774	1863	0
Grp Volume(v), veh/h	182	584	115	45	0	445	259	0	147	130	276	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1508	1774	0	1816	1774	0	1735	1774	1863	0
Q Serve(g_s), s	12.7	28.9	5.2	3.2	0.0	24.0	18.0	0.0	9.8	8.5	18.6	0.0
Cycle Q Clear(g_c), s	12.7	28.9	5.2	3.2	0.0	24.0	18.0	0.0	9.8	8.5	18.6	0.0
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.31	1.00		0.00
Lane Grp Cap(c), veh/h	210	927	751	58	0	748	291	0	284	268	281	0
V/C Ratio(X)	0.87	0.63	0.15	0.77	0.00	0.59	0.89	0.00	0.52	0.49	0.98	0.00
Avail Cap(c_a), veh/h	338	927	751	338	0	748	415	0	406	268	281	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.00	0.93	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.6	23.2	17.2	60.5	0.0	28.8	51.1	0.0	48.1	49.0	53.3	0.0
Incr Delay (d2), s/veh	7.5	3.2	0.4	7.3	0.0	3.2	12.4	0.0	0.5	0.5	48.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	15.6	2.3	1.7	0.0	12.7	9.8	0.0	4.7	4.2	13.4	0.0
LnGrp Delay(d),s/veh	62.0	26.4	17.6	67.7	0.0	32.1	63.4	0.0	48.7	49.5	101.9	0.0
LnGrp LOS	E	C	B	E		C	E		D	D	F	
Approach Vol, veh/h		881			490			406			406	
Approach Delay, s/veh		32.6			35.4			58.1			85.2	
Approach LOS		C			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.1	68.2		24.0	18.9	57.4		25.7
Change Period (Y+Rc), s	4.0	5.5		5.0	4.0	5.5		5.0
Max Green Setting (Gmax), s	24.0	34.0		19.0	24.0	34.0		29.5
Max Q Clear Time (g_c+I1), s	5.2	30.9		20.6	14.7	26.0		20.0
Green Ext Time (p_c), s	0.1	1.2		0.0	0.3	2.2		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	47.7
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	746	15	47	441	18	3	9	30	16	17	24
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.98		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	9	746	14	47	441	17	3	9	3	16	17	2
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	1034	19	229	908	33	229	78	26	302	59	7
Arrive On Green	0.62	0.57	0.57	0.62	0.57	0.57	0.12	0.08	0.08	0.12	0.08	0.08
Sat Flow, veh/h	7	1808	34	78	1587	58	341	1022	341	731	777	91
Grp Volume(v), veh/h	769	0	0	505	0	0	15	0	0	35	0	0
Grp Sat Flow(s),veh/h/ln	1849	0	0	1723	0	0	1703	0	0	1600	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Cycle Q Clear(g_c), s	6.1	0.0	0.0	3.3	0.0	0.0	0.2	0.0	0.0	0.4	0.0	0.0
Prop In Lane	0.01		0.02	0.09		0.03	0.20		0.20	0.46		0.06
Lane Grp Cap(c), veh/h	1315	0	0	1251	0	0	413	0	0	443	0	0
V/C Ratio(X)	0.58	0.00	0.00	0.40	0.00	0.00	0.04	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	4997	0	0	4473	0	0	1858	0	0	1809	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.3	0.0	0.0	2.6	0.0	0.0	9.1	0.0	0.0	9.1	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	1.4	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	3.4	0.0	0.0	2.7	0.0	0.0	9.1	0.0	0.0	9.1	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h		769			505			15			35	
Approach Delay, s/veh		3.4			2.7			9.1			9.1	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		16.7		4.6		16.7		4.6
Change Period (Y+Rc), s		4.5		3.0		4.5		3.0
Max Green Setting (Gmax), s		55.0		20.0		55.0		20.0
Max Q Clear Time (g_c+I1), s		8.1		2.4		5.3		2.2
Green Ext Time (p_c), s		4.1		0.1		4.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	3.4
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	757	54	58	462	26	35
Number	6	16	5	2	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1900
Adj Flow Rate, veh/h	757	51	58	462	26	2
Adj No. of Lanes	1	0	1	1	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	925	62	443	1339	66	5
Arrive On Green	0.54	0.54	0.06	0.72	0.04	0.04
Sat Flow, veh/h	1723	116	1774	1863	1578	121
Grp Volume(v), veh/h	0	808	58	462	29	0
Grp Sat Flow(s),veh/h/ln	0	1839	1774	1863	1760	0
Q Serve(g_s), s	0.0	12.1	0.4	3.1	0.5	0.0
Cycle Q Clear(g_c), s	0.0	12.1	0.4	3.1	0.5	0.0
Prop In Lane		0.06	1.00		0.90	0.07
Lane Grp Cap(c), veh/h	0	988	443	1339	74	0
V/C Ratio(X)	0.00	0.82	0.13	0.35	0.39	0.00
Avail Cap(c_a), veh/h	0	3629	651	4233	842	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.4	5.3	1.8	15.6	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.1	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.0	0.2	1.6	0.3	0.0
LnGrp Delay(d),s/veh	0.0	7.0	5.3	1.8	16.9	0.0
LnGrp LOS		A	A	A	B	
Approach Vol, veh/h	808			520	29	
Approach Delay, s/veh	7.0			2.2	16.9	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		28.0		5.4	6.1	22.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		76.0		16.0	6.0	66.0		
Max Q Clear Time (g_c+I1), s		5.1		2.5	2.4	14.1		
Green Ext Time (p_c), s		3.8		0.0	0.0	3.8		

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	849	8	3	156	0	12	0	15	85	10	350
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	0	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	0	849	8	3	156	0	12	0	0	85	10	96
Adj No. of Lanes	1	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	4	1067	10	92	1069	0	39	0	0	270	32	153
Arrive On Green	0.00	0.58	0.58	0.58	0.58	0.00	0.02	0.00	0.00	0.15	0.17	0.17
Sat Flow, veh/h	1774	1842	17	6	1845	0	1774	0	0	1595	188	1579
Grp Volume(v), veh/h	0	0	857	159	0	0	12	0	0	95	0	96
Grp Sat Flow(s),veh/h/ln	1774	0	1859	1851	0	0	1774	0	0	1783	0	1579
Q Serve(g_s), s	0.0	0.0	14.9	0.0	0.0	0.0	0.3	0.0	0.0	2.0	0.0	5.4
Cycle Q Clear(g_c), s	0.0	0.0	14.9	1.6	0.0	0.0	0.3	0.0	0.0	2.0	0.0	5.4
Prop In Lane	1.00		0.01	0.02		0.00	1.00		0.00	0.89		1.00
Lane Grp Cap(c), veh/h	4	0	1077	1161	0	0	39	0	0	302	0	153
V/C Ratio(X)	0.00	0.00	0.80	0.14	0.00	0.00	0.31	0.00	0.00	0.31	0.00	0.63
Avail Cap(c_a), veh/h	600	0	1481	1639	0	0	514	0	0	818	0	610
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	6.8	4.0	0.0	0.0	19.9	0.0	0.0	15.5	0.0	64.4
Incr Delay (d2), s/veh	0.0	0.0	2.6	0.1	0.0	0.0	1.7	0.0	0.0	0.2	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	8.2	0.9	0.0	0.0	0.2	0.0	0.0	1.0	0.0	0.1
LnGrp Delay(d),s/veh	0.0	0.0	9.4	4.1	0.0	0.0	21.6	0.0	0.0	15.7	0.0	65.9
LnGrp LOS			A	A			C			B		E
Approach Vol, veh/h		857			159			12			191	
Approach Delay, s/veh		9.4			4.1			21.6			41.0	
Approach LOS		A			A			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		27.5		10.0	0.0	27.5		3.9
Change Period (Y+Rc), s		3.5		3.0	3.0	3.5		3.0
Max Green Setting (Gmax), s		33.0		19.0	14.0	35.0		12.0
Max Q Clear Time (g_c+I1), s		16.9		7.4	0.0	3.6		2.3
Green Ext Time (p_c), s		7.1		0.4	0.0	9.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	622	72	255	23	11	27	148	22	34	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.99	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863			
Adj Flow Rate, veh/h	622	72	182	23	11	5	148	22	5			
Adj No. of Lanes	1	1	0	0	1	1	1	1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Cap, veh/h	759	300	759	256	93	243	289	303	251			
Arrive On Green	0.43	0.65	0.65	0.17	0.15	0.15	0.16	0.16	0.16			
Sat Flow, veh/h	1774	461	1165	753	604	1571	1774	1863	1545			
Grp Volume(v), veh/h	622	0	254	34	0	5	148	22	5			
Grp Sat Flow(s),veh/h/ln	1774	0	1625	1357	0	1571	1774	1863	1545			
Q Serve(g_s), s	13.3	0.0	2.8	0.0	0.0	0.1	3.3	0.4	0.1			
Cycle Q Clear(g_c), s	13.3	0.0	2.8	0.7	0.0	0.1	3.3	0.4	0.1			
Prop In Lane	1.00		0.72	0.68		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	759	0	1059	365	0	243	289	303	251			
V/C Ratio(X)	0.82	0.00	0.24	0.09	0.00	0.02	0.51	0.07	0.02			
Avail Cap(c_a), veh/h	1604	0	1059	702	0	655	946	993	824			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	10.9	0.0	3.1	15.6	0.0	15.5	16.5	15.3	15.2			
Incr Delay (d2), s/veh	2.3	0.0	0.2	0.0	0.0	0.0	0.5	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.9	0.0	1.2	0.3	0.0	0.1	1.6	0.2	0.1			
LnGrp Delay(d),s/veh	13.1	0.0	3.3	15.6	0.0	15.5	17.0	15.3	15.2			
LnGrp LOS	B		A	B		B	B	B	B			
Approach Vol, veh/h		876			39			175				
Approach Delay, s/veh		10.3			15.6			16.8				
Approach LOS		B			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		32.6		10.5	21.5	11.2		
Change Period (Y+Rc), s		* 4.5		3.5	3.0	4.5		
Max Green Setting (Gmax), s		* 23		23.0	39.0	18.0		
Max Q Clear Time (g_c+I1), s		4.8		5.3	15.3	2.7		
Green Ext Time (p_c), s		1.6		0.3	3.1	0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	9	198	5	9	269
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	198	5	9	269

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	488	204	0	0	203	0
Stage 1	201	-	-	-	-	-
Stage 2	287	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	539	837	-	-	1369	-
Stage 1	833	-	-	-	-	-
Stage 2	762	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	533	835	-	-	1366	-
Mov Cap-2 Maneuver	533	-	-	-	-	-
Stage 1	833	-	-	-	-	-
Stage 2	754	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	835	1366	-
HCM Lane V/C Ratio	-	-	0.011	0.007	-
HCM Control Delay (s)	-	-	9.4	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	0	1	1	333	200	3	0	263	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	1	333	200	3	0	263	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1131	1131	205	263	0	0	203	0	0
Stage 1	868	868	-	-	-	-	-	-	-
Stage 2	263	263	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	225	203	836	1301	-	-	1369	-	-
Stage 1	411	370	-	-	-	-	-	-	-
Stage 2	781	691	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	167	0	834	1298	-	-	1366	-	-
Mov Cap-2 Maneuver	167	0	-	-	-	-	-	-	-
Stage 1	306	0	-	-	-	-	-	-	-
Stage 2	779	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	5.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1298	-	-	834	1366	-	-
HCM Lane V/C Ratio	0.257	-	-	0.002	-	-	-
HCM Control Delay (s)	8.7	-	-	9.3	0	-	-
HCM Lane LOS	A	-	-	A	A	-	-
HCM 95th %tile Q(veh)	1	-	-	0	0	-	-

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	52	92	0	3	17	0	97	8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	52	92	0	3	17	0	97	8
Number of Lanes	0	1	0	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.6	6.9	8.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	36%	92%
Vol Thru, %	15%	0%	8%
Vol Right, %	85%	64%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	20	144	105
LT Vol	0	52	97
Through Vol	3	0	8
RT Vol	17	92	0
Lane Flow Rate	20	144	105
Geometry Grp	1	1	1
Degree of Util (X)	0.021	0.154	0.128
Departure Headway (Hd)	3.757	3.838	4.388
Convergence, Y/N	Yes	Yes	Yes
Cap	938	923	812
Service Time	1.841	1.911	2.442
HCM Lane V/C Ratio	0.021	0.156	0.129
HCM Control Delay	6.9	7.6	8.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.5	0.4

Intersection	
Intersection Delay, s/veh	14.7
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	0	80	93	0	302	116	0	0	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	80	93	0	302	116	0	0	0	0	0
Number of Lanes	0	0	1	0	0	1	1	0	0	0	0	0

Approach	EB	WB
Opposing Approach	WB	EB
Opposing Lanes	2	1
Conflicting Approach Left	SB	
Conflicting Lanes Left	2	0
Conflicting Approach Right		SB
Conflicting Lanes Right	0	2
HCM Control Delay	11.8	15.6
HCM LOS	B	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	73%	0%
Vol Thru, %	46%	0%	100%	27%	58%
Vol Right, %	54%	0%	0%	0%	42%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	173	302	116	297	139
LT Vol	0	302	0	217	0
Through Vol	80	0	116	80	80
RT Vol	93	0	0	0	59
Lane Flow Rate	173	302	116	297	139
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.297	0.559	0.198	0.548	0.23
Departure Headway (Hd)	6.175	6.659	6.152	6.637	5.967
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	581	541	583	544	602
Service Time	4.221	4.401	3.894	4.377	3.707
HCM Lane V/C Ratio	0.298	0.558	0.199	0.546	0.231
HCM Control Delay	11.8	17.6	10.4	17.2	10.5
HCM Lane LOS	B	C	B	C	B
HCM 95th-tile Q	1.2	3.4	0.7	3.3	0.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	217	160	59
Peak Hour Factor	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	217	160	59
Number of Lanes	0	0	2	0

Approach	SB
Opposing Approach	
Opposing Lanes	0
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	15.1
HCM LOS	C

Lane

Intersection	
Intersection Delay, s/veh	21.6
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	66	170	61	0	17	148	153	0	121	317	174
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	66	170	61	0	17	148	153	0	121	317	174
Number of Lanes	0	0	1	0	0	0	2	0	0	0	2	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	2	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	1	2
HCM Control Delay	25.6	16.2	22.4
HCM LOS	D	C	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	43%	0%	22%	19%	0%	27%
Vol Thru, %	57%	48%	57%	81%	33%	16%
Vol Right, %	0%	52%	21%	0%	67%	57%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	280	333	297	91	227	263
LT Vol	121	0	66	17	0	71
Through Vol	159	159	170	74	74	43
RT Vol	0	174	61	0	153	149
Lane Flow Rate	280	332	297	91	227	263
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	0.602	0.66	0.661	0.208	0.482	0.582
Departure Headway (Hd)	7.856	7.257	8.121	8.33	7.746	7.97
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	461	502	448	433	468	455
Service Time	5.556	4.957	6.121	6.03	5.446	5.97
HCM Lane V/C Ratio	0.607	0.661	0.663	0.21	0.485	0.578
HCM Control Delay	21.7	22.9	25.6	13.2	17.4	21.5
HCM Lane LOS	C	C	D	B	C	C
HCM 95th-tile Q	3.9	4.8	4.7	0.8	2.6	3.6

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	71	43	149
Peak Hour Factor	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	71	43	149
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	21.5
HCM LOS	C

Lane

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	37	283	0	0	257	8	0	0	0	4	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	150	75	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	283	0	0	257	8	0	0	0	4	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	265	0	0	283	0	0	486	622	142	477	618	133
Stage 1	-	-	-	-	-	-	357	357	-	261	261	-
Stage 2	-	-	-	-	-	-	129	265	-	216	357	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1296	-	-	1276	-	-	464	401	880	471	403	892
Stage 1	-	-	-	-	-	-	633	627	-	721	691	-
Stage 2	-	-	-	-	-	-	861	688	-	766	627	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1296	-	-	1276	-	-	444	390	880	461	391	892
Mov Cap-2 Maneuver	-	-	-	-	-	-	444	390	-	461	391	-
Stage 1	-	-	-	-	-	-	615	609	-	700	691	-
Stage 2	-	-	-	-	-	-	842	688	-	744	609	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	0	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	1296	-	-	1276	-	-	772
HCM Lane V/C Ratio	-	-	0.029	-	-	-	-	-	0.031
HCM Control Delay (s)	0	0	7.9	-	-	0	-	-	9.8
HCM Lane LOS	A	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	-	0.1	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	93	185	5	8	136	10	9	4	4	23	6	101
Conflicting Peds, #/hr	3	0	0	0	0	3	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	185	5	8	136	10	9	4	4	23	6	101

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	148	0	0	192	0	0	465	540	100	442	537	78
Stage 1	-	-	-	-	-	-	376	376	-	159	159	-
Stage 2	-	-	-	-	-	-	89	164	-	283	378	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1431	-	-	1379	-	-	481	447	936	499	449	967
Stage 1	-	-	-	-	-	-	617	615	-	827	765	-
Stage 2	-	-	-	-	-	-	908	761	-	700	614	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1427	-	-	1376	-	-	401	414	932	465	416	963
Mov Cap-2 Maneuver	-	-	-	-	-	-	401	414	-	465	416	-
Stage 1	-	-	-	-	-	-	576	574	-	772	759	-
Stage 2	-	-	-	-	-	-	800	755	-	645	573	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.4	13	10.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	467	1427	-	-	1376	-	-	770
HCM Lane V/C Ratio	0.036	0.065	-	-	0.006	-	-	0.169
HCM Control Delay (s)	13	7.7	-	-	7.6	0	-	10.6
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	11.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	374	0	29	3	0	23	0	215	0	3	115	0
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	7	7	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	374	0	29	3	0	23	0	215	0	3	115	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	350	338	123	338	338	223	116	0	0	216	0	0
Stage 1	122	122	-	216	216	-	-	-	-	-	-	-
Stage 2	228	216	-	122	122	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	605	583	928	616	583	817	1473	-	-	1354	-	-
Stage 1	882	795	-	786	724	-	-	-	-	-	-	-
Stage 2	775	724	-	882	795	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	583	581	922	592	581	812	1464	-	-	1346	-	-
Mov Cap-2 Maneuver	583	581	-	592	581	-	-	-	-	-	-	-
Stage 1	881	793	-	785	723	-	-	-	-	-	-	-
Stage 2	749	723	-	848	793	-	-	-	-	-	-	-

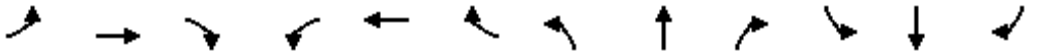
Approach	EB	WB	NB	SB
HCM Control Delay, s	20.7	9.8	0	0.2
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1464	-	-	583	922	779	1346	-	-
HCM Lane V/C Ratio	-	-	-	0.642	0.031	0.033	0.002	-	-
HCM Control Delay (s)	0	-	-	21.6	9	9.8	7.7	0	-
HCM Lane LOS	A	-	-	C	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	4.6	0.1	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	65	117	39	66	160	59	40	486	63	68	634	83
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.92	0.97		0.94	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	65	117	25	66	160	42	40	486	58	68	634	78
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	241	45	138	255	61	69	803	96	93	820	101
Arrive On Green	0.26	0.23	0.23	0.26	0.23	0.23	0.04	0.49	0.49	0.05	0.51	0.51
Sat Flow, veh/h	382	1035	195	316	1094	262	1774	1627	194	1774	1616	199
Grp Volume(v), veh/h	207	0	0	268	0	0	40	0	544	68	0	712
Grp Sat Flow(s),veh/h/ln	1612	0	0	1673	0	0	1774	0	1821	1774	0	1815
Q Serve(g_s), s	0.0	0.0	0.0	2.3	0.0	0.0	1.6	0.0	15.1	2.6	0.0	22.3
Cycle Q Clear(g_c), s	7.2	0.0	0.0	9.5	0.0	0.0	1.6	0.0	15.1	2.6	0.0	22.3
Prop In Lane	0.31		0.12	0.25		0.16	1.00		0.11	1.00		0.11
Lane Grp Cap(c), veh/h	489	0	0	501	0	0	69	0	898	93	0	921
V/C Ratio(X)	0.42	0.00	0.00	0.53	0.00	0.00	0.58	0.00	0.61	0.73	0.00	0.77
Avail Cap(c_a), veh/h	774	0	0	800	0	0	177	0	898	177	0	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.82	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.0	0.0	0.0	23.9	0.0	0.0	33.1	0.0	12.8	32.7	0.0	14.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.0	0.0	2.9	0.0	3.0	4.1	0.0	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.0	4.4	0.0	0.0	0.8	0.0	8.3	1.4	0.0	12.7
LnGrp Delay(d),s/veh	23.2	0.0	0.0	24.2	0.0	0.0	36.0	0.0	15.8	36.8	0.0	20.3
LnGrp LOS	C			C			D		B	D		C
Approach Vol, veh/h		207			268			584			780	
Approach Delay, s/veh		23.2			24.2			17.2			21.7	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		21.3	6.7	42.0		21.3	7.7	41.0
Change Period (Y+Rc), s		5.0	4.0	6.5		5.0	4.0	6.5
Max Green Setting (Gmax), s		29.5	7.0	18.0		29.5	7.0	18.0
Max Q Clear Time (g_c+I1), s		9.2	3.6	24.3		11.5	4.6	17.1
Green Ext Time (p_c), s		1.2	0.0	0.0		1.2	0.0	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	20.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	136	42	42	184	98	32	246	36	119	282	93
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.99	0.98		0.91	0.96		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1937	1900	1900	1937	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	51	136	30	42	184	72	32	246	20	119	282	61
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	341	67	181	327	118	202	945	75	354	664	142
Arrive On Green	0.31	0.28	0.28	0.31	0.28	0.28	0.36	0.32	0.32	0.36	0.32	0.32
Sat Flow, veh/h	267	1238	241	157	1185	427	176	2935	232	541	2062	442
Grp Volume(v), veh/h	217	0	0	298	0	0	158	0	140	243	0	219
Grp Sat Flow(s),veh/h/ln	1747	0	0	1769	0	0	1715	0	1627	1458	0	1587
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	1.9	1.3	0.0	3.2
Cycle Q Clear(g_c), s	2.8	0.0	0.0	4.1	0.0	0.0	1.8	0.0	1.9	3.4	0.0	3.2
Prop In Lane	0.24		0.14	0.14		0.24	0.20		0.14	0.49		0.28
Lane Grp Cap(c), veh/h	689	0	0	685	0	0	755	0	524	698	0	511
V/C Ratio(X)	0.31	0.00	0.00	0.44	0.00	0.00	0.21	0.00	0.27	0.35	0.00	0.43
Avail Cap(c_a), veh/h	1880	0	0	1943	0	0	2057	0	1855	1813	0	1809
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.7	0.0	0.0	9.2	0.0	0.0	7.4	0.0	7.5	7.7	0.0	8.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	2.0	0.0	0.0	0.9	0.0	0.9	1.5	0.0	1.4
LnGrp Delay(d),s/veh	8.8	0.0	0.0	9.4	0.0	0.0	7.5	0.0	7.6	7.8	0.0	8.2
LnGrp LOS	A			A			A		A	A		A
Approach Vol, veh/h		217			298			298			462	
Approach Delay, s/veh		8.8			9.4			7.5			8.0	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		15.6		14.2		15.6		14.2
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		30.0		34.0		30.0
Max Q Clear Time (g_c+I1), s		3.9		6.1		5.4		4.8
Green Ext Time (p_c), s		1.8		1.3		1.8		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	8.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	65	217	21	52	272	32
Conflicting Peds, #/hr	0	3	3	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	217	21	52	272	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	67	0	161	70
Stage 1	-	-	-	-	67	-
Stage 2	-	-	-	-	94	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1535	-	830	993
Stage 1	-	0	-	-	956	-
Stage 2	-	0	-	-	930	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1531	-	817	989
Mov Cap-2 Maneuver	-	-	-	-	817	-
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	917	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	832	-	1531	-
HCM Lane V/C Ratio	0.365	-	0.014	-
HCM Control Delay (s)	11.8	-	7.4	0
HCM Lane LOS	B	-	A	A
HCM 95th %tile Q(veh)	1.7	-	0	-

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	19	139	0	172	12	0	63	186
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	19	139	0	172	12	0	63	186
Number of Lanes	0	1	1	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	8.7	9	9.7
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	25%
Vol Thru, %	93%	0%	0%	75%
Vol Right, %	7%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	184	19	139	249
LT Vol	0	19	0	63
Through Vol	172	0	0	186
RT Vol	12	0	139	0
Lane Flow Rate	184	19	139	249
Geometry Grp	2	7	7	2
Degree of Util (X)	0.233	0.032	0.186	0.317
Departure Headway (Hd)	4.566	6.026	4.816	4.582
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	786	594	744	784
Service Time	2.602	3.767	2.557	2.614
HCM Lane V/C Ratio	0.234	0.032	0.187	0.318
HCM Control Delay	9	9	8.7	9.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0.1	0.7	1.4

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	69	7	34	150	4	9
Conflicting Peds, #/hr	0	3	3	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	69	7	34	150	4	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	77	0	217	42
Stage 1	-	-	-	-	74	-
Stage 2	-	-	-	-	143	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1520	-	752	1019
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	869	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1516	-	733	1016
Mov Cap-2 Maneuver	-	-	-	-	733	-
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	847	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	908	-	-	1516	-
HCM Lane V/C Ratio	0.014	-	-	0.022	-
HCM Control Delay (s)	9	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	30	5	17	7	4	1	17	57	15	153	35
Conflicting Peds, #/hr	1	0	0	0	0	1	13	0	2	2	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	30	5	17	7	4	1	17	57	15	153	35

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	228	222	108	143	239	31	189	0	0	18	0	0
Stage 1	202	202	-	20	20	-	-	-	-	-	-	-
Stage 2	26	20	-	123	219	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.14	-	-	4.12	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.22	-	-	2.218	-	-
Pot Cap-1 Maneuver	717	676	926	819	662	1043	1382	-	-	1599	-	-
Stage 1	781	734	-	998	878	-	-	-	-	-	-	-
Stage 2	991	878	-	869	721	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	695	668	915	771	654	1031	1367	-	-	1582	-	-
Mov Cap-2 Maneuver	695	668	-	771	654	-	-	-	-	-	-	-
Stage 1	780	726	-	996	876	-	-	-	-	-	-	-
Stage 2	968	876	-	812	714	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	9.9	0.1	0.5
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1367	-	-	695	764	1582	-	-
HCM Lane V/C Ratio	0.001	-	-	0.056	0.037	0.009	-	-
HCM Control Delay (s)	7.6	0	-	10.5	9.9	7.3	-	-
HCM Lane LOS	A	A	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	8	94	114	5	23	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	94	114	5	23	107

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	270	117	0	0	119	0
Stage 1	117	-	-	-	-	-
Stage 2	153	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	719	935	-	-	1469	-
Stage 1	908	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	707	935	-	-	1469	-
Mov Cap-2 Maneuver	707	-	-	-	-	-
Stage 1	908	-	-	-	-	-
Stage 2	860	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	1.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	707	935	1469	-
HCM Lane V/C Ratio	-	-	0.011	0.101	0.016	-
HCM Control Delay (s)	-	-	10.2	9.3	7.5	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0.3	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	15	110	1	0	106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	15	110	1	0	106

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	216	110	0	-	110	0
Stage 1	110	-	-	-	-	-
Stage 2	106	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	772	943	-	0	1480	-
Stage 1	915	-	-	0	-	-
Stage 2	918	-	-	0	-	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	772	943	-	-	1480	-
Mov Cap-2 Maneuver	772	-	-	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	918	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	7.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	WBLn1	SBL	SBT
Capacity (veh/h)	-	1572	1480	-
HCM Lane V/C Ratio	-	0.016	-	-
HCM Control Delay (s)	-	7.3	0	-
HCM Lane LOS	-	A	A	-
HCM 95th %tile Q(veh)	-	0	0	-

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	22	55	53	57	53	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	55	53	57	53	67

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	255	82	0	0	110	0
Stage 1	82	-	-	-	-	-
Stage 2	173	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	734	978	-	-	1480	-
Stage 1	941	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	707	978	-	-	1480	-
Mov Cap-2 Maneuver	707	-	-	-	-	-
Stage 1	941	-	-	-	-	-
Stage 2	825	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	3.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	881	1480	-
HCM Lane V/C Ratio	-	-	0.087	0.036	-
HCM Control Delay (s)	-	-	9.5	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	12	103	3	22	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	12	103	3	22	68

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	217	105	0	0	106	0
Stage 1	105	-	-	-	-	-
Stage 2	112	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	771	949	-	-	1485	-
Stage 1	919	-	-	-	-	-
Stage 2	913	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	759	949	-	-	1485	-
Mov Cap-2 Maneuver	759	-	-	-	-	-
Stage 1	919	-	-	-	-	-
Stage 2	899	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	1.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	949	1485	-
HCM Lane V/C Ratio	-	-	0.013	0.015	-
HCM Control Delay (s)	-	-	8.8	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	171	579	165	167	406	126	135	567	147	153	584	135
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.92	1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	171	579	140	167	406	38	135	567	58	153	584	118
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	941	227	204	1180	511	170	908	374	189	774	156
Arrive On Green	0.12	0.34	0.34	0.12	0.33	0.33	0.10	0.26	0.26	0.11	0.27	0.27
Sat Flow, veh/h	1774	2793	673	1774	3539	1532	1774	3539	1458	1774	2897	583
Grp Volume(v), veh/h	171	366	353	167	406	38	135	567	58	153	356	346
Grp Sat Flow(s),veh/h/ln	1774	1770	1696	1774	1770	1532	1774	1770	1458	1774	1770	1710
Q Serve(g_s), s	8.1	15.0	15.1	8.0	7.5	1.5	6.5	12.3	2.7	7.3	16.0	16.1
Cycle Q Clear(g_c), s	8.1	15.0	15.1	8.0	7.5	1.5	6.5	12.3	2.7	7.3	16.0	16.1
Prop In Lane	1.00		0.40	1.00		1.00	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	210	596	571	204	1180	511	170	908	374	189	473	457
V/C Ratio(X)	0.81	0.61	0.62	0.82	0.34	0.07	0.79	0.62	0.15	0.81	0.75	0.76
Avail Cap(c_a), veh/h	409	674	646	307	1348	583	348	1021	421	307	511	493
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	24.0	24.0	37.5	21.7	19.7	38.3	28.5	24.9	37.8	29.1	29.2
Incr Delay (d2), s/veh	7.4	1.4	1.5	10.1	0.2	0.1	8.0	1.0	0.2	7.9	5.8	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	7.5	7.3	4.5	3.7	0.6	3.5	6.1	1.1	4.0	8.6	8.4
LnGrp Delay(d),s/veh	44.6	25.4	25.5	47.5	21.9	19.8	46.4	29.5	25.1	45.8	34.9	35.3
LnGrp LOS	D	C	C	D	C	B	D	C	C	D	C	D
Approach Vol, veh/h		890			611			760			855	
Approach Delay, s/veh		29.1			28.8			32.2			37.0	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	27.7	13.8	33.4	12.7	26.7	13.5	33.7
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	17.0	25.0	20.0	33.0	15.0	25.0	15.0	33.0
Max Q Clear Time (g_c+I1), s	8.5	18.1	10.1	9.5	9.3	14.3	10.0	17.1
Green Ext Time (p_c), s	0.2	4.3	0.3	8.2	0.2	6.0	0.2	6.8

Intersection Summary	
HCM 2010 Ctrl Delay	32.0
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	800	24	9	662	15	10	6	5	24	18	23
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.95	0.96		1.00	0.96		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	36	800	23	9	662	14	10	6	0	24	18	3
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	2684	76	49	2878	60	108	53	0	92	57	7
Arrive On Green	0.84	0.84	0.84	0.84	0.84	0.84	0.07	0.07	0.00	0.07	0.07	0.07
Sat Flow, veh/h	105	3186	91	19	3416	72	823	790	0	635	853	106
Grp Volume(v), veh/h	435	0	424	357	0	328	16	0	0	45	0	0
Grp Sat Flow(s),veh/h/ln	1708	0	1674	1828	0	1678	1613	0	0	1594	0	0
Q Serve(g_s), s	0.0	0.0	5.9	0.0	0.0	4.2	0.0	0.0	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	5.9	4.1	0.0	4.2	0.9	0.0	0.0	2.8	0.0	0.0
Prop In Lane	0.08		0.05	0.03		0.04	0.62		0.00	0.53		0.07
Lane Grp Cap(c), veh/h	1474	0	1410	1574	0	1414	161	0	0	156	0	0
V/C Ratio(X)	0.29	0.00	0.30	0.23	0.00	0.23	0.10	0.00	0.00	0.29	0.00	0.00
Avail Cap(c_a), veh/h	1474	0	1410	1574	0	1414	333	0	0	332	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.00	0.72	0.97	0.00	0.97	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.8	0.0	1.8	1.7	0.0	1.7	48.3	0.0	0.0	49.2	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	2.7	2.1	0.0	1.9	0.5	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	2.1	0.0	2.2	1.7	0.0	1.7	48.4	0.0	0.0	49.5	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		859			685			16			45	
Approach Delay, s/veh		2.2			1.7			48.4			49.5	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		97.7		12.3		97.7		12.3
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		7.9		4.8		6.2		2.9
Green Ext Time (p_c), s		8.5		0.1		8.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	3.8
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	759	29	15	618	18	46	21	34	18	20	33
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.94	0.99		0.94	0.88		0.85	0.89		0.85
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	16	759	27	15	618	16	46	21	17	18	20	5
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	61	2577	91	68	2579	66	141	62	39	117	118	25
Arrive On Green	1.00	1.00	1.00	0.77	0.77	0.77	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	35	3327	117	44	3330	85	669	459	286	524	873	184
Grp Volume(v), veh/h	418	0	384	336	0	313	84	0	0	43	0	0
Grp Sat Flow(s),veh/h/ln	1814	0	1666	1786	0	1674	1414	0	0	1581	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	5.7	3.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.5	0.0	5.7	5.6	0.0	0.0	2.4	0.0	0.0
Prop In Lane	0.04		0.07	0.04		0.05	0.55		0.20	0.42		0.12
Lane Grp Cap(c), veh/h	1439	0	1290	1417	0	1296	241	0	0	259	0	0
V/C Ratio(X)	0.29	0.00	0.30	0.24	0.00	0.24	0.35	0.00	0.00	0.17	0.00	0.00
Avail Cap(c_a), veh/h	1439	0	1290	1417	0	1296	305	0	0	329	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.00	0.96	0.98	0.00	0.98	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.4	0.0	3.4	43.5	0.0	0.0	42.2	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.6	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	2.8	0.0	2.6	2.4	0.0	0.0	1.2	0.0	0.0
LnGrp Delay(d),s/veh	0.5	0.0	0.6	3.4	0.0	3.5	43.8	0.0	0.0	42.3	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		802			649			84			43	
Approach Delay, s/veh		0.5			3.5			43.8			42.3	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		90.2		19.8		90.2		19.8
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		2.0		4.4		7.7		7.6
Green Ext Time (p_c), s		7.6		0.4		7.6		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	5.2
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	745	34	19	581	12	43	20	35	8	17	21
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	0.96		0.94	0.97		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	13	745	32	19	581	11	43	20	15	8	17	2
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	2704	115	91	2681	50	116	51	28	72	124	12
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	27	3323	141	69	3294	62	684	538	291	306	1297	128
Grp Volume(v), veh/h	414	0	376	312	0	299	78	0	0	27	0	0
Grp Sat Flow(s),veh/h/ln	1828	0	1663	1744	0	1681	1513	0	0	1732	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0	1.5	0.0	0.0
Prop In Lane	0.03		0.09	0.06		0.04	0.55		0.19	0.30		0.07
Lane Grp Cap(c), veh/h	1522	0	1353	1454	0	1368	195	0	0	207	0	0
V/C Ratio(X)	0.27	0.00	0.28	0.21	0.00	0.22	0.40	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	1522	0	1353	1454	0	1368	322	0	0	349	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.00	0.96	0.90	0.00	0.90	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	47.3	0.0	0.0	45.7	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.0	0.0	0.0	2.3	0.0	0.0	0.8	0.0	0.0
LnGrp Delay(d),s/veh	0.4	0.0	0.5	0.0	0.0	0.0	47.8	0.0	0.0	45.8	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		790			611			78			27	
Approach Delay, s/veh		0.5			0.0			47.8			45.8	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		94.5		15.5		94.5		15.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		2.0		3.5		2.0		7.2
Green Ext Time (p_c), s		7.2		0.3		7.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	3.5
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	131	550	83	51	430	149	61	316	35	130	356	120
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1937	1900	1863	1937	1900
Adj Flow Rate, veh/h	131	550	72	51	430	117	61	316	31	130	356	108
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	1055	138	244	1100	296	79	379	37	158	375	114
Arrive On Green	0.03	0.11	0.11	0.27	0.80	0.80	0.04	0.22	0.22	0.09	0.26	0.26
Sat Flow, veh/h	1774	3136	409	1774	2739	737	1774	1730	170	1774	1423	432
Grp Volume(v), veh/h	131	310	312	51	276	271	61	0	347	130	0	464
Grp Sat Flow(s),veh/h/ln	1774	1770	1775	1774	1770	1706	1774	0	1899	1774	0	1854
Q Serve(g_s), s	8.1	18.2	18.3	2.4	4.9	5.0	3.7	0.0	19.2	7.9	0.0	27.0
Cycle Q Clear(g_c), s	8.1	18.2	18.3	2.4	4.9	5.0	3.7	0.0	19.2	7.9	0.0	27.0
Prop In Lane	1.00		0.23	1.00		0.43	1.00		0.09	1.00		0.23
Lane Grp Cap(c), veh/h	160	595	597	244	711	686	79	0	416	158	0	489
V/C Ratio(X)	0.82	0.52	0.52	0.21	0.39	0.39	0.77	0.00	0.83	0.82	0.00	0.95
Avail Cap(c_a), veh/h	177	595	597	244	711	686	194	0	484	210	0	489
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.93	0.93	0.93	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.5	40.5	40.6	35.3	6.9	7.0	52.0	0.0	41.1	49.2	0.0	39.8
Incr Delay (d2), s/veh	20.4	3.1	3.1	0.1	1.5	1.6	6.0	0.0	9.3	13.6	0.0	28.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	9.4	9.5	1.2	2.6	2.6	2.0	0.0	11.1	4.5	0.0	17.6
LnGrp Delay(d),s/veh	72.9	43.6	43.7	35.4	8.4	8.5	58.0	0.0	50.4	62.8	0.0	67.8
LnGrp LOS	E	D	D	D	A	A	E		D	E		E
Approach Vol, veh/h		753			598			408			594	
Approach Delay, s/veh		48.8			10.8			51.5			66.7	
Approach LOS		D			B			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.1	44.0	14.8	29.1	14.9	51.2	9.9	34.0
Change Period (Y+Rc), s	7.0	* 7	5.0	5.0	5.0	7.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	* 37	13.0	28.0	11.0	36.0	12.0	29.0
Max Q Clear Time (g_c+I1), s	4.4	20.3	9.9	21.2	10.1	7.0	5.7	29.0
Green Ext Time (p_c), s	0.8	1.3	0.1	1.3	0.0	1.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.1
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	565	79	25	476	96	82	210	30	117	227	65
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	47	565	71	25	476	83	82	210	25	117	227	55
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	1622	203	60	973	169	105	280	33	145	280	68
Arrive On Green	0.45	1.00	1.00	0.01	0.11	0.11	0.06	0.17	0.17	0.08	0.19	0.19
Sat Flow, veh/h	1774	3164	397	1774	3014	523	1774	1633	194	1774	1442	349
Grp Volume(v), veh/h	47	315	321	25	278	281	82	0	235	117	0	282
Grp Sat Flow(s),veh/h/ln	1774	1770	1790	1774	1770	1767	1774	0	1827	1774	0	1791
Q Serve(g_s), s	1.7	0.0	0.0	1.5	16.3	16.5	5.0	0.0	13.4	7.1	0.0	16.6
Cycle Q Clear(g_c), s	1.7	0.0	0.0	1.5	16.3	16.5	5.0	0.0	13.4	7.1	0.0	16.6
Prop In Lane	1.00		0.22	1.00		0.30	1.00		0.11	1.00		0.20
Lane Grp Cap(c), veh/h	397	907	918	60	571	570	105	0	314	145	0	348
V/C Ratio(X)	0.12	0.35	0.35	0.41	0.49	0.49	0.78	0.00	0.75	0.81	0.00	0.81
Avail Cap(c_a), veh/h	397	907	918	153	571	570	185	0	440	266	0	513
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.0	0.0	0.0	53.3	40.6	40.6	51.1	0.0	43.3	49.7	0.0	42.4
Incr Delay (d2), s/veh	0.0	0.9	0.9	1.7	3.0	3.0	4.8	0.0	2.4	4.0	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.2	0.2	0.8	8.5	8.5	2.6	0.0	7.0	3.7	0.0	8.6
LnGrp Delay(d),s/veh	24.1	0.9	0.9	55.0	43.5	43.7	55.8	0.0	45.7	53.6	0.0	46.0
LnGrp LOS	C	A	A	D	D	D	E		D	D		D
Approach Vol, veh/h		683			584			317			399	
Approach Delay, s/veh		2.5			44.1			48.3			48.2	
Approach LOS		A			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.1	41.0	14.5	24.4	9.2	61.9	12.0	26.9
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	35.5	16.5	26.5	9.5	35.5	11.5	31.5
Max Q Clear Time (g_c+I1), s	3.7	18.5	9.1	15.4	3.5	2.0	7.0	18.6
Green Ext Time (p_c), s	0.1	1.2	0.1	1.0	0.0	1.6	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	31.3
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	706	4	4	597	0	0	0	5	8	0	7
Conflicting Peds, #/hr	2	0	1	1	0	2	1	0	2	2	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	706	4	4	597	0	0	0	5	8	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	599	0	0	712	0	0	1019	1317	359	962	1319	303
Stage 1	-	-	-	-	-	-	710	710	-	607	607	-
Stage 2	-	-	-	-	-	-	309	607	-	355	712	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	974	-	-	884	-	-	191	156	638	210	156	693
Stage 1	-	-	-	-	-	-	391	435	-	450	485	-
Stage 2	-	-	-	-	-	-	676	485	-	635	434	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	972	-	-	883	-	-	188	155	636	207	155	691
Mov Cap-2 Maneuver	-	-	-	-	-	-	188	155	-	207	155	-
Stage 1	-	-	-	-	-	-	390	434	-	449	482	-
Stage 2	-	-	-	-	-	-	665	482	-	629	433	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	10.7	17.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	636	972	-	-	883	-	-	308
HCM Lane V/C Ratio	0.008	-	-	-	0.005	-	-	0.049
HCM Control Delay (s)	10.7	0	-	-	9.1	-	-	17.3
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	701	6	6	588	9	5	0	6	87	2	5
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	14	701	6	6	588	8	5	0	0	87	2	3
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	748	3001	26	681	2984	41	208	0	0	177	3	4
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.07	0.00	0.00	0.07	0.08	0.08
Sat Flow, veh/h	818	3596	31	738	3575	49	1710	0	0	1353	31	47
Grp Volume(v), veh/h	14	345	362	6	291	305	5	0	0	92	0	0
Grp Sat Flow(s),veh/h/ln	818	1770	1857	738	1770	1854	1710	0	0	1431	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	7.0	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.03	1.00		0.00	0.95		0.03
Lane Grp Cap(c), veh/h	748	1477	1550	681	1477	1547	193	0	0	170	0	0
V/C Ratio(X)	0.02	0.23	0.23	0.01	0.20	0.20	0.03	0.00	0.00	0.54	0.00	0.00
Avail Cap(c_a), veh/h	748	1477	1550	681	1477	1547	445	0	0	426	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.97	0.97	0.97	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	46.8	0.0	0.0	49.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.4	0.0	0.3	0.3	0.0	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	0.0	0.1	0.1	0.1	0.0	0.0	2.8	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.4	0.4	0.0	0.3	0.3	46.8	0.0	0.0	50.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D			D		
Approach Vol, veh/h		721			602			5			92	
Approach Delay, s/veh		0.4			0.3			46.8			50.8	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		96.8		13.2		96.8		13.2
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0
Max Green Setting (Gmax), s		72.0		29.0		72.0		29.0
Max Q Clear Time (g_c+I1), s		2.0		2.3		2.0		9.0
Green Ext Time (p_c), s		3.2		0.2		3.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	3.8
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	777	2	10	660	117	0	1	11	92	0	11
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	0.95		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	777	2	10	660	111	0	1	0	92	0	0
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	2	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	47	2914	8	25	2403	404	0	134	0	323	134	0
Arrive On Green	0.04	1.00	1.00	0.01	0.79	0.79	0.00	0.07	0.00	0.07	0.00	0.00
Sat Flow, veh/h	1774	3621	9	1774	3032	509	0	1863	0	2684	1863	0
Grp Volume(v), veh/h	22	380	399	10	385	386	0	1	0	92	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1861	1774	1770	1772	0	1863	0	1342	1863	0
Q Serve(g_s), s	1.3	0.0	0.0	0.6	6.3	6.4	0.0	0.1	0.0	3.6	0.0	0.0
Cycle Q Clear(g_c), s	1.3	0.0	0.0	0.6	6.3	6.4	0.0	0.1	0.0	3.7	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.29	0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	47	1424	1497	25	1402	1404	0	134	0	323	134	0
V/C Ratio(X)	0.46	0.27	0.27	0.39	0.27	0.28	0.00	0.01	0.00	0.29	0.00	0.00
Avail Cap(c_a), veh/h	202	1424	1497	202	1402	1404	0	195	0	801	466	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	52.3	0.0	0.0	53.7	3.0	3.0	0.0	47.4	0.0	49.1	0.0	0.0
Incr Delay (d2), s/veh	6.8	0.4	0.4	9.5	0.5	0.5	0.0	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.2	0.2	0.4	3.2	3.3	0.0	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	59.1	0.4	0.4	63.3	3.5	3.5	0.0	47.4	0.0	49.6	0.0	0.0
LnGrp LOS	E	A	A	E	A	A		D		D		
Approach Vol, veh/h		801			781			1			92	
Approach Delay, s/veh		2.0			4.3			47.4			49.6	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	93.5		11.4	6.4	92.2		11.4
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5
Max Green Setting (Gmax), s	12.5	43.0		27.5	12.5	43.0		11.5
Max Q Clear Time (g_c+I1), s	2.6	2.0		5.7	3.3	8.4		2.1
Green Ext Time (p_c), s	0.0	8.4		0.3	0.0	8.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.7
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	11	55	857	20	39	766
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	55	857	20	39	766

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1329	440	0	0	878	0
Stage 1	868	-	-	-	-	-
Stage 2	461	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	146	565	-	-	765	-
Stage 1	371	-	-	-	-	-
Stage 2	601	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	138	565	-	-	765	-
Mov Cap-2 Maneuver	138	-	-	-	-	-
Stage 1	371	-	-	-	-	-
Stage 2	570	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.7	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	373	765	-
HCM Lane V/C Ratio	-	-	0.177	0.051	-
HCM Control Delay (s)	-	-	16.7	10	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.2	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	0	0	0	0	556	350	313	817	0
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	556	350	313	817	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1722	2000	411	818	0	-	556	0	0
Stage 1	1444	1444	-	-	-	-	-	-	-
Stage 2	278	556	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	80	59	590	806	-	0	1011	-	-
Stage 1	183	195	-	-	-	0	-	-	-
Stage 2	744	511	-	-	-	0	-	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	55	0	589	805	-	-	1010	-	-
Mov Cap-2 Maneuver	105	0	-	-	-	-	-	-	-
Stage 1	126	0	-	-	-	-	-	-	-
Stage 2	743	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	2.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	805	-	-	1010	-	-
HCM Lane V/C Ratio	-	-	-	0.31	-	-
HCM Control Delay (s)	0	-	0	10.2	-	-
HCM Lane LOS	A	-	A	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.3	-	-

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing**
Volume and Delay by Movement **PM Peak Hour**

Intersection 38 **I-580 EB Off-Ramp-98th Avenue/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn	6	6	103.3%	2.8	3	11	0.1	32.5	27.8	0.0	80.9	C
	Second Left												
	Left Turn	41	43	104.9%	3.8	35	50	0.3	52.0	7.9	42.2	64.4	D
	Through												
	Right Turn	515	518	100.5%	16.9	494	546	0.1	1.5	0.4	1.1	2.3	A
	Second Right												
	Subtotal	562	567	100.9%	17.3	539	599	0.2	4.7	1.3	2.8	6.5	A
SB	U Turn												
	Second Left												
	Left Turn	132	134	101.7%	11.6	120	164	0.2	43.9	7.0	34.7	51.4	D
	Through	490	489	99.8%	22.2	463	528	0.0	43.2	5.4	36.7	51.3	D
	Right Turn	32	31	96.6%	3.7	27	39	0.2	31.1	6.5	19.4	41.7	C
	Second Right												
	Subtotal	654	654	100.0%	25.6	617	696	0.0	42.8	5.4	35.3	50.0	D
EB	U Turn												
	Second Left												
	Left Turn												
	Through	64	59	92.0%	4.8	53	66	0.7	44.5	8.5	33.8	58.6	D
	Right Turn	163	166	101.9%	11.2	147	180	0.2	10.9	2.1	8.2	14.5	B
	Second Right												
	Subtotal	227	225	99.1%	11.8	208	244	0.1	20.2	2.0	17.6	24.5	C
WB	U Turn												
	Second Left												
	Left Turn	468	462	98.8%	10.5	449	483	0.3	28.0	2.0	24.2	30.3	C
	Through	180	184	102.2%	11.5	164	199	0.3	16.4	1.1	15.2	18.7	B
	Right Turn												
	Second Right												
	Subtotal	648	646	99.7%	11.9	632	671	0.1	24.9	1.7	21.4	27.0	C
Total		2,091	2,092	100.1%	40.8	2,024	2,169	0.0	25.0	2.0	21.7	27.7	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing**
Volume and Delay by Movement **PM Peak Hour**

Intersection 39 **I-580 Ramps/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	409	418	102.2%	19.5	391	446	0.4	24.8	2.5	21.8	29.1	C
	Through	2	2	120.0%	1.6	0	5	0.3	6.5	11.0	0.0	29.5	A
	Right Turn	209	205	97.9%	12.9	186	222	0.3	6.4	1.6	4.8	9.5	A
	Second Right												
	Subtotal	620	625	100.8%	22.1	599	667	0.2	19.0	1.7	16.9	21.2	B
SB	U Turn												
	Second Left												
	Left Turn												
	Through												
	Right Turn												
	Second Right												
	Subtotal												
EB	U Turn												
	Second Left												
	Left Turn	463	454	98.0%	17.6	426	483	0.4	35.9	3.3	29.3	40.3	D
	Through	248	244	98.4%	13.2	216	260	0.3	17.4	2.6	13.2	21.3	B
	Right Turn												
	Second Right												
	Subtotal	711	698	98.1%	17.8	668	718	0.5	29.3	2.2	25.9	31.7	C
WB	U Turn												
	Second Left												
	Left Turn												
	Through	239	240	100.5%	13.5	215	259	0.1	39.0	4.3	31.6	46.3	D
	Right Turn	145	145	100.1%	6.4	136	160	0.0	7.5	1.5	5.5	10.5	A
	Second Right												
	Subtotal	384	385	100.3%	10.6	366	403	0.1	27.6	3.7	20.0	32.8	C
Total		1,715	1,708	99.6%	27.8	1,665	1,744	0.2	25.2	1.3	22.2	26.7	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing**
Volume and Delay by Movement **PM Peak Hour**

Intersection 40 **Mountain Boulevard-Oakland Zoo Driveway/Golf Links Road** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	29	28	96.6%	4.8	22	39	0.2	11.2	3.8	6.6	16.7	B
	Through	2	2	105.0%	2.5	0	7	0.1	3.1	5.3	0.0	14.7	A
	Right Turn	2	2	115.0%	1.3	1	5	0.2	0.6	1.1	0.0	3.1	A
	Second Right												
	Subtotal	33	32	98.2%	5.5	24	43	0.1	11.0	3.9	5.5	16.1	B
SB	U Turn												
	Second Left												
	Left Turn	12	13	106.7%	3.3	8	17	0.2	7.7	4.4	3.5	15.9	A
	Through	1	1	80.0%	0.9	0	2	0.2	1.6	3.3	0.0	8.7	A
	Right Turn	67	72	106.9%	7.7	63	88	0.6	12.0	10.1	2.9	39.0	B
	Second Right												
	Subtotal	80	85	106.5%	9.4	75	103	0.6	11.3	8.5	3.0	33.4	B
EB	U Turn	26	28	107.3%	6.2	20	40	0.4	1.1	1.1	0.5	4.1	A
	Second Left												
	Left Turn	109	102	93.4%	6.6	89	110	0.7	1.0	0.2	0.8	1.3	A
	Through	320	317	99.1%	18.3	295	343	0.2	1.2	0.1	1.1	1.5	A
	Right Turn	2	2	85.0%	0.9	1	4	0.2	0.4	0.6	0.0	1.7	A
	Second Right												
	Subtotal	457	449	98.2%	18.4	423	478	0.4	1.1	0.1	1.0	1.3	A
WB	U Turn												
	Second Left												
	Left Turn	2	2	85.0%	1.2	0	3	0.2	26.9	62.5	0.0	199.5	D
	Through	262	257	98.1%	10.1	238	274	0.3	35.4	43.8	8.8	153.1	E
	Right Turn	8	9	106.3%	3.6	5	14	0.2	30.7	61.0	0.0	202.4	D
	Second Right												
	Subtotal	272	267	98.2%	11.6	245	289	0.3	35.1	44.1	8.8	154.2	E
Total		842	833	99.0%	18.4	801	860	0.3	14.2	16.7	3.9	59.3	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	701	202	77	672	87	143	199	68	162	596	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	110	701	106	77	672	79	143	199	41	162	596	41
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	904	396	99	747	88	170	1051	212	298	1553	695
Arrive On Green	0.08	0.26	0.26	0.06	0.23	0.23	0.10	0.36	0.36	0.17	0.44	0.44
Sat Flow, veh/h	1774	3539	1549	1774	3191	375	1774	2934	593	1774	3539	1583
Grp Volume(v), veh/h	110	701	106	77	372	379	143	118	122	162	596	41
Grp Sat Flow(s),veh/h/ln	1774	1770	1549	1774	1770	1797	1774	1770	1758	1774	1770	1583
Q Serve(g_s), s	7.3	22.1	6.6	5.1	24.5	24.5	9.5	5.5	5.7	10.0	13.6	1.8
Cycle Q Clear(g_c), s	7.3	22.1	6.6	5.1	24.5	24.5	9.5	5.5	5.7	10.0	13.6	1.8
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.34	1.00		1.00
Lane Grp Cap(c), veh/h	137	904	396	99	414	421	170	634	630	298	1553	695
V/C Ratio(X)	0.81	0.78	0.27	0.78	0.90	0.90	0.84	0.19	0.19	0.54	0.38	0.06
Avail Cap(c_a), veh/h	281	959	420	222	420	427	222	634	630	298	1553	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	41.5	35.7	55.9	44.6	44.6	53.3	26.5	26.5	45.7	22.7	19.4
Incr Delay (d2), s/veh	10.5	3.8	0.4	12.5	21.5	21.5	19.3	0.7	0.7	2.0	0.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	11.3	2.8	2.9	14.5	14.7	5.6	2.8	2.9	5.1	6.8	0.8
LnGrp Delay(d),s/veh	65.0	45.3	36.1	68.4	66.1	66.1	72.7	27.1	27.2	47.7	23.4	19.6
LnGrp LOS	E	D	D	E	E	E	E	C	C	D	C	B
Approach Vol, veh/h		917			828			383			799	
Approach Delay, s/veh		46.6			66.3			44.2			28.2	
Approach LOS		D			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.2	48.0	10.7	36.2	15.5	57.6	13.2	33.6
Change Period (Y+Rc), s	5.0	* 5	4.0	5.5	4.0	5.0	4.0	5.5
Max Green Setting (Gmax), s	11.0	* 43	15.0	32.5	15.0	39.0	19.0	28.5
Max Q Clear Time (g_c+I1), s	12.0	7.7	7.1	24.1	11.5	15.6	9.3	26.5
Green Ext Time (p_c), s	0.0	1.5	0.1	5.7	0.1	4.9	0.2	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	46.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Signal Warrant Worksheets

FEHR PEERS

FEHR PEERS

Sheet No 1 of 1

Major Street	Seminary Avenue
Minor Street	Overdale Avenue

Project	Oak Knoll
Scenario	Existing
Peak Hour	AM

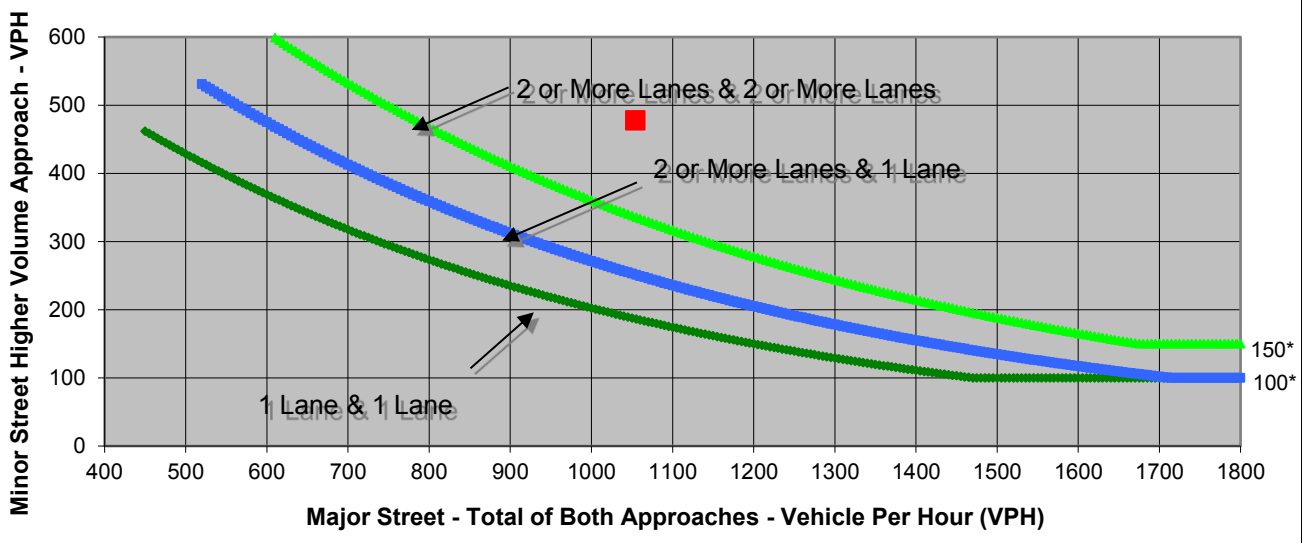
Turn Movement Volumes

	NB	SB	EB	WB
Left	6	38	0	3
Through	0	28	870	179
Right	15	412	2	0
Total	21	478	872	182

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Seminary Avenue	Overdale Avenue	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,054**	**478**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 2

Major Street	Seminary Avenue
Minor Street	Overdale Avenue
Project	Oak Knoll
Scenario	Existing
Peak Hour	PM

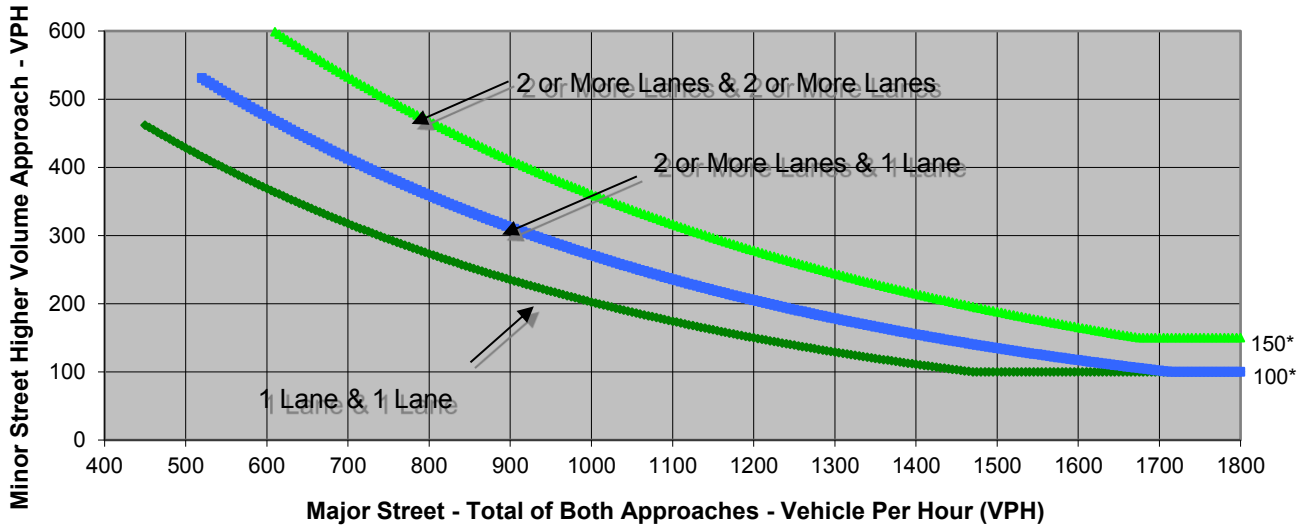
Turn Movement Volumes

	NB	SB	EB	WB
Left	3	169	0	7
Through	0	105	659	335
Right	6	430	8	0
Total	9	704	667	342

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Seminary Avenue	Overdale Avenue	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,009**	**704**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 9

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Sunnymere Avenue
Minor Street Kuhnle Ave

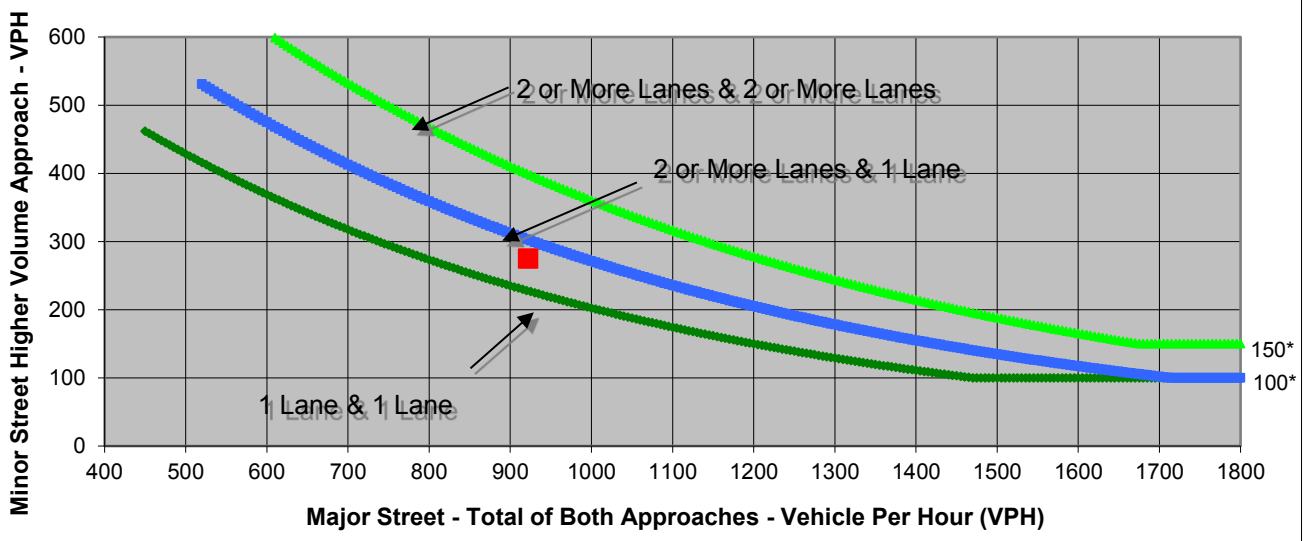
Turn Movement Volumes

	NB	SB	EB	WB
Left	53	76	545	0
Through	187	22	344	0
Right	35	121	33	0
Total	275	219	922	0

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Sunnymere Avenue	Kuhnle Ave	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**922**	**275**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 10

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Sunnymere Avenue
Minor Street Kuhnle Ave

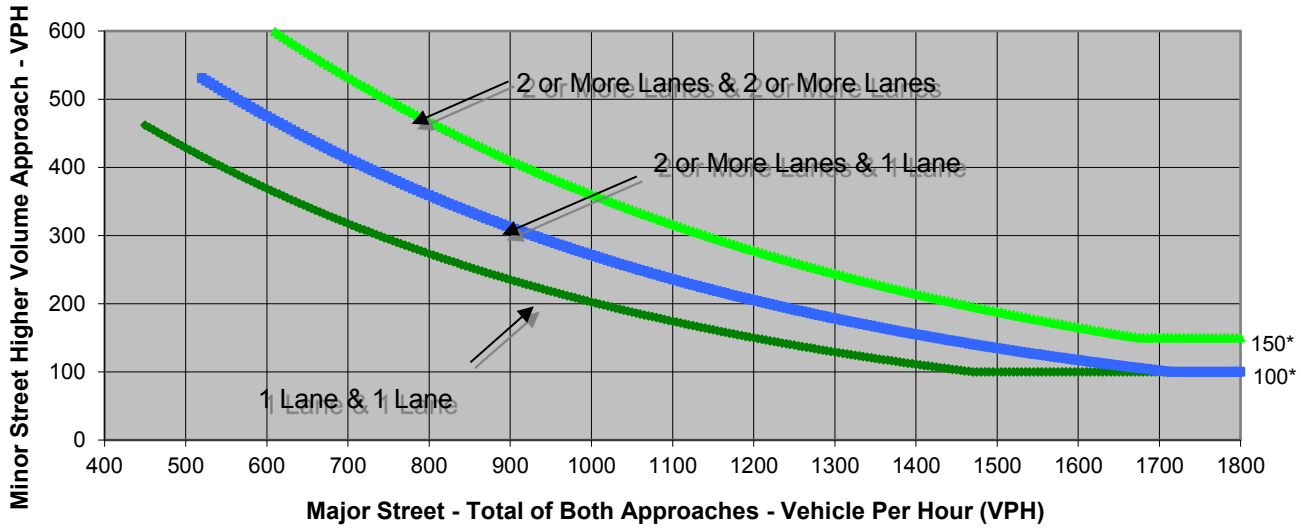
Turn Movement Volumes

	NB	SB	EB	WB
Left	13	533	390	0
Through	59	122	373	0
Right	25	329	54	0
Total	97	984	817	0

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Sunnymere Avenue	Kuhnle Ave	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**817**	**984**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 17

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Kuhnle Ave
Minor Street Mountain Boulevard

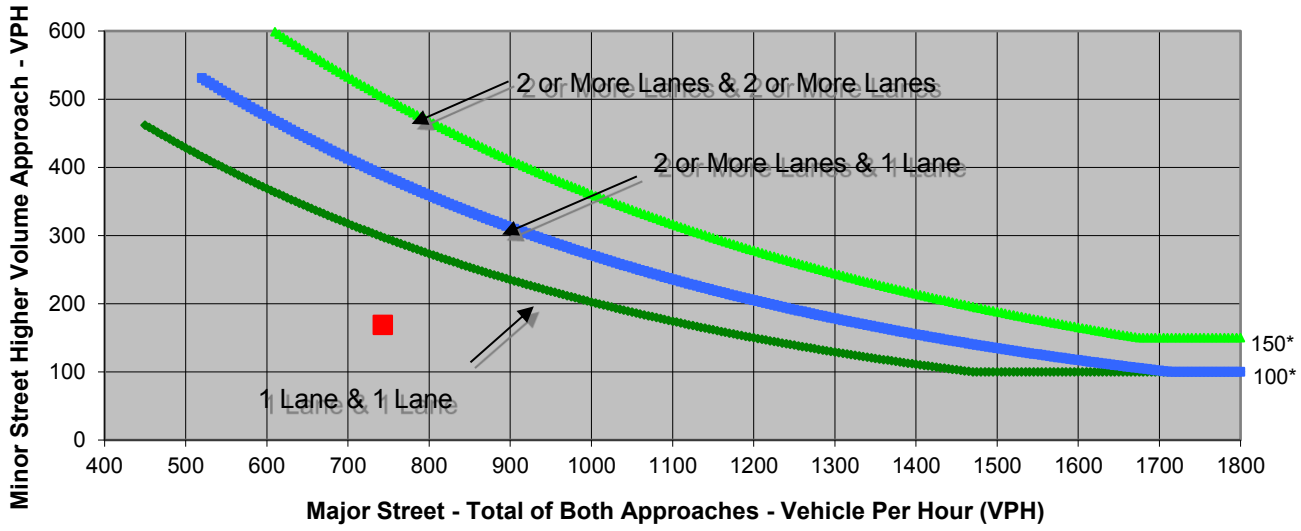
Turn Movement Volumes

	NB	SB	EB	WB
Left	731	0	0	132
Through	1	6	0	35
Right	0	5	81	2
Total	732	11	81	169

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Kuhnle Ave	Mountain Boulevard	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**743**	**169**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 18

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Kuhnle Ave
Minor Street Mountain Boulevard

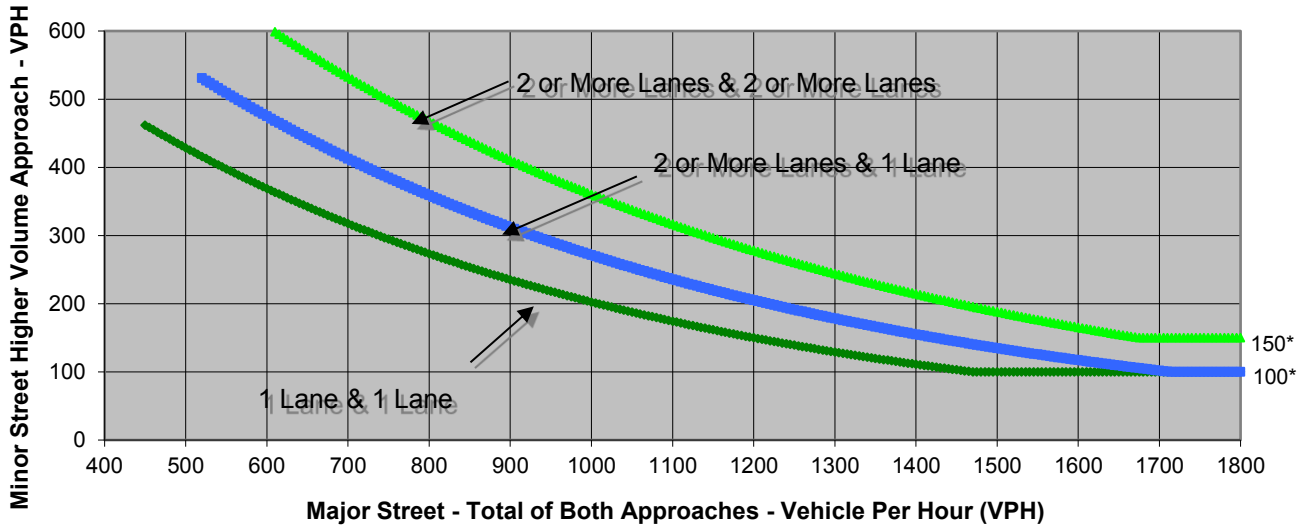
Turn Movement Volumes

	NB	SB	EB	WB
Left	447	0	1	284
Through	2	6	0	48
Right	0	8	694	10
Total	449	14	695	342

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Kuhnle Ave	Mountain Boulevard	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**463**	**695**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 25

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Mountain Boulevard
Minor Street Rifle Lane

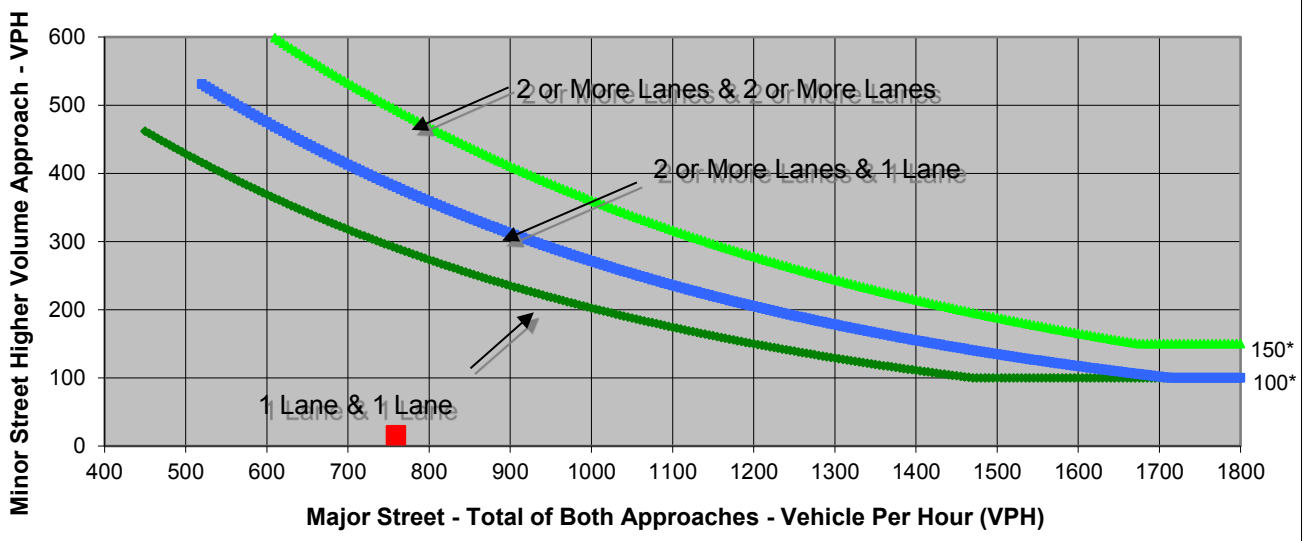
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	3	0	2
Through	612	141	0	0
Right	3	0	0	14
Total	615	144	0	16

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mountain Boulevard	Rifle Lane	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**759**	**16**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 26

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Mountain Boulevard
Minor Street Rifle Lane

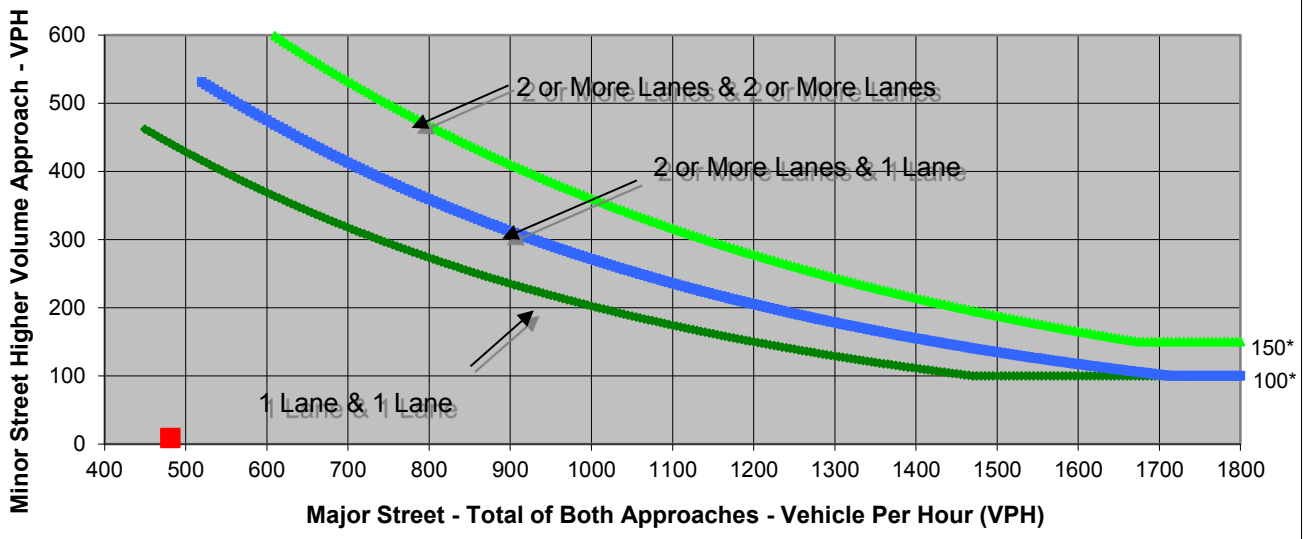
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	9	0	0
Through	198	269	0	0
Right	5	0	0	9
Total	203	278	0	9

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mountain Boulevard	Rifle Lane	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**481**	**9**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 33

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Mountain Boulevard
Minor Street I-580 WB On-Ramp

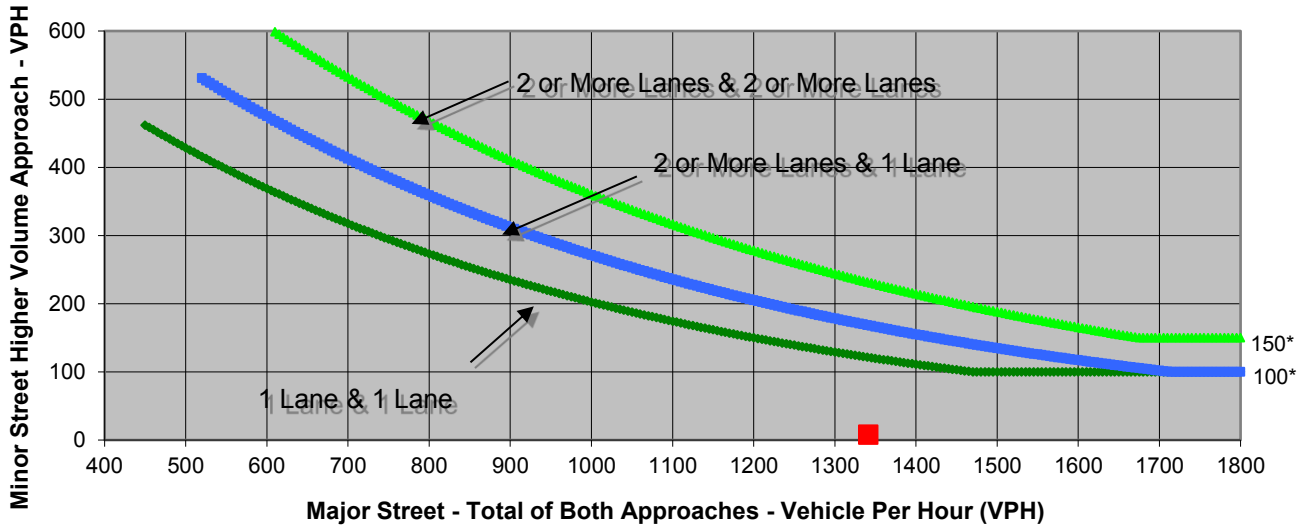
Turn Movement Volumes

	NB	SB	EB	WB
Left	587	0	0	2
Through	610	140	0	2
Right	3	1	0	4
Total	1,200	141	0	8

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mountain Boulevard	I-580 WB On-Ramp	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,341**	**8**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 34

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Mountain Boulevard
Minor Street I-580 WB On-Ramp

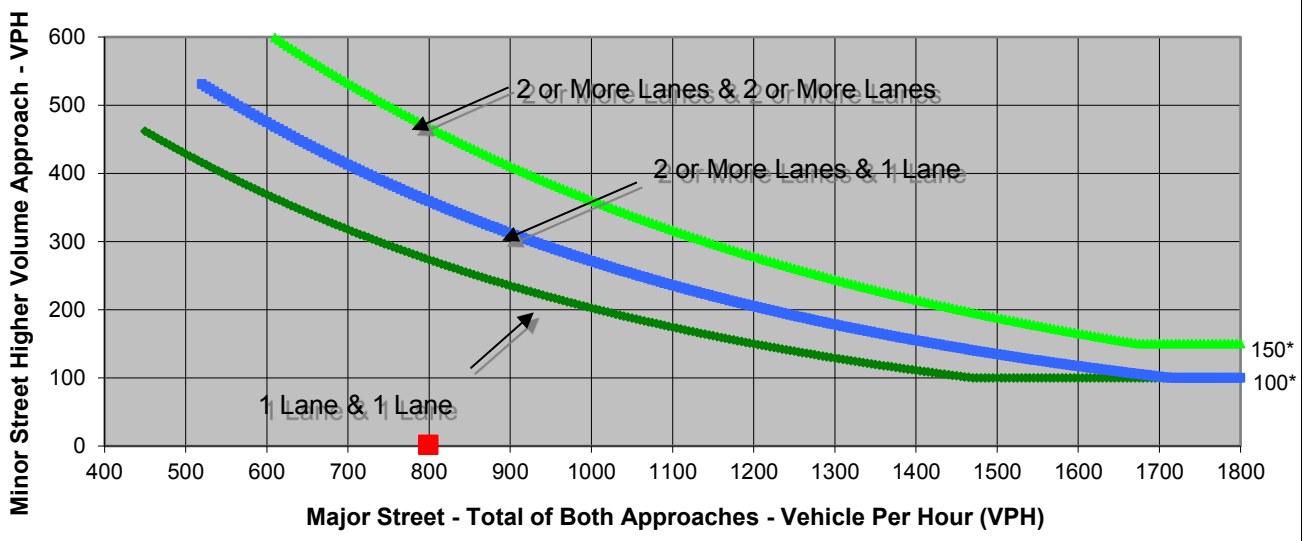
Turn Movement Volumes

	NB	SB	EB	WB
Left	333	0	0	0
Through	200	263	0	1
Right	3	0	0	1
Total	536	263	0	2

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mountain Boulevard	I-580 WB On-Ramp	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**799**	**2**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 41

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Keller Avenue
Minor Street Greenly Drive

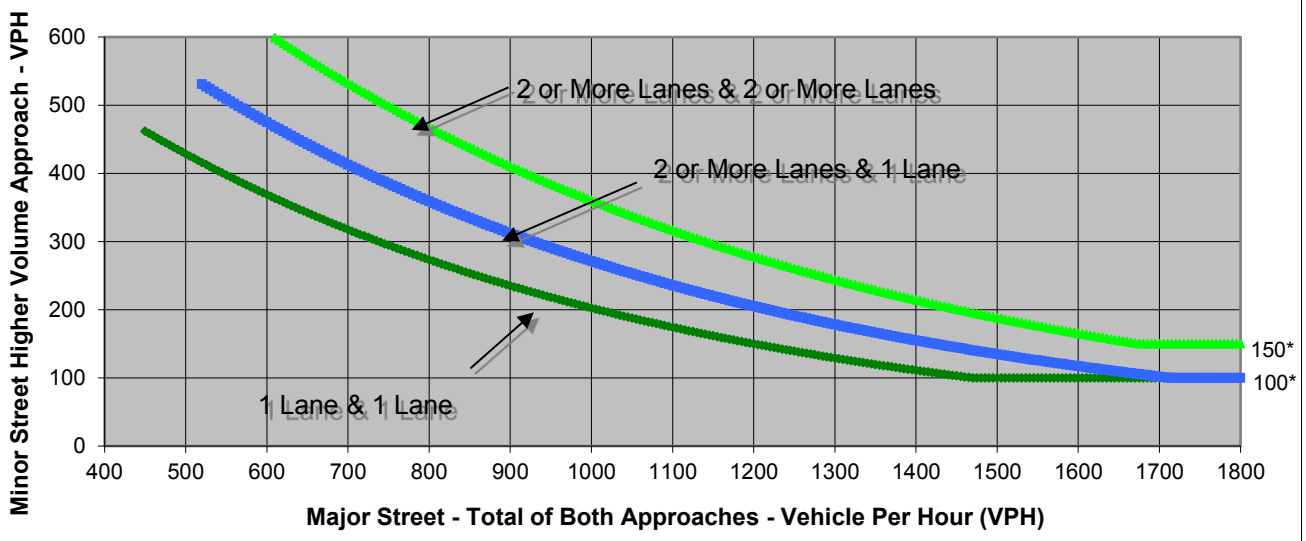
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	118	0	17
Through	12	2	0	0
Right	43	0	0	63
Total	55	120	0	80

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Keller Avenue	Minor Street Greenly Drive	Warrant Met
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**80**	**120**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 42

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Keller Avenue
Minor Street Greenly Drive

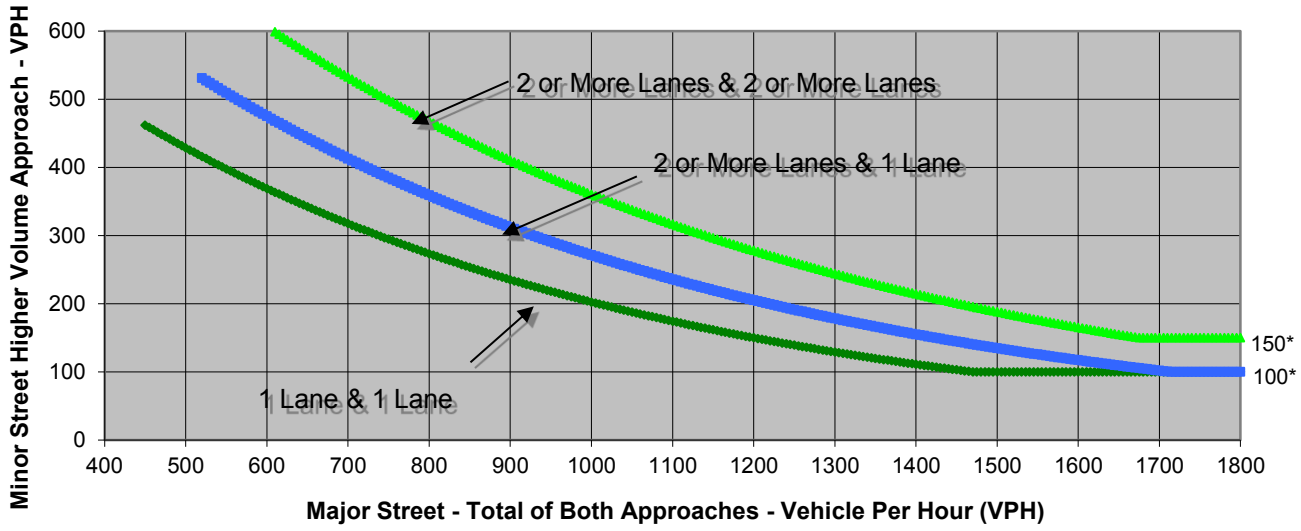
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	97	0	52
Through	3	8	0	0
Right	17	0	0	92
Total	20	105	0	144

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Keller Avenue	Minor Street Greenly Drive	Warrant Met
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**144**	**105**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 49

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Keller Avenue
Minor Street I-580 EB Off-Ramp

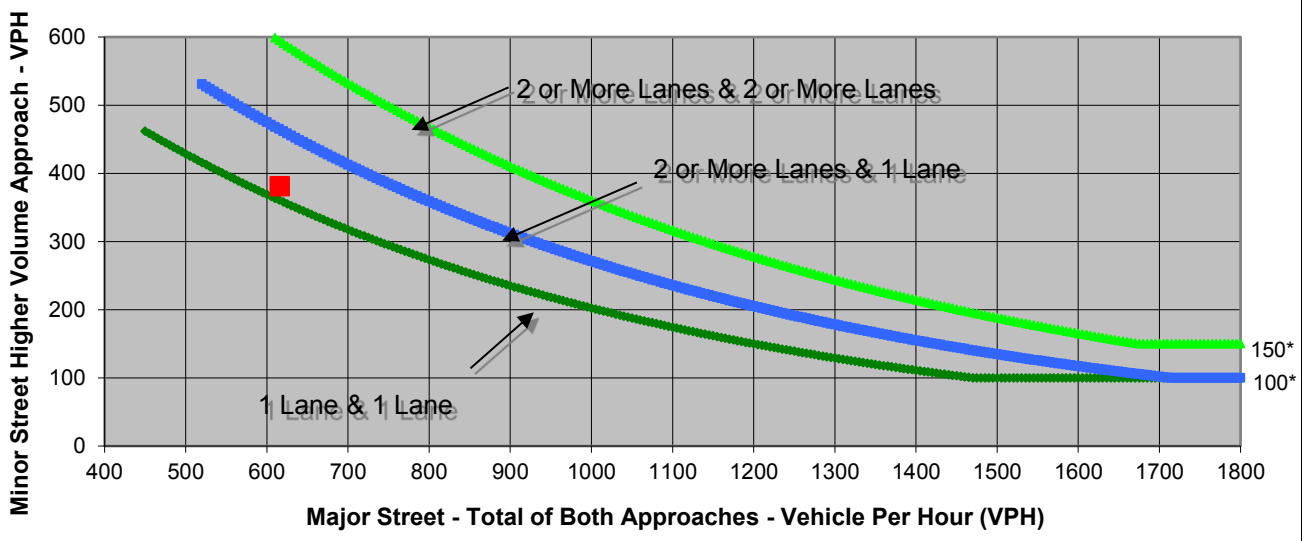
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	139	0	320
Through	0	205	130	49
Right	0	37	117	0
Total	0	381	247	369

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Keller Avenue	I-580 EB Off-Ramp	
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**616**	**381**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 50

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Keller Avenue
Minor Street I-580 EB Off-Ramp

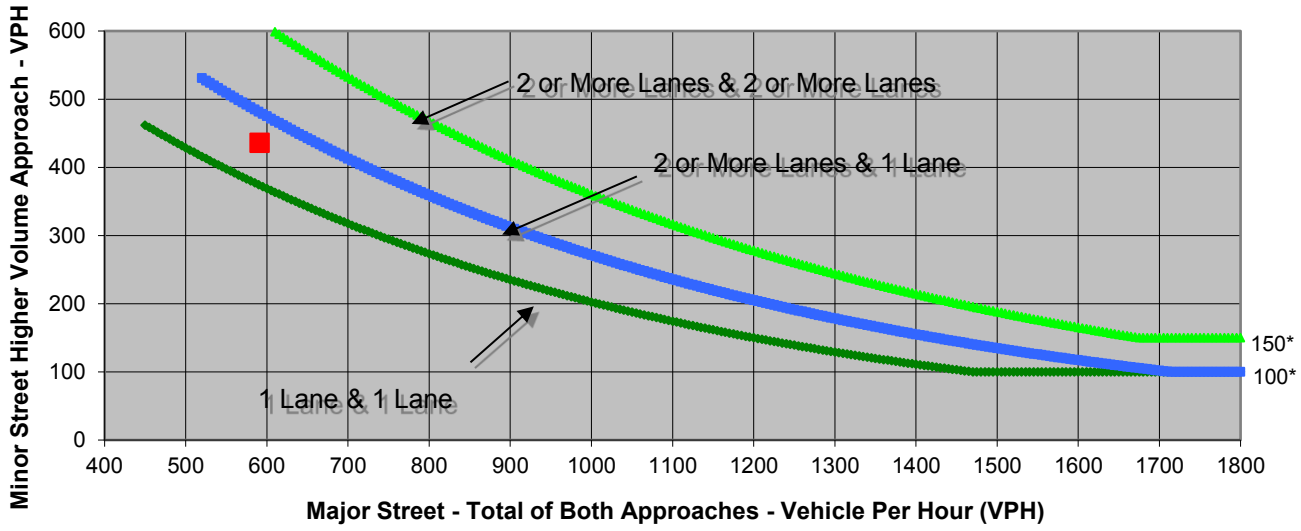
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	217	0	302
Through	0	160	80	116
Right	0	59	93	0
Total	0	436	173	418

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Keller Avenue	I-580 EB Off-Ramp	
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**591**	**436**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 57

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Mountain Boulevard
Minor Street Keller Avenue

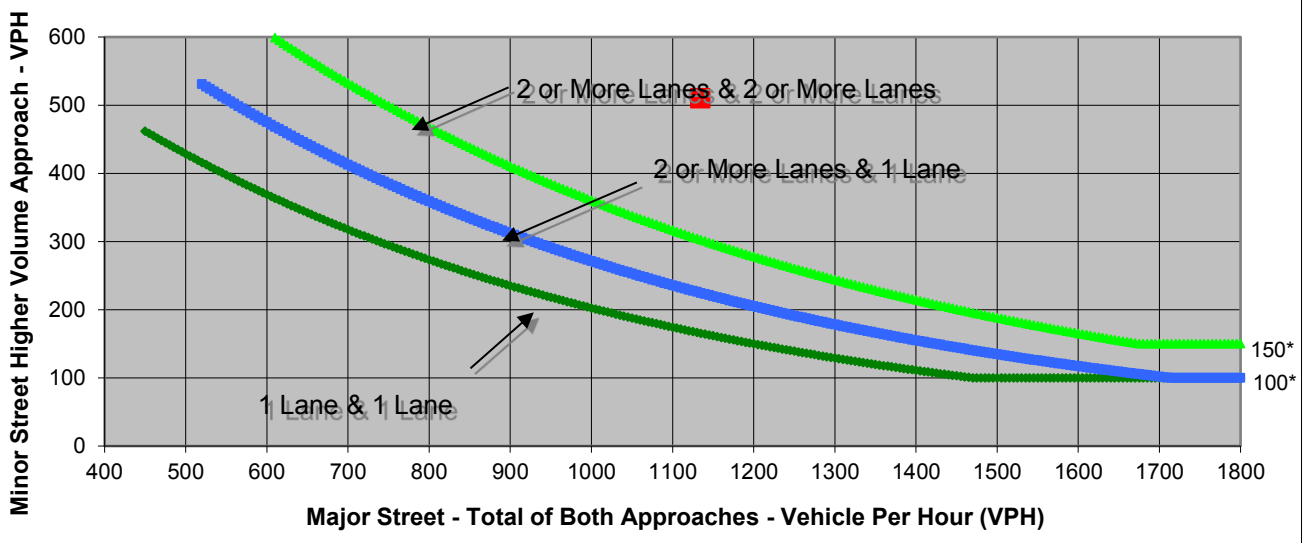
Turn Movement Volumes

	NB	SB	EB	WB
Left	66	23	117	12
Through	781	12	94	196
Right	145	107	58	302
Total	992	142	269	510

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mountain Boulevard	Keller Avenue	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,134**	**510**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 58

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Mountain Boulevard
Minor Street Keller Avenue

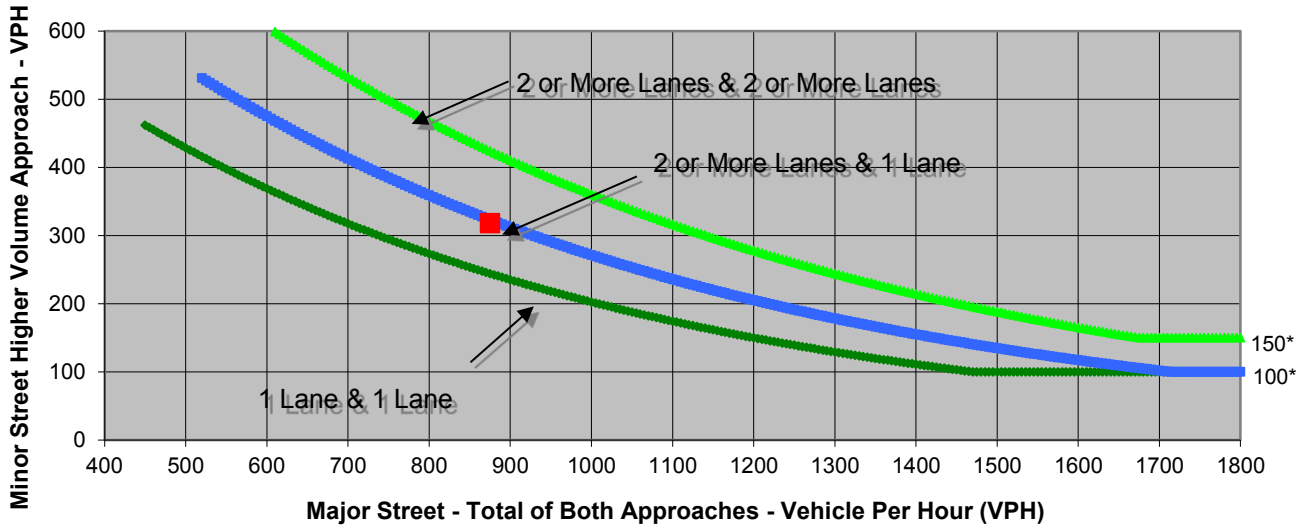
Turn Movement Volumes

	NB	SB	EB	WB
Left	121	71	66	17
Through	317	43	170	148
Right	174	149	61	153
Total	612	263	297	318

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mountain Boulevard	Keller Avenue	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**875**	**318**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 65

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Keller Avenue
Minor Street Project Driveway

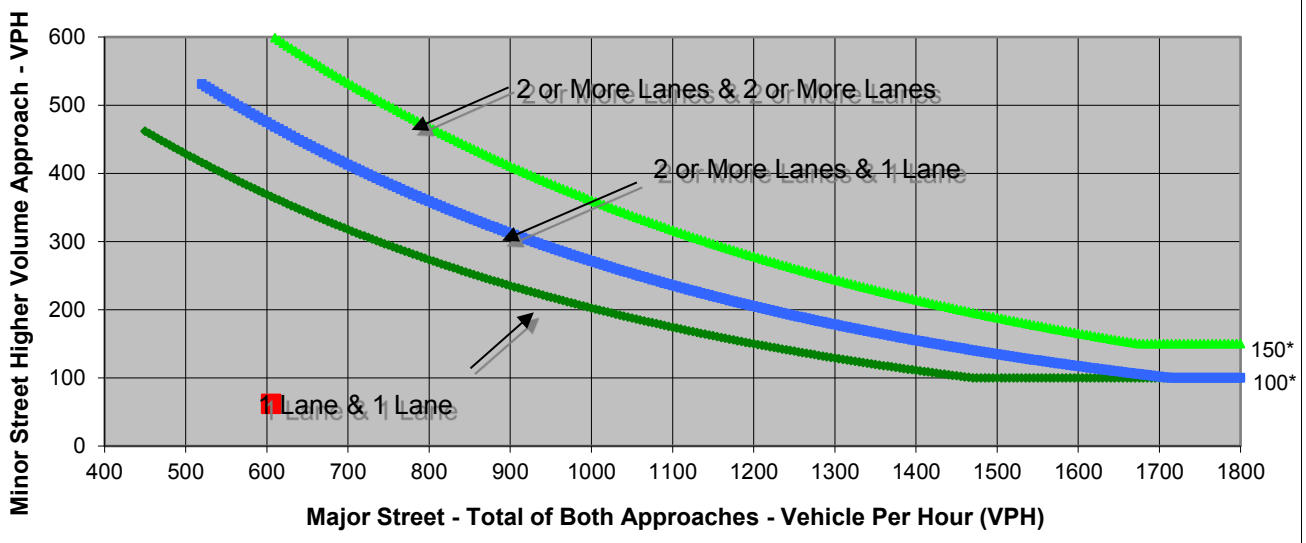
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	3	22	0
Through	0	0	208	372
Right	0	59	0	3
Total	0	62	230	375

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Keller Avenue	Minor Street Project Driveway	Warrant Met
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**605**	**62**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 66

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Keller Avenue
Minor Street Project Driveway

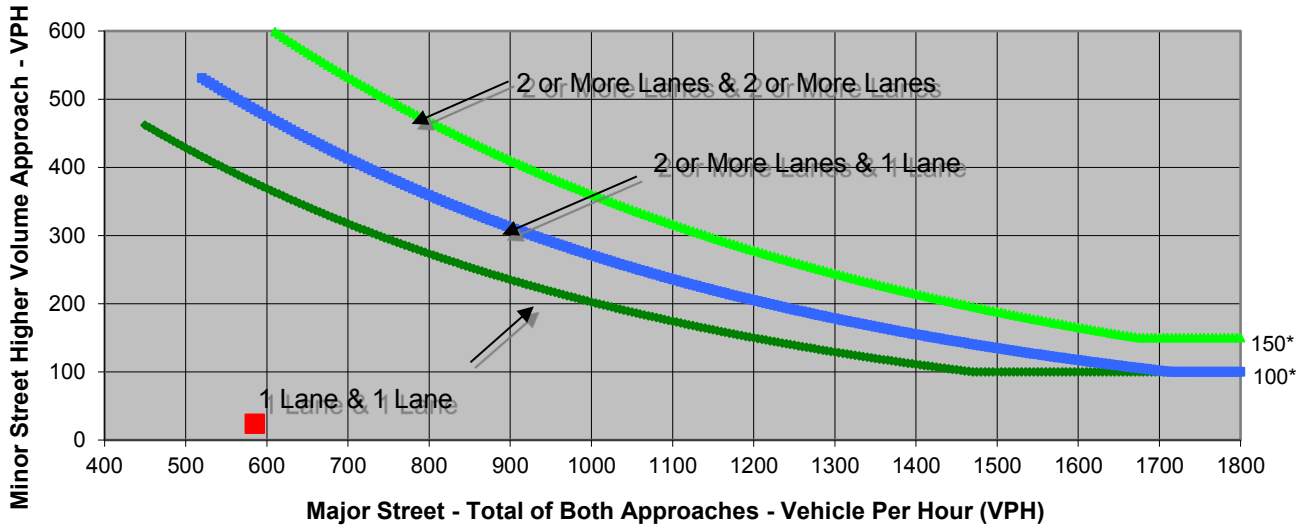
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	4	37	0
Through	0	0	283	257
Right	0	20	0	8
Total	0	24	320	265

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Keller Avenue	Minor Street Project Driveway	Warrant Met
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**585**	**24**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 73

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Keller Avenue
Minor Street Campus Drive

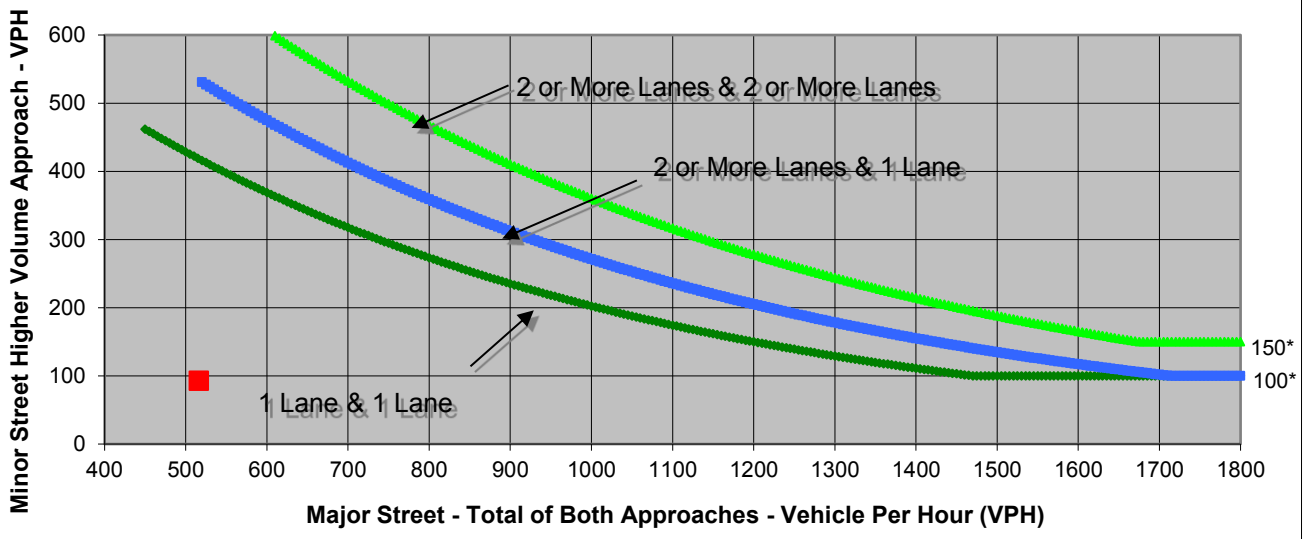
Turn Movement Volumes

	NB	SB	EB	WB
Left	2	7	88	1
Through	0	1	124	285
Right	1	85	0	18
Total	3	93	212	304

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Keller Avenue	Minor Street Campus Drive	Warrant Met
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**516**	**93**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 74

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Keller Avenue
Minor Street Campus Drive

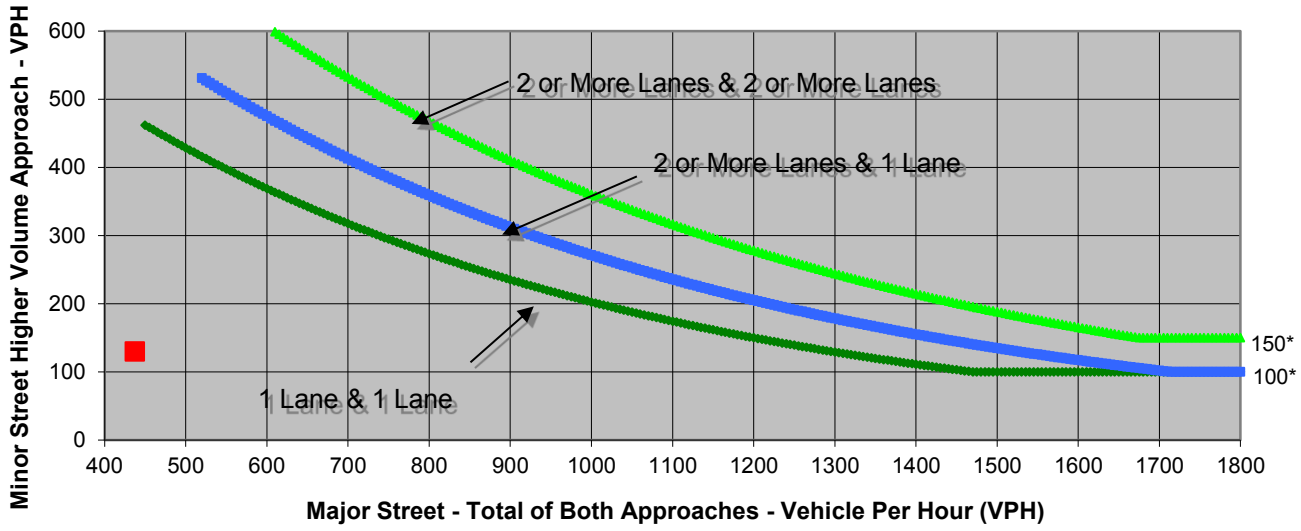
Turn Movement Volumes

	NB	SB	EB	WB
Left	9	23	93	8
Through	4	6	185	136
Right	4	101	5	10
Total	17	130	283	154

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Keller Avenue	Minor Street Campus Drive	Warrant Met
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**437**	**130**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 81

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Mountain Boulevard
Minor Street I-580 WB Off-Ramp

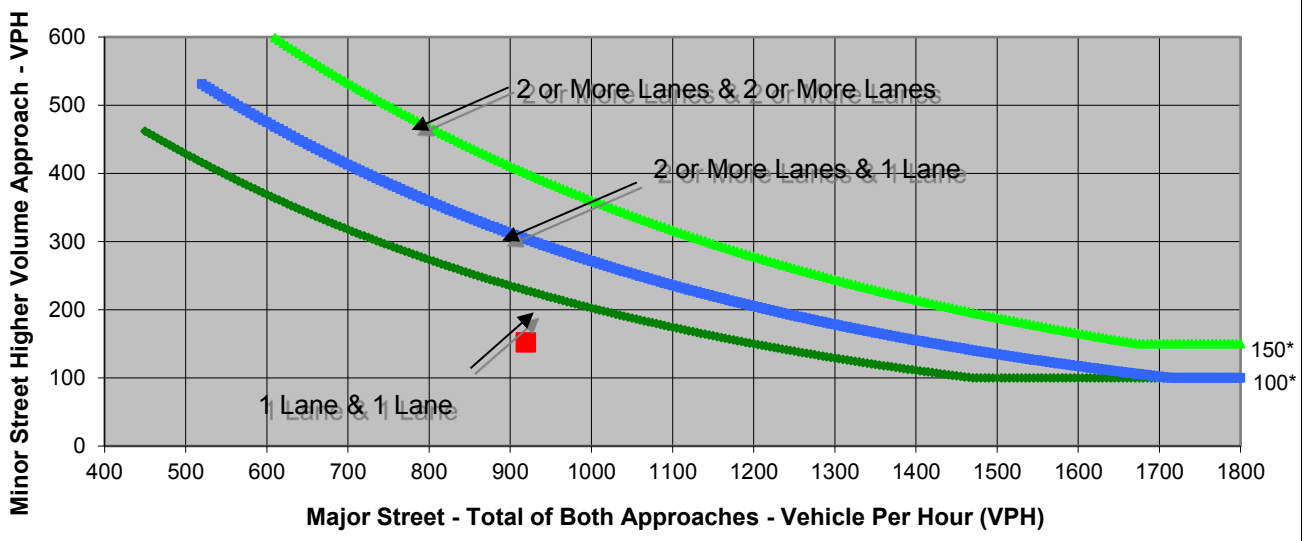
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	144	1
Through	837	82	0	0
Right	0	0	8	11
Total	837	82	152	12

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mountain Boulevard	I-580 WB Off-Ramp	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**919**	**152**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 82

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Mountain Boulevard
Minor Street I-580 WB Off-Ramp

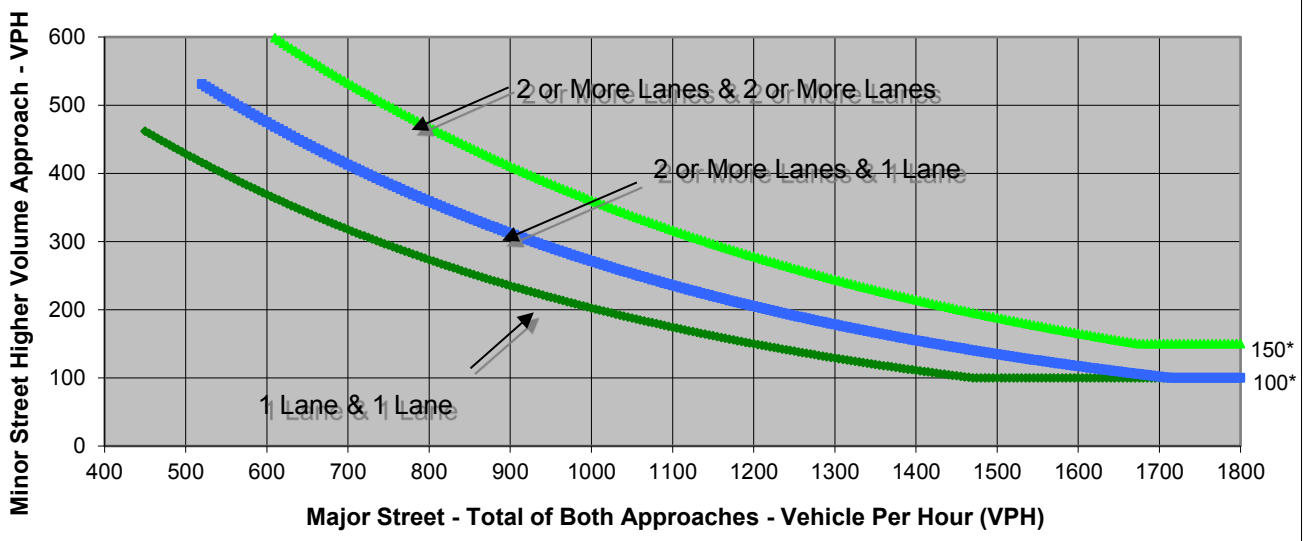
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	3	374	3
Through	215	115	0	0
Right	0	0	29	23
Total	215	118	403	26

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mountain Boulevard	I-580 WB Off-Ramp	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**333**	**403**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 89

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street 82nd Avenue
Minor Street Golf Links Road

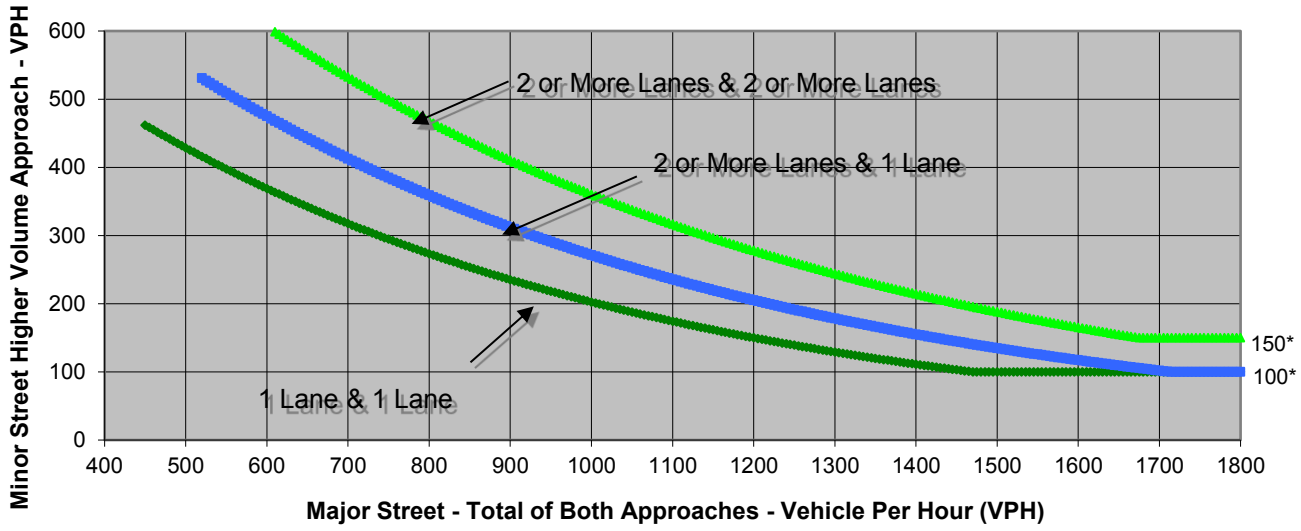
Turn Movement Volumes

	NB	SB	EB	WB
Left	372	0	0	24
Through	0	0	41	52
Right	24	0	0	0
Total	396	0	41	76

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	82nd Avenue	Golf Links Road	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**117**	**396**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 90

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street 82nd Avenue
Minor Street Golf Links Road

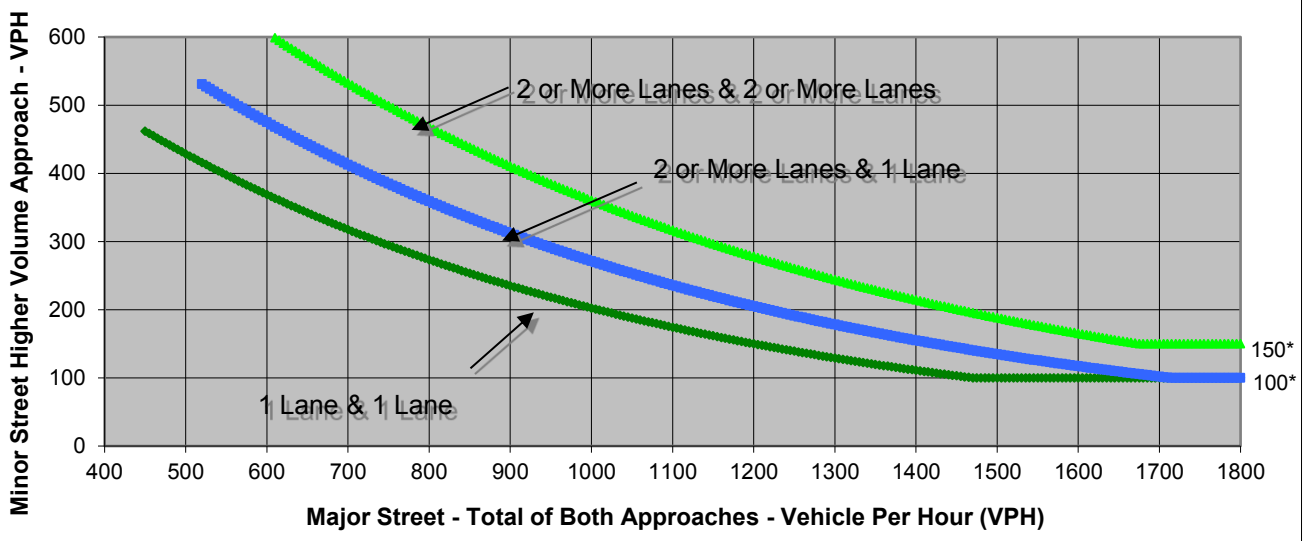
Turn Movement Volumes

	NB	SB	EB	WB
Left	272	0	0	21
Through	0	0	65	52
Right	32	0	0	0
Total	304	0	65	73

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	82nd Avenue	Golf Links Road	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**138**	**304**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 97

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Golf Links Road
Minor Street Fontaine Street

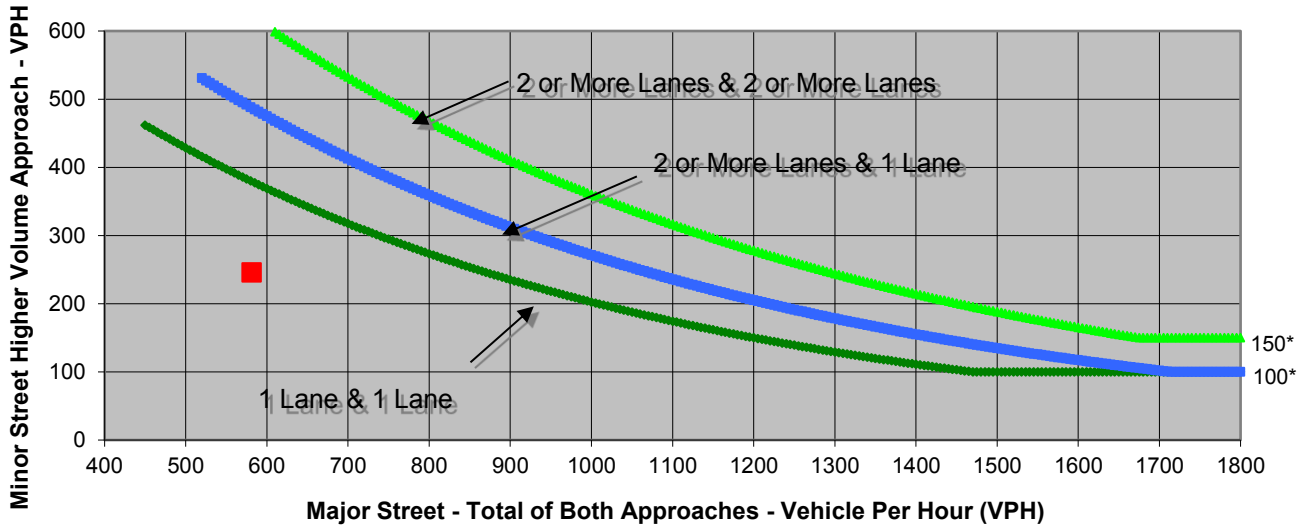
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	186	0	57
Through	213	149	0	0
Right	33	0	0	189
Total	246	335	0	246

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Golf Links Road	Minor Street Fontaine Street	Warrant Met
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**581**	**246**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 98

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Golf Links Road
Minor Street Fontaine Street

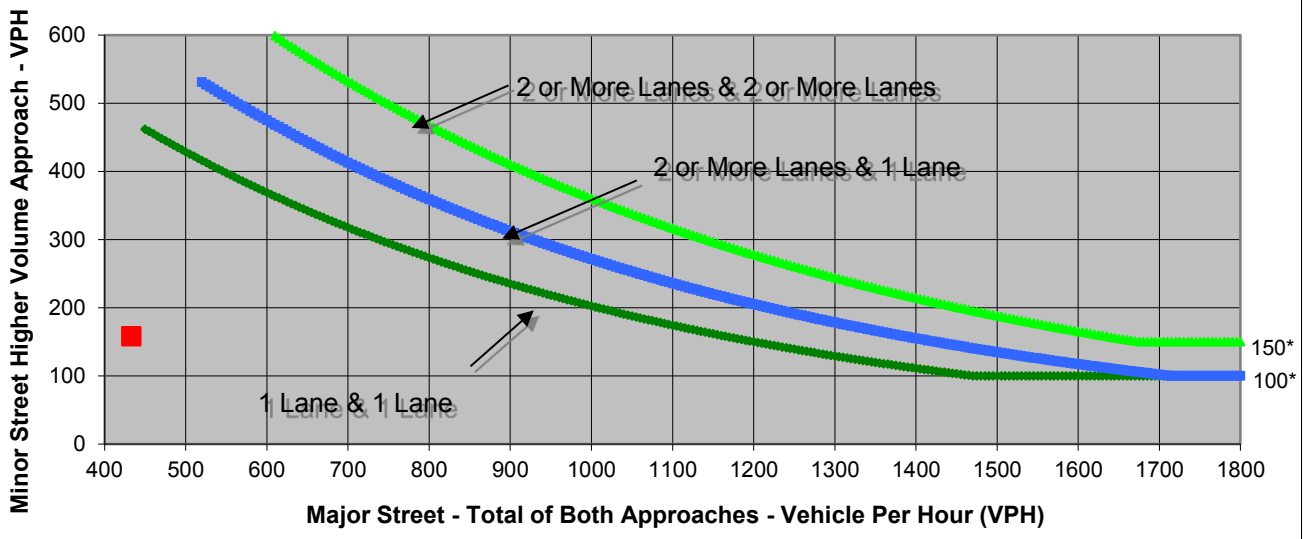
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	63	0	19
Through	172	186	0	0
Right	12	0	0	139
Total	184	249	0	158

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Golf Links Road	Minor Street Fontaine Street	Warrant Met
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**433**	**158**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 105

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Fontaine Street
Minor Street Crest Avenue

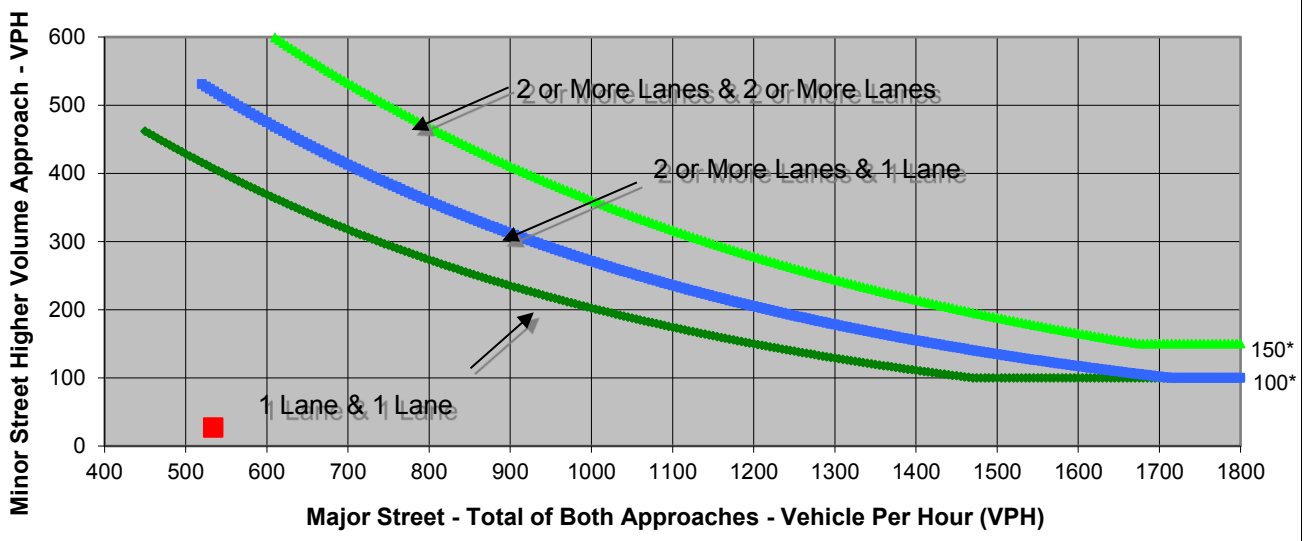
Turn Movement Volumes

	NB	SB	EB	WB
Left	4	0	0	68
Through	0	0	224	240
Right	23	0	2	0
Total	27	0	226	308

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Fontaine Street	Crest Avenue	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**534**	**27**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 106

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Fontaine Street
Minor Street Crest Avenue

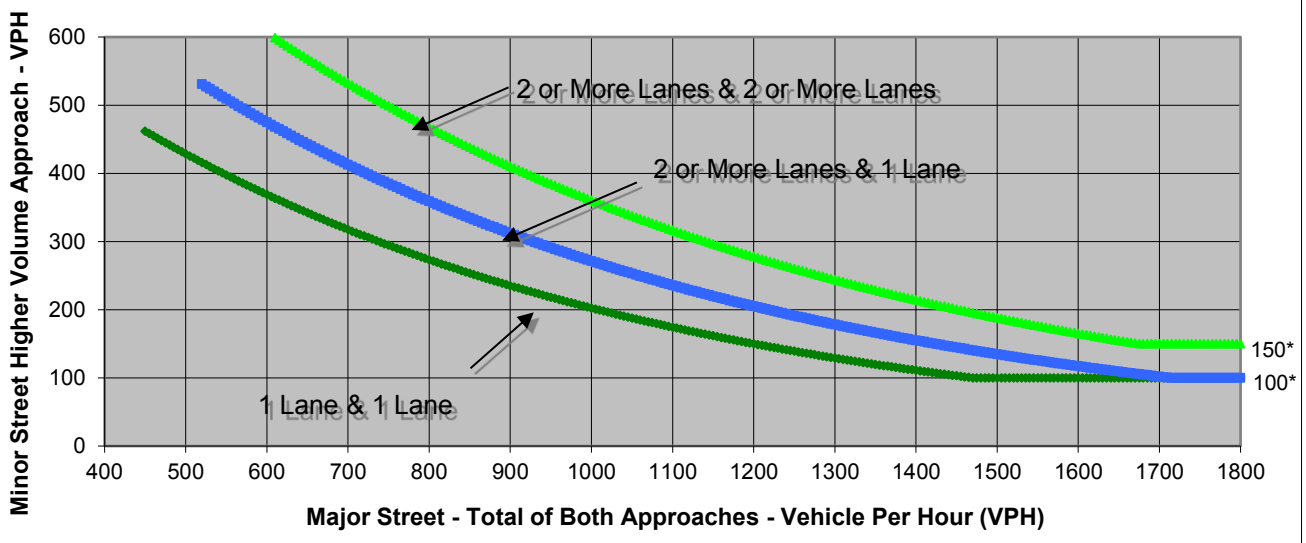
Turn Movement Volumes

	NB	SB	EB	WB
Left	4	0	0	34
Through	0	0	69	150
Right	9	0	7	0
Total	13	0	76	184

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Fontaine Street	Crest Avenue	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**260**	**13**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 113

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Fontaine Street
Minor Street I-580 Overcrossing

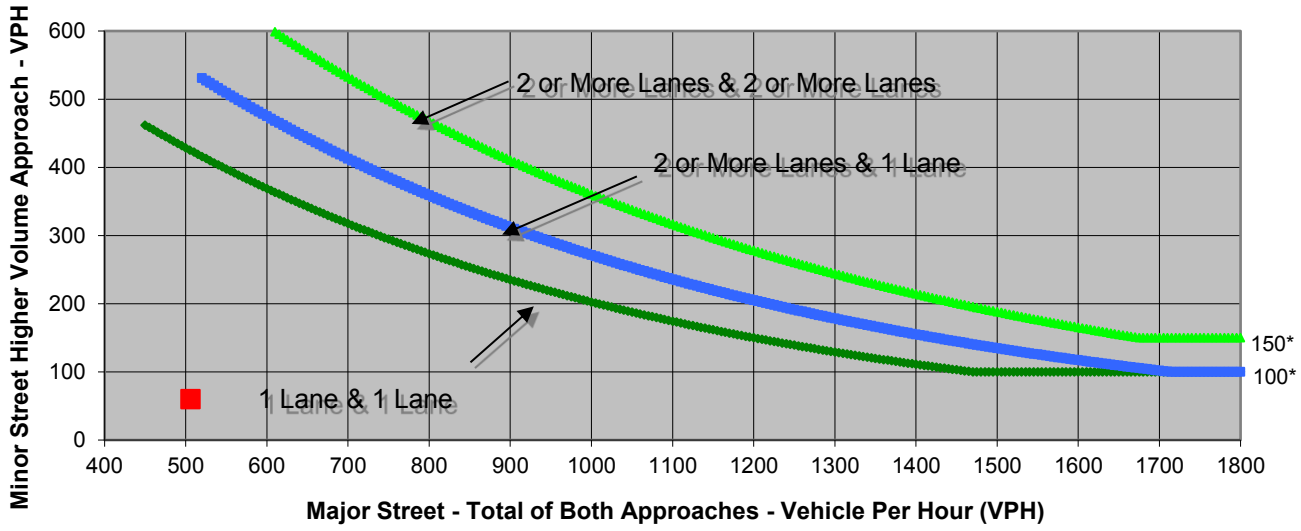
Turn Movement Volumes

	NB	SB	EB	WB
Left	27	54	4	27
Through	63	206	13	13
Right	130	26	19	20
Total	220	286	36	60

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Fontaine Street	I-580 Overcrossing	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**506**	**60**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 114

Major Street	Fontaine Street
Minor Street	I-580 Overcrossing

Project	Oak Knoll
Scenario	Existing
Peak Hour	PM

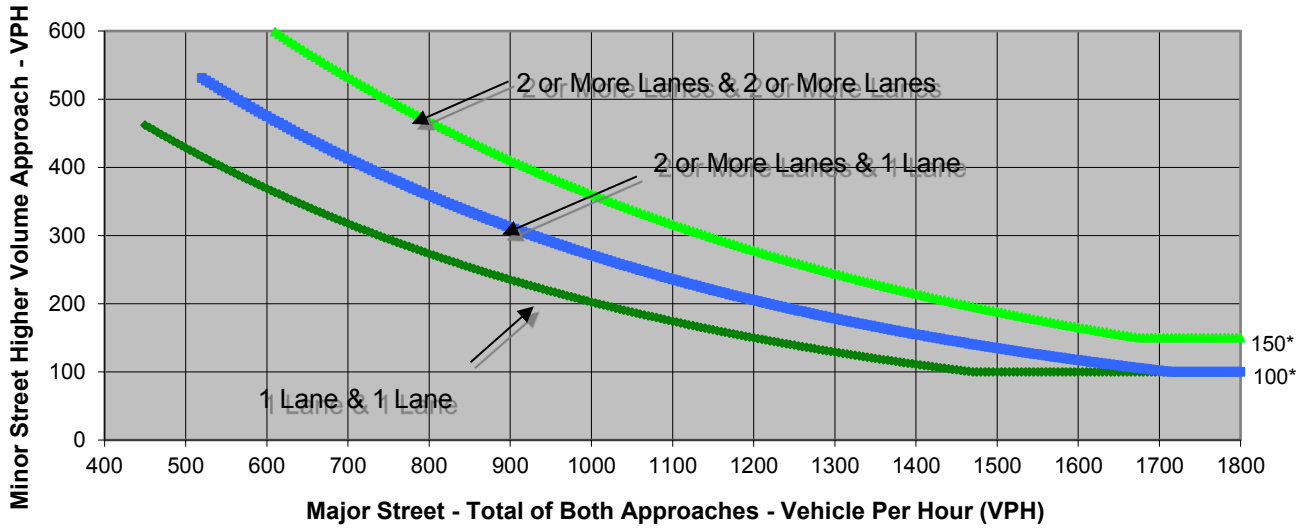
Turn Movement Volumes

	NB	SB	EB	WB
Left	1	15	4	17
Through	17	153	30	7
Right	57	35	5	4
Total	75	203	39	28

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Fontaine Street	I-580 Overcrossing	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**278**	**39**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 121

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Mountain Boulevard
Minor Street I-580 Overcrossing

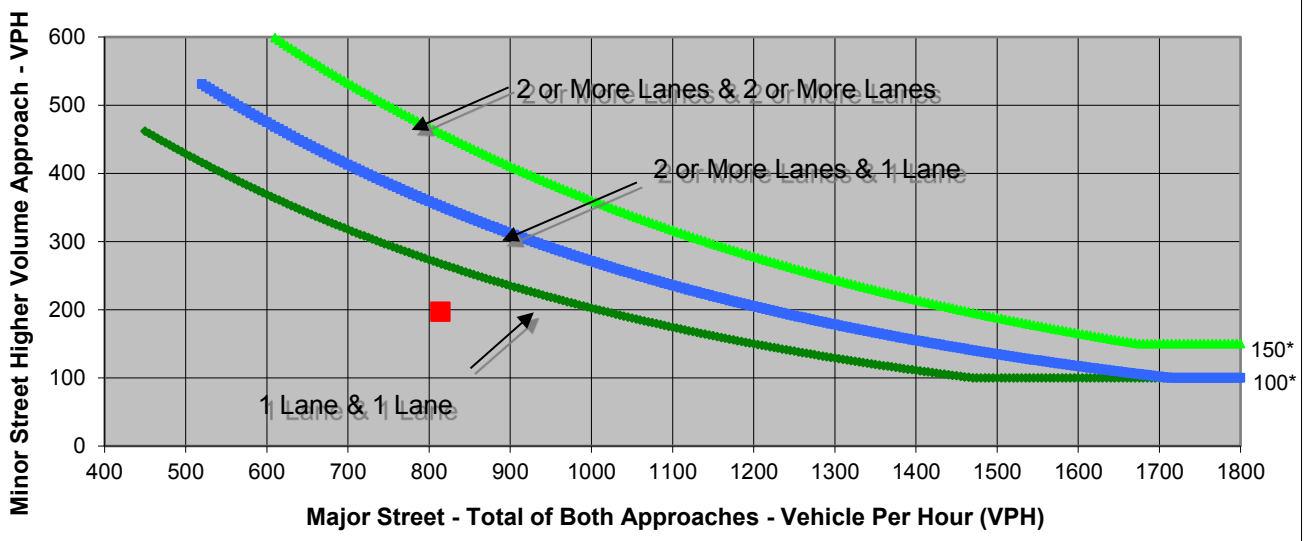
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	9	0	16
Through	680	74	0	0
Right	51	0	0	181
Total	731	83	0	197

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mountain Boulevard	I-580 Overcrossing	
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**814**	**197**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 122

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Mountain Boulevard
Minor Street I-580 Overcrossing

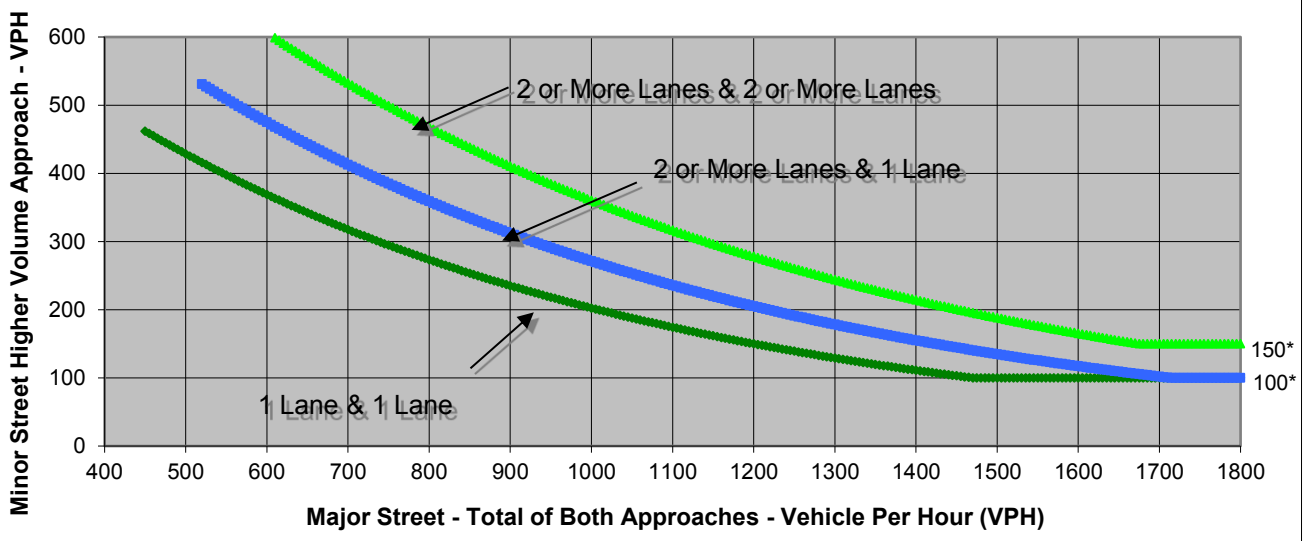
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	23	0	8
Through	114	107	0	0
Right	5	0	0	94
Total	119	130	0	102

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mountain Boulevard	I-580 Overcrossing	
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**249**	**102**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 129

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Mountain Boulevard
Minor Street Project Driveway

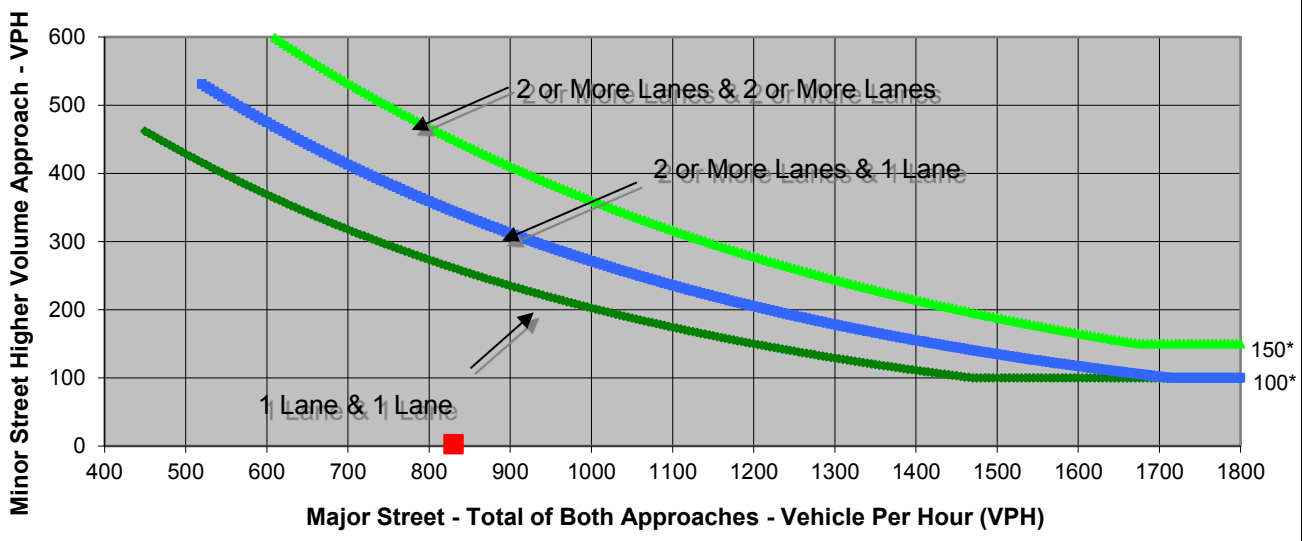
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	8	0	1
Through	726	80	0	0
Right	16	0	0	2
Total	742	88	0	3

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Mountain Boulevard	Minor Street Project Driveway	Warrant Met
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**830**	**3**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 130

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Mountain Boulevard
Minor Street Project Driveway

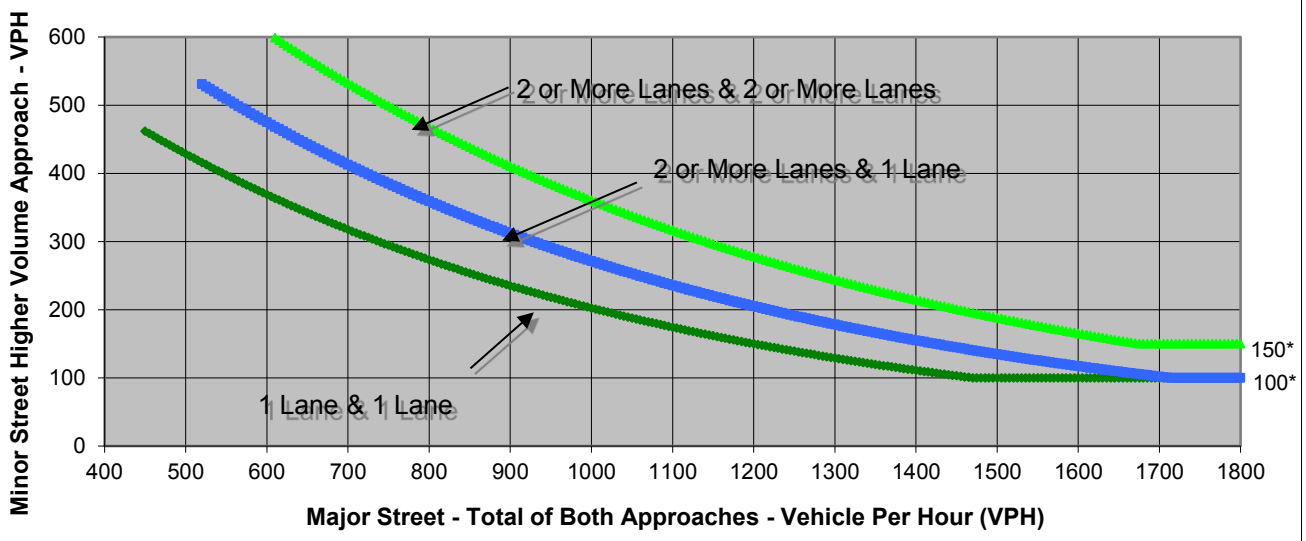
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	10
Through	110	106	0	0
Right	1	0	0	15
Total	111	106	0	25

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mountain Boulevard	Project Driveway	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**217**	**25**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 137

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Mountain Boulevard
Minor Street Sequoyah Road

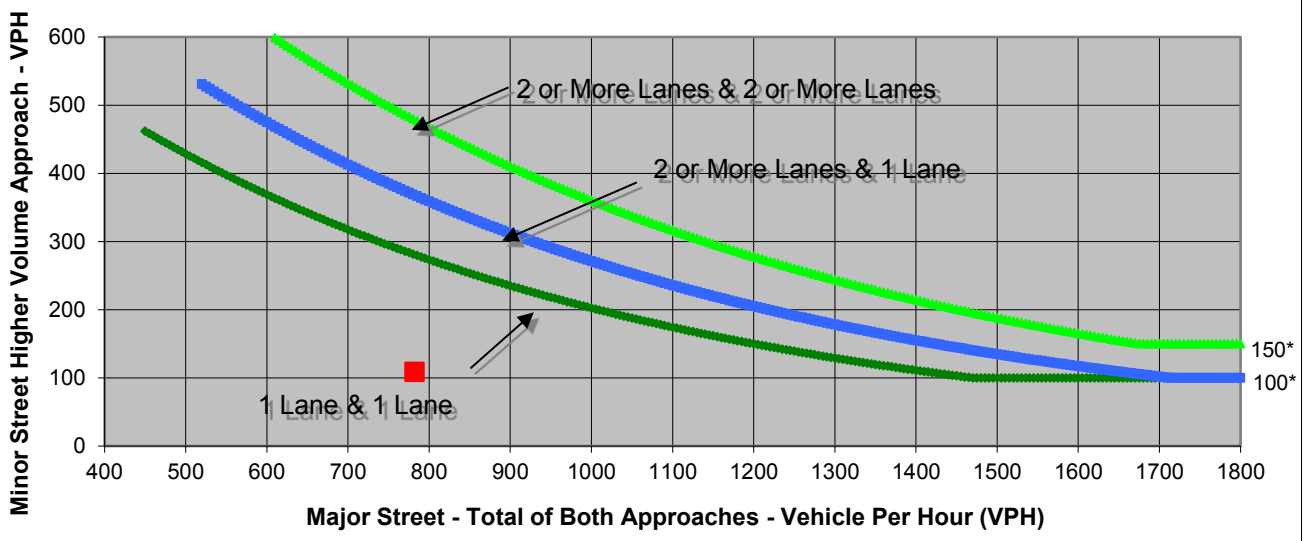
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	28	0	34
Through	665	57	0	0
Right	32	0	0	75
Total	697	85	0	109

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Mountain Boulevard	Minor Street Sequoyah Road	Warrant Met
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**782**	**109**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 138

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Mountain Boulevard
Minor Street Sequoyah Road

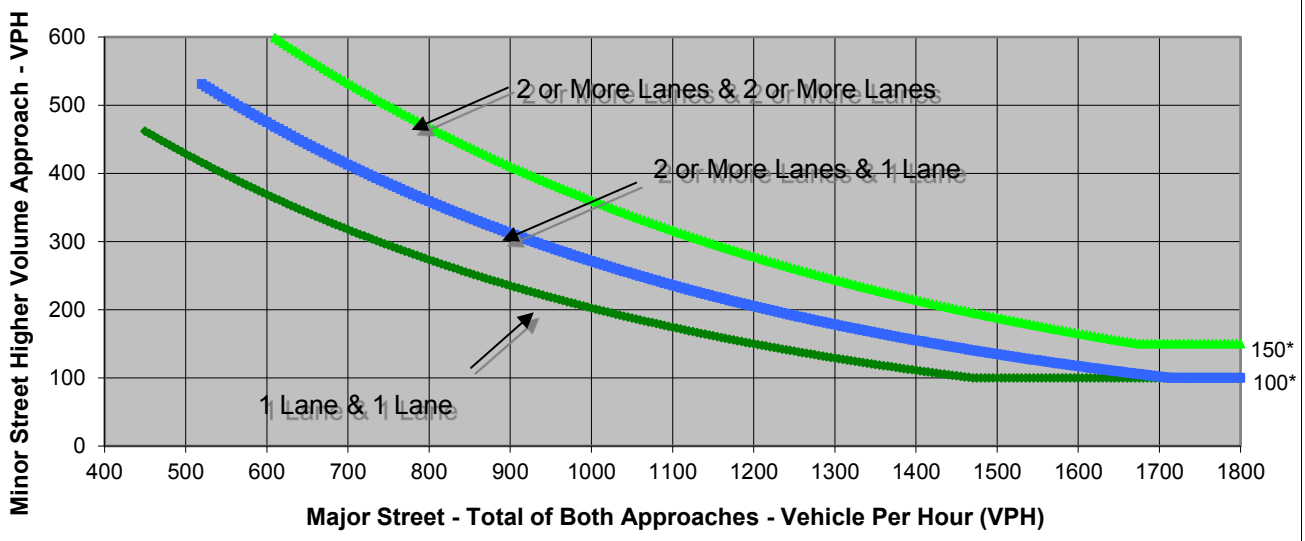
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	53	0	22
Through	53	67	0	0
Right	57	0	0	55
Total	110	120	0	77

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Mountain Boulevard	Sequoyah Road	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**230**	**77**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 145

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Mountain Boulevard
Minor Street Calafia Avenue

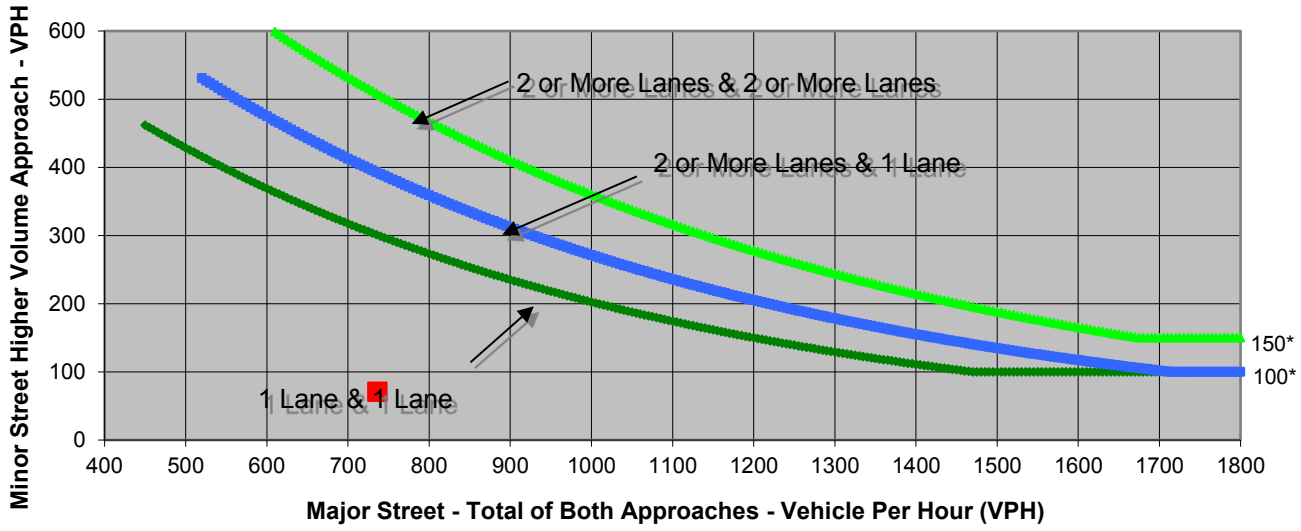
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	21	0	12
Through	635	76	0	0
Right	4	0	0	59
Total	639	97	0	71

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Mountain Boulevard	Minor Street Calafia Avenue	Warrant Met
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**736**	**71**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 146

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Mountain Boulevard
Minor Street Calafia Avenue

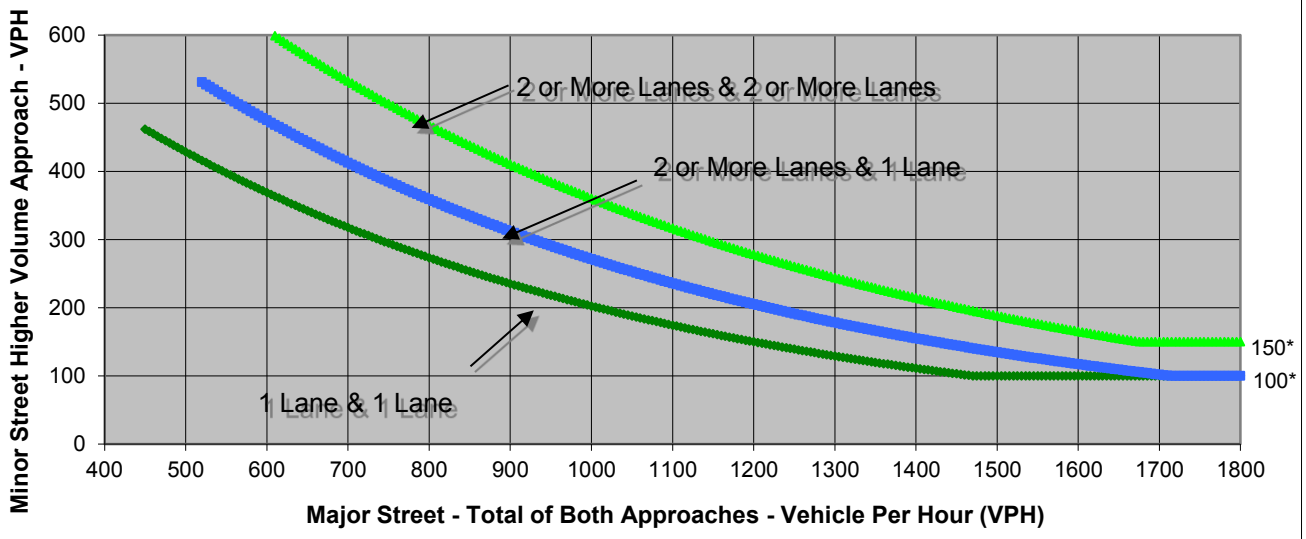
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	22	0	0
Through	103	68	0	0
Right	3	0	0	12
Total	106	90	0	12

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Mountain Boulevard	Minor Street Calafia Avenue	Warrant Met
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**196**	**12**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 153

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street 98th Avenue
Minor Street Thermal Street

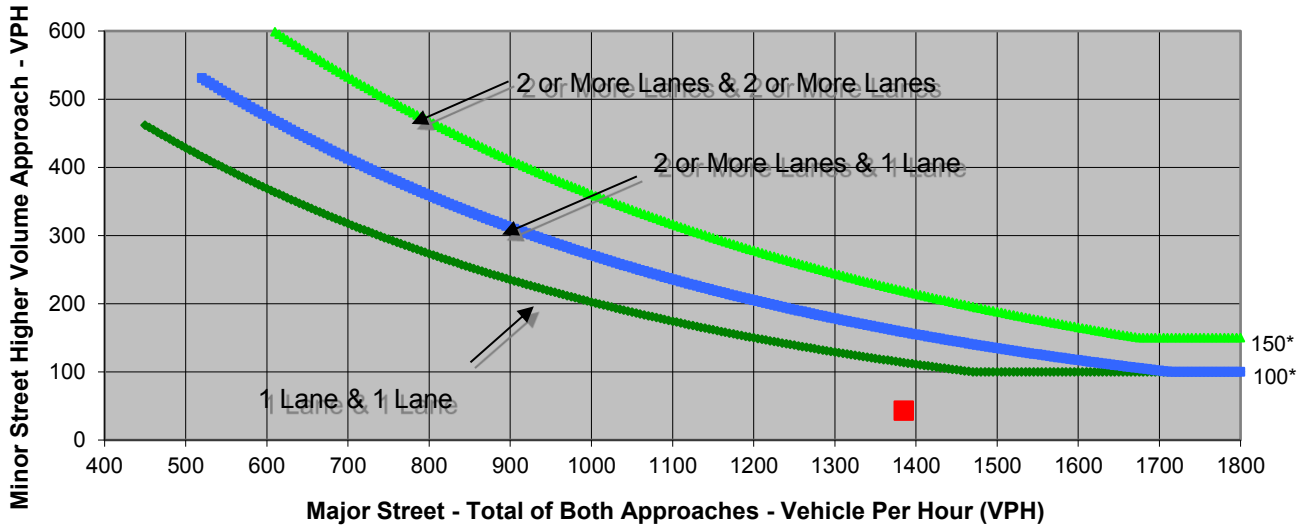
Turn Movement Volumes

	NB	SB	EB	WB
Left	1	18	0	1
Through	0	0	801	582
Right	14	25	1	0
Total	15	43	802	583

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	98th Avenue	Thermal Street	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,385**	**43**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 154

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street 98th Avenue
Minor Street Thermal Street

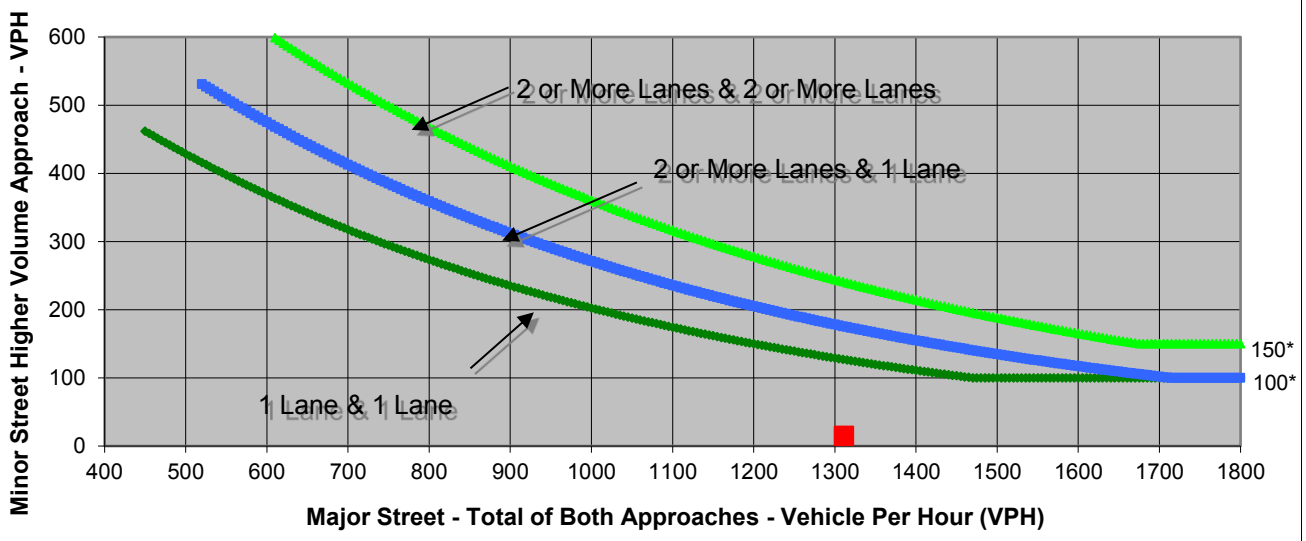
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	8	0	4
Through	0	0	706	597
Right	5	7	4	0
Total	5	15	710	601

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	98th Avenue	Thermal Street	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,311**	**15**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 161

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street 98th Avenue
Minor Street Stanley Avenue

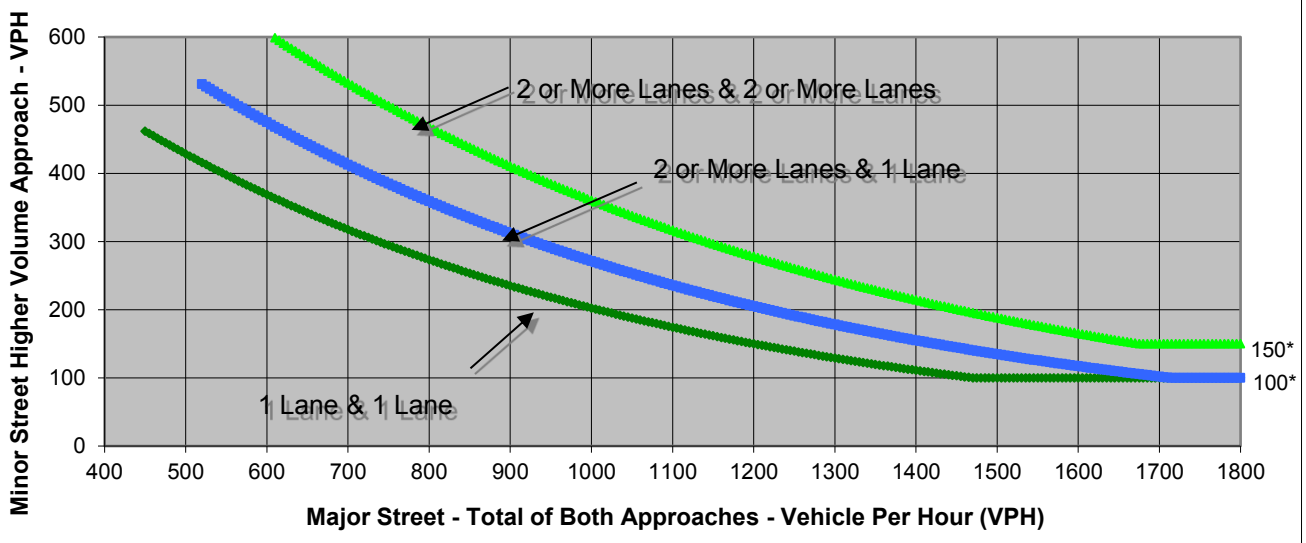
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	129	0	44
Through	1,124	977	0	0
Right	11	0	0	207
Total	1,135	1,106	0	251

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	98th Avenue	Stanley Avenue	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,241**	**251**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 162

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street 98th Avenue
Minor Street Stanley Avenue

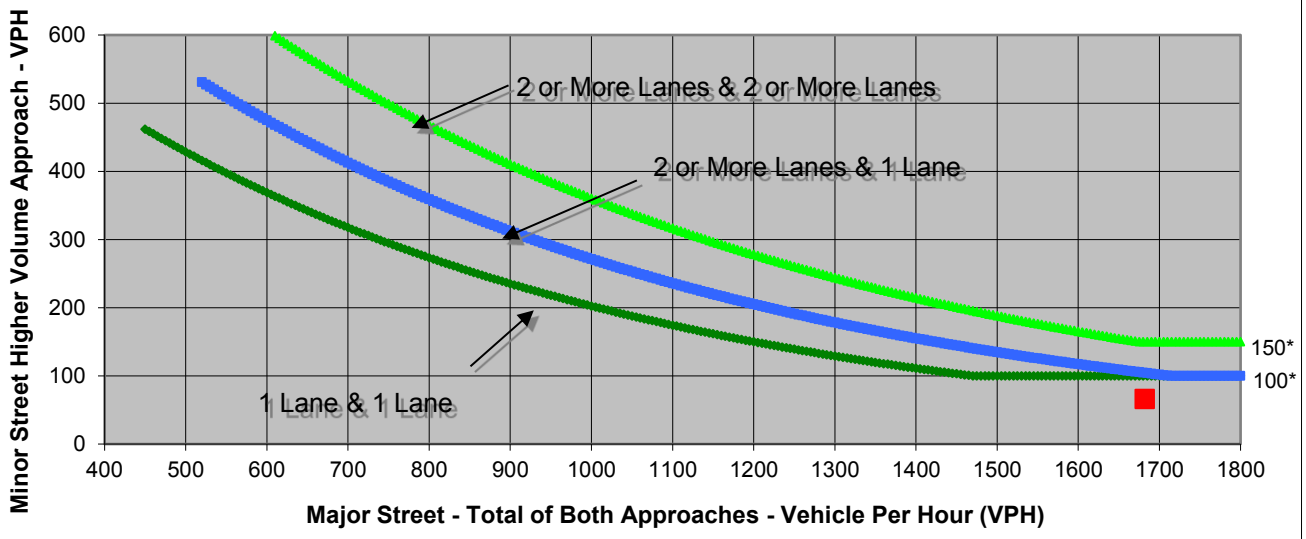
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	39	0	11
Through	857	766	0	0
Right	20	0	0	55
Total	877	805	0	66

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	98th Avenue	Stanley Avenue	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,682**	**66**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 169

Project Oak Knoll
Scenario Existing
Peak Hour AM

Major Street Golf Links Road
Minor Street Mountain Boulevard

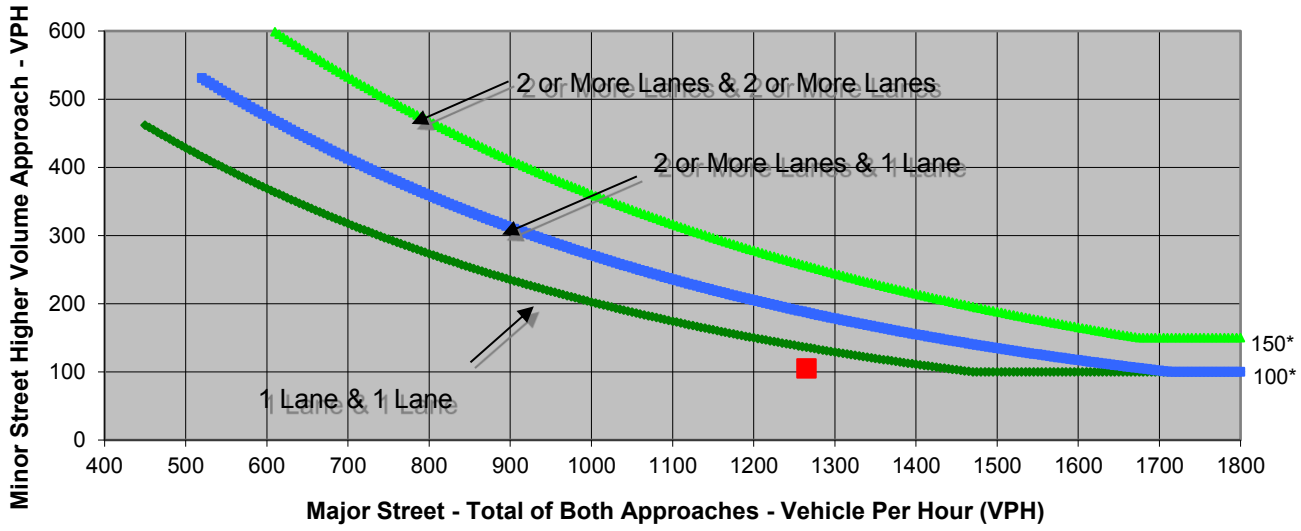
Turn Movement Volumes

	NB	SB	EB	WB
Left	6	10	608	1
Through	2	4	300	271
Right	0	91	52	33
Total	8	105	960	305

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Golf Links Road	Mountain Boulevard	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,265**	**105**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 170

Project Oak Knoll
Scenario Existing
Peak Hour PM

Major Street Golf Links Road
Minor Street Mountain Boulevard

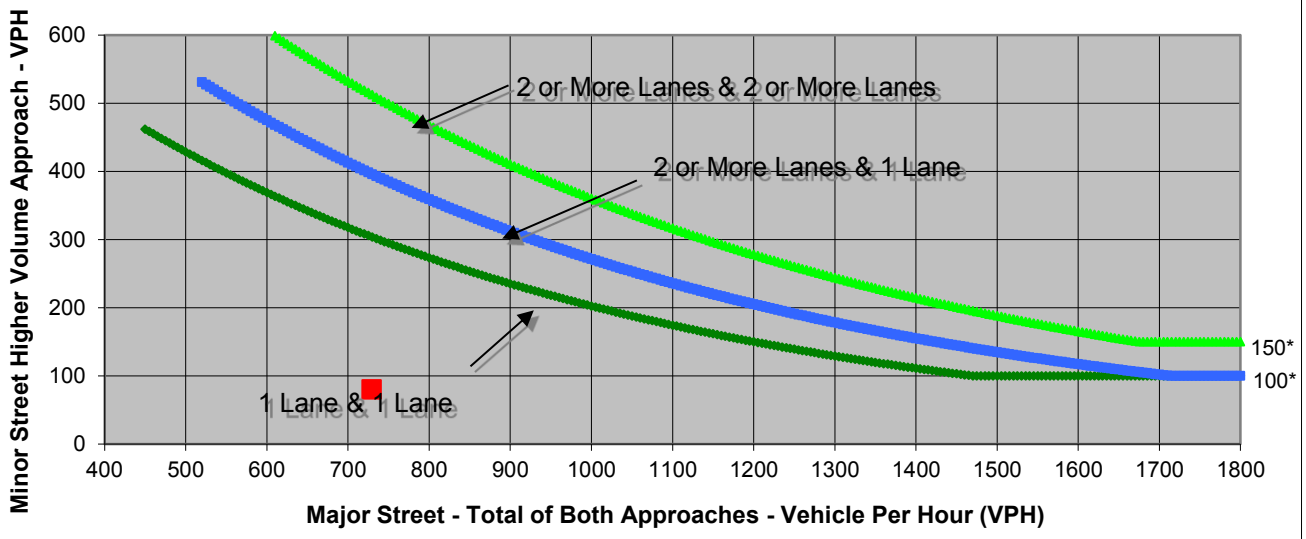
Turn Movement Volumes

	NB	SB	EB	WB
Left	29	12	135	2
Through	2	1	320	262
Right	2	67	2	8
Total	33	80	457	272

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Golf Links Road	Mountain Boulevard	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**729**	**80**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Freeway Analysis Worksheets

FEHR PEERS

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd Off-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,820	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	620	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,820	620		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,705	155		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,820	620		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,323	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,820	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,200	pcph	9,600	pcph	No
Ramp volume, v_R	620	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,748	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,323	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.76	
Density, D_R	31.2	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.354	
Space mean speed in ramp influence area, S_R	60.1	mph
Space mean speed in outer lanes, S_O	73.9	mph
Space mean speed for all vehicles, S	66.4	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Off-ramp to On-ramp
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,200	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,550	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,200	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,550	pcphpl
Average passenger-car speed, S	68.6	mph
Volume-to-capacity ratio, v/c	0.65	
Density, D	22.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd On-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,810	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	610	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,810	610		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,703	153		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,810	610		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.142		(Equation 13-3, 13-4, or 13-5)
v_{12} =	878	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,200	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,810	pcph	9,600	pcph	No
Ramp volume, v_R	610	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,661	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,480	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,090	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.67	
Density, D_R	26.8	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.371	
Space mean speed in ramp influence area, S_R	59.6	mph
Space mean speed in outer lanes, S_O	65.1	mph
Space mean speed for all vehicles, S	62.5	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd to Keller Ave
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,810	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,703	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,810	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,703	pcphpl
Average passenger-car speed, S	67.1	mph
Volume-to-capacity ratio, v/c	0.71	
Density, D	25.4	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,810	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	403	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,810	403		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,703	101		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,810	403		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,196	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,810	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,407	pcph	9,600	pcph	No
Ramp volume, v_R	403	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,807	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,196	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.73	
Density, D_R	29.9	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.334	
Space mean speed in ramp influence area, S_R	60.6	mph
Space mean speed in outer lanes, S_O	73.6	mph
Space mean speed for all vehicles, S	66.9	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp to On-ramp
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,407	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,602	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,407	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,602	pcphpl
Average passenger-car speed, S	68.1	mph
Volume-to-capacity ratio, v/c	0.67	
Density, D	23.5	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave On-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,741	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	334	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,741	334		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,685	84		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,741	334		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.176		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,128	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,407	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,741	pcph	9,600	pcph	No
Ramp volume, v_R	334	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,640	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,563	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	2,897	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.63	
Density, D_R	25.4	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.356	
Space mean speed in ramp influence area, S_R	60.0	mph
Space mean speed in outer lanes, S_O	64.9	mph
Space mean speed for all vehicles, S	62.7	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave to Edwards Ave
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,741	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,685	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,741	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,685	pcphpl
Average passenger-car speed, S	67.3	mph
Volume-to-capacity ratio, v/c	0.70	
Density, D	25.1	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Edwards Ave On-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,412	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	671	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,412	671		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,853	168		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,412	671		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.134		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	903	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,741	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,412	pcph	9,600	pcph	No
Ramp volume, v_R	671	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,919	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,696	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,367	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.73	
Density, D_R	28.9	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.398	
Space mean speed in ramp influence area, S_R	58.9	mph
Space mean speed in outer lanes, S_O	64.5	mph
Space mean speed for all vehicles, S	61.8	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Semminary Ave Off-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,412	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	342	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,412	342		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,853	86		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,412	342		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,425	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,412	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,070	pcph	9,600	pcph	No
Ramp volume, v_R	342	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,994	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,425	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.78	
Density, D_R	31.9	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.329	
Space mean speed in ramp influence area, S_R	60.8	mph
Space mean speed in outer lanes, S_O	72.9	mph
Space mean speed for all vehicles, S	66.8	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB Off-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,070	vph

Off Ramp Data

Type of diverge	Major	
Number of lanes in ramp	2	
Free-flow speed on ramp	65	mph
Volume on ramp	1,944	vph
Length of deceleration lane(s)	740	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,070	1,944		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,768	486		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,070	1,944		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.260		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,277	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,070	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,126	pcph	9,600	pcph	No
Ramp volume, v_R	1,944	pcph	4,700	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,897	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,277	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.74	
Density, D_R	30.9	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.213	
Space mean speed in ramp influence area, S_R	64.0	mph
Space mean speed in outer lanes, S_O	73.3	mph
Space mean speed for all vehicles, S	68.7	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB to Frontage Rd
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	5,126	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,282	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,126	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,282	pcphpl
Average passenger-car speed, S	69.9	mph
Volume-to-capacity ratio, v/c	0.53	
Density, D	18.3	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	CA-13 NB: I-580 WB to Calaveras Ave
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	1,944	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	486	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	1,944	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	972	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.41	
Density, D	13.9	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd Off-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,048	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	678	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,048	678		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,762	170		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,048	678		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,455	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,048	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,370	pcph	9,600	pcph	No
Ramp volume, v_R	678	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,796	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,455	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.79	
Density, D_R	32.3	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.359	
Space mean speed in ramp influence area, S_R	59.9	mph
Space mean speed in outer lanes, S_O	73.7	mph
Space mean speed for all vehicles, S	66.2	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Off-ramp to On-ramp
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,370	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,593	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,370	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,593	pcphpl
Average passenger-car speed, S	68.2	mph
Volume-to-capacity ratio, v/c	0.66	
Density, D	23.3	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd On-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,019	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	649	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,019	649		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,755	162		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,019	649		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.137		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	871	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,370	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,019	pcph	9,600	pcph	No
Ramp volume, v_R	649	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,750	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,548	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,197	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.70	
Density, D_R	27.6	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.380	
Space mean speed in ramp influence area, S_R	59.3	mph
Space mean speed in outer lanes, S_O	64.9	mph
Space mean speed for all vehicles, S	62.3	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd to Keller Ave
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	7,019	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,755	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,019	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,755	pcphpl
Average passenger-car speed, S	66.4	mph
Volume-to-capacity ratio, v/c	0.73	
Density, D	26.4	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,019	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	152	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,019	152		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,755	38		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,019	152		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,146	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,019	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,867	pcph	9,600	pcph	No
Ramp volume, v_R	152	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,936	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,146	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.72	
Density, D_R	29.5	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.312	
Space mean speed in ramp influence area, S_R	61.3	mph
Space mean speed in outer lanes, S_O	73.1	mph
Space mean speed for all vehicles, S	67.3	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp to On-ramp
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,867	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,717	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,867	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,717	pcphpl
Average passenger-car speed, S	66.9	mph
Volume-to-capacity ratio, v/c	0.72	
Density, D	25.7	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave On-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,457	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	590	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,457	590		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,864	148		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,457	590		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.144		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	989	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,867	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,457	pcph	9,600	pcph	No
Ramp volume, v_R	590	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,939	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,747	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,337	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.73	
Density, D_R	28.7	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.395	
Space mean speed in ramp influence area, S_R	58.9	mph
Space mean speed in outer lanes, S_O	64.4	mph
Space mean speed for all vehicles, S	61.8	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave to Edwards Ave
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	7,457	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,864	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,457	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,864	pcphpl
Average passenger-car speed, S	64.9	mph
Volume-to-capacity ratio, v/c	0.78	
Density, D	28.7	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Edwards Ave On-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,536	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	1,079	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,536	1,079		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,134	270		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,536	1,079		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.083		(Equation 13-3, 13-4, or 13-5)
v_{12} =	618	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,457	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,536	pcph	9,600	pcph	No
Ramp volume, v_R	1,079	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,419	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,983	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	4,062	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.88	
Density, D_R	34.2	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.512	
Space mean speed in ramp influence area, S_R	55.7	mph
Space mean speed in outer lanes, S_O	63.7	mph
Space mean speed for all vehicles, S	59.6	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Semminary Ave Off-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,536	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	169	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,536	169		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,134	42		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,536	169		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,817	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,536	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,367	pcph	9,600	pcph	No
Ramp volume, v_R	169	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,359	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,817	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.87	
Density, D_R	35.3	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.313	
Space mean speed in ramp influence area, S_R	61.2	mph
Space mean speed in outer lanes, S_O	71.5	mph
Space mean speed for all vehicles, S	66.5	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB Off-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,367	vph

Off Ramp Data

Type of diverge	Major	
Number of lanes in ramp	2	
Free-flow speed on ramp	65	mph
Volume on ramp	1,978	vph
Length of deceleration lane(s)	740	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,367	1,978		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,092	495		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,367	1,978		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.260		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,639	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,367	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,389	pcph	9,600	pcph	No
Ramp volume, v_R	1,978	pcph	4,700	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,364	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,639	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.83	
Density, D_R	36.6	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.216	
Space mean speed in ramp influence area, S_R	64.0	mph
Space mean speed in outer lanes, S_O	71.5	mph
Space mean speed for all vehicles, S	68.0	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB to Frontage Rd
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,389	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,597	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,389	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,597	pcphpl
Average passenger-car speed, S	68.2	mph
Volume-to-capacity ratio, v/c	0.67	
Density, D	23.4	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	CA-13 NB: I-580 WB to Calaveras Ave
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	1,978	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	495	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	1,978	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	989	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.41	
Density, D	14.1	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave Off-ramp to CA-13 SB
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	4,733	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,183	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	4,733	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,183	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.49	
Density, D	16.9	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: CA-13 SB On-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,374	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	65	mph
Volume on ramp	1,641	vph
Length of acceleration lane(s)	600	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,374	1,641		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,594	410		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,374	1,641		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.013		(Equation 13-3, 13-4, or 13-5)
v_{12} =	60	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	4,733	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,374	pcph	9,600	pcph	No
Ramp volume, v_R	1,641	pcph	2,200	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,337	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	1,893	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,534	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.77	
Density, D_R	28.5	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.377	
Space mean speed in ramp influence area, S_R	59.5	mph
Space mean speed in outer lanes, S_O	66.7	mph
Space mean speed for all vehicles, S	62.5	mph

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave On-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,305	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	931	vph
Length of acceleration lane(s)	540	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,305	931		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,826	233		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,305	931		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.101		(Equation 13-3, 13-4, or 13-5)
v_{12} =	646	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,374	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,305	pcph	9,600	pcph	No
Ramp volume, v_R	931	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,864	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,550	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,481	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.76	
Density, D_R	28.8	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.399	
Space mean speed in ramp influence area, S_R	58.8	mph
Space mean speed in outer lanes, S_O	64.9	mph
Space mean speed for all vehicles, S	61.9	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave Off-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,305	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	445	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,305	445		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,826	111		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,305	445		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,436	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,305	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,860	pcph	9,600	pcph	No
Ramp volume, v_R	445	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,935	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,436	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.78	
Density, D_R	32.2	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.338	
Space mean speed in ramp influence area, S_R	60.5	mph
Space mean speed in outer lanes, S_O	73.1	mph
Space mean speed for all vehicles, S	66.6	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave To Keller Ave
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,860	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,715	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,860	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,715	pcphpl
Average passenger-car speed, S	66.9	mph
Volume-to-capacity ratio, v/c	0.71	
Density, D	25.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,860	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	436	vph
Length of deceleration lane(s)	220	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,860	436		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,715	109		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,860	436		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,237	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,860	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,424	pcph	9,600	pcph	No
Ramp volume, v_R	436	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,812	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,237	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.74	
Density, D_R	30.1	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.337	
Space mean speed in ramp influence area, S_R	60.6	mph
Space mean speed in outer lanes, S_O	73.6	mph
Space mean speed for all vehicles, S	66.8	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp to On-ramp
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,424	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,606	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,424	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,606	pcphpl
Average passenger-car speed, S	68.1	mph
Volume-to-capacity ratio, v/c	0.67	
Density, D	23.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave On-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,783	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	359	vph
Length of acceleration lane(s)	380	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,783	359		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,696	90		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,783	359		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.173		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,111	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,424	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,783	pcph	9,600	pcph	No
Ramp volume, v_R	359	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,657	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,570	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	2,929	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.64	
Density, D_R	25.8	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.360	
Space mean speed in ramp influence area, S_R	59.9	mph
Space mean speed in outer lanes, S_O	64.9	mph
Space mean speed for all vehicles, S	62.6	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave to Golf Links Rd
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,783	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,696	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,783	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,696	pcphpl
Average passenger-car speed, S	67.1	mph
Volume-to-capacity ratio, v/c	0.71	
Density, D	25.3	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp
Alternative	Existing Conditions
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,783	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	654	vph
Length of deceleration lane(s)	160	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,783	654		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,696	164		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,783	654		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,326	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,783	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,129	pcph	9,600	pcph	No
Ramp volume, v_R	654	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,728	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,326	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.76	
Density, D_R	31.4	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.357	
Space mean speed in ramp influence area, S_R	60.0	mph
Space mean speed in outer lanes, S_O	73.9	mph
Space mean speed for all vehicles, S	66.4	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp to On-ramp
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,129	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,532	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,129	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,532	pcphpl
Average passenger-car speed, S	68.7	mph
Volume-to-capacity ratio, v/c	0.64	
Density, D	22.3	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd On-ramp
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,792	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,698	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,792	pcph

Speed Inputs and Adjustments

Number of lanes, N	5	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	6,792	pcph	9,600	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	Yes
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,358	pcphpl
Average passenger-car speed, S	69.7	mph
Volume-to-capacity ratio, v/c	0.57	
Density, D	19.5	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	CA-13 SB: Calaveras Ave to Seminary Ave
Alternative	Existing Conditions
Time period	PM

Flow Inputs and Adjustments

Volume, V	1,828	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	457	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	1,828	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	914	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.38	
Density, D	13.1	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave Off-ramp to CA-13 SB
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	3,583	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	896	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	3,583	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	896	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.37	
Density, D	12.8	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: CA-13 SB On-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	5,621	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	65	mph
Volume on ramp	2,038	vph
Length of acceleration lane(s)	600	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	5,621	2,038		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,405	510		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	5,621	2,038		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.066		(Equation 13-3, 13-4, or 13-5)
v_{12} =	236	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	3,583	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,621	pcph	9,600	pcph	No
Ramp volume, v_R	2,038	pcph	2,200	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,673	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	1,433	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,471	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.75	
Density, D_R	27.9	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.368	
Space mean speed in ramp influence area, S_R	59.7	mph
Space mean speed in outer lanes, S_O	67.9	mph
Space mean speed for all vehicles, S	62.6	mph

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave On-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,076	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	455	vph
Length of acceleration lane(s)	540	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,076	455		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,519	114		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,076	455		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.161		(Equation 13-3, 13-4, or 13-5)
v_{12} =	905	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	5,621	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,076	pcph	9,600	pcph	No
Ramp volume, v_R	455	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,358	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,248	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	2,703	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.59	
Density, D_R	23.0	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.331	
Space mean speed in ramp influence area, S_R	60.7	mph
Space mean speed in outer lanes, S_O	65.7	mph
Space mean speed for all vehicles, S	63.4	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave Off-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,076	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	527	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,076	527		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,519	132		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,076	527		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	2,946	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,076	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,549	pcph	9,600	pcph	No
Ramp volume, v_R	527	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,565	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	2,946	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.67	
Density, D_R	28.0	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.345	
Space mean speed in ramp influence area, S_R	60.3	mph
Space mean speed in outer lanes, S_O	74.6	mph
Space mean speed for all vehicles, S	66.9	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave To Keller Ave
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	5,549	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,387	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,549	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,387	pcphpl
Average passenger-car speed, S	69.6	mph
Volume-to-capacity ratio, v/c	0.58	
Density, D	19.9	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	5,549	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	381	vph
Length of deceleration lane(s)	220	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	5,549	381		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,387	95		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	5,549	381		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	2,634	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	5,549	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,168	pcph	9,600	pcph	No
Ramp volume, v_R	381	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,457	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	2,634	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.60	
Density, D_R	24.9	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.332	
Space mean speed in ramp influence area, S_R	60.7	mph
Space mean speed in outer lanes, S_O	75.0	mph
Space mean speed for all vehicles, S	67.5	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp to On-ramp
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	5,168	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,292	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,168	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,292	pcphpl
Average passenger-car speed, S	69.9	mph
Volume-to-capacity ratio, v/c	0.54	
Density, D	18.5	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave On-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	5,466	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	298	vph
Length of acceleration lane(s)	380	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	5,466	298		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,367	75		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	5,466	298		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.181		(Equation 13-3, 13-4, or 13-5)
v_{12} =	933	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	5,168	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,466	pcph	9,600	pcph	No
Ramp volume, v_R	298	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,117	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,067	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	2,365	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.51	
Density, D_R	21.4	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.328	
Space mean speed in ramp influence area, S_R	60.8	mph
Space mean speed in outer lanes, S_O	66.2	mph
Space mean speed for all vehicles, S	63.8	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave to Golf Links Rd
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	5,466	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,367	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,466	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,367	pcphpl
Average passenger-car speed, S	69.7	mph
Volume-to-capacity ratio, v/c	0.57	
Density, D	19.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp
Alternative	Existing Conditions
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	5,466	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	880	vph
Length of deceleration lane(s)	160	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	5,466	880		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,367	220		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	5,466	880		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	2,879	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	5,466	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	4,586	pcph	9,600	pcph	No
Ramp volume, v_R	880	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,293	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	2,879	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.65	
Density, D_R	27.6	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.377	
Space mean speed in ramp influence area, S_R	59.4	mph
Space mean speed in outer lanes, S_O	75.6	mph
Space mean speed for all vehicles, S	66.1	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp to On-ramp
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	4,586	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,147	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	4,586	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,147	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.48	
Density, D	16.4	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd On-ramp
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	5,296	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,324	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,296	pcph

Speed Inputs and Adjustments

Number of lanes, N	5	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	5,296	pcph	9,600	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	Yes
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,059	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.44	
Density, D	15.1	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	CA-13 SB: Calaveras Ave to Seminary Ave
Alternative	Existing Conditions
Time period	AM

Flow Inputs and Adjustments

Volume, V	2,256	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	564	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	2,256	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,128	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.47	
Density, D	16.1	pcpmpl
Level of service, LOS	B	

APPENDIX V-D

2040 NO PROJECT CONDITIONS ANALYSIS WORKSHEETS



Intersection Analysis Worksheets

FEHR PEERS

Intersection	
Int Delay, s/veh	29.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1000	30	10	230	0	20	0	30	60	40	720
Conflicting Peds, #/hr	0	0	2	2	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1000	30	10	230	0	20	0	30	60	40	720

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	230	0	0	1030	0	0	1285	1265	517	750	1280	232
Stage 1	-	-	-	-	-	-	1015	1015	-	250	250	-
Stage 2	-	-	-	-	-	-	270	250	-	500	1030	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.218	-	-	2.22	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1338	-	-	670	-	-	131	169	504	313	165	806
Stage 1	-	-	-	-	-	-	256	315	-	753	699	-
Stage 2	-	-	-	-	-	-	735	699	-	522	310	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1336	-	-	669	-	-	~ 11	166	503	290	163	805
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 11	166	-	290	163	-
Stage 1	-	-	-	-	-	-	256	315	-	753	689	-
Stage 2	-	-	-	-	-	-	72	689	-	490	310	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	$ 714.5	34.3
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	27	1336	-	-	669	-	-	221	805
HCM Lane V/C Ratio	1.852	-	-	-	0.015	-	-	0.452	0.894
HCM Control Delay (s)	$ 714.5	0	-	-	10.5	-	-	34.1	34.3
HCM Lane LOS	F	A	-	-	B	-	-	D	D
HCM 95th %tile Q(veh)	6	0	-	-	0	-	-	2.2	12

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	38.4
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	650	400	40	0	0	0	0	0	60	190	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	650	400	40	0	0	0	0	0	60	190	40
Number of Lanes	0	1	1	0	0	0	0	0	0	0	1	0

Approach	EB	NB
Opposing Approach		SB
Opposing Lanes	0	2
Conflicting Approach Left	SB	EB
Conflicting Lanes Left	2	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	50.6	18.4
HCM LOS	F	C

Lane	NBLn1	EBLn1	EBLn2	SBLn1	SBLn2
Vol Left, %	21%	100%	0%	100%	0%
Vol Thru, %	66%	0%	91%	0%	14%
Vol Right, %	14%	0%	9%	0%	86%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	290	650	440	90	210
LT Vol	60	650	0	90	0
Through Vol	190	0	400	0	30
RT Vol	40	0	40	0	180
Lane Flow Rate	290	650	440	90	210
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.557	1	0.782	0.196	0.394
Departure Headway (Hd)	6.917	6.968	6.396	7.855	6.757
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	519	527	568	454	529
Service Time	4.99	4.668	4.096	5.655	4.557
HCM Lane V/C Ratio	0.559	1.233	0.775	0.198	0.397
HCM Control Delay	18.4	65.7	28.3	12.6	13.9
HCM Lane LOS	C	F	D	B	B
HCM 95th-tile Q	3.4	13.9	7.3	0.7	1.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	90	30	180
Peak Hour Factor	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	90	30	180
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	
Conflicting Lanes Left	0
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	13.5
HCM LOS	B

Lane

Intersection	
Int Delay, s/veh	334.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	100	190	40	10	820	20	0	0	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	300	125	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	100	190	40	10	820	20	0	0	10	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1700	1675	15	1725	1680	20	20	0	0	20	0	0
Stage 1	15	15	-	1660	1660	-	-	-	-	-	-	-
Stage 2	1685	1660	-	65	20	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	73	95	1065	~ 70	95	1058	1596	-	-	1596	-	-
Stage 1	1005	883	-	~ 123	154	-	-	-	-	-	-	-
Stage 2	119	154	-	946	879	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	12	46	1065	~ 38	46	1058	1596	-	-	1596	-	-
Mov Cap-2 Maneuver	12	46	-	~ 38	46	-	-	-	-	-	-	-
Stage 1	489	883	-	~ 60	75	-	-	-	-	-	-	-
Stage 2	27	75	-	857	879	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	$ 1634.1	9.4	0
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1596	-	-	1065	38	57	1596	-	-
HCM Lane V/C Ratio	0.514	-	-	0.094	5	0.877	-	-	-
HCM Control Delay (s)	9.6	-	-	8.$	$ 2011.3	200.8	0	-	-
HCM Lane LOS	A	-	-	A	F	F	A	-	-
HCM 95th %tile Q(veh)	3.1	-	-	0.3	22.2	3.9	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	180	470	120	20	630	50	250	490	30	90	450	150
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	180	470	47	20	630	47	250	490	28	90	450	0
Adj No. of Lanes	1	1	1	1	1	0	0	2	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	723	595	29	548	41	207	434	26	444	466	0
Arrive On Green	0.08	0.39	0.39	0.02	0.32	0.32	0.19	0.18	0.18	0.25	0.25	0.00
Sat Flow, veh/h	1774	1863	1535	1774	1709	128	1130	2369	139	1774	1863	0
Grp Volume(v), veh/h	180	470	47	20	0	677	400	0	368	90	450	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1535	1774	0	1837	1806	0	1832	1774	1863	0
Q Serve(g_s), s	10.0	24.8	2.3	1.3	0.0	38.5	22.0	0.0	22.0	4.8	28.7	0.0
Cycle Q Clear(g_c), s	10.0	24.8	2.3	1.3	0.0	38.5	22.0	0.0	22.0	4.8	28.7	0.0
Prop In Lane	1.00		1.00	1.00		0.07	0.63		0.08	1.00		0.00
Lane Grp Cap(c), veh/h	148	723	595	29	0	589	331	0	336	444	466	0
V/C Ratio(X)	1.22	0.65	0.08	0.70	0.00	1.15	1.21	0.00	1.10	0.20	0.97	0.00
Avail Cap(c_a), veh/h	148	723	595	59	0	589	331	0	336	444	466	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.00	0.80	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.0	30.1	23.2	58.7	0.0	40.8	48.7	0.0	49.0	35.6	44.5	0.0
Incr Delay (d2), s/veh	144.2	4.5	0.3	8.6	0.0	82.2	117.9	0.0	77.8	0.1	32.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	13.6	1.0	0.7	0.0	32.9	21.8	0.0	18.4	2.4	19.0	0.0
LnGrp Delay(d),s/veh	199.2	34.6	23.4	67.3	0.0	123.0	166.6	0.0	126.8	35.6	77.3	0.0
LnGrp LOS	F	C	C	E		F	F		F	D	E	
Approach Vol, veh/h		697			697			768			540	
Approach Delay, s/veh		76.3			121.4			147.5			70.4	
Approach LOS		E			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	52.1		35.0	14.0	44.0		27.0
Change Period (Y+Rc), s	4.0	5.5		5.0	4.0	5.5		5.0
Max Green Setting (Gmax), s	4.0	44.5		30.0	10.0	38.5		22.0
Max Q Clear Time (g_c+I1), s	3.3	26.8		30.7	12.0	40.5		24.0
Green Ext Time (p_c), s	0.0	3.1		0.0	0.0	0.0		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		107.0
HCM 2010 LOS		F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	10	550	20	30	640	10	30	30	100	20	10	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.98	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	10	550	18	30	640	9	30	30	20	20	10	5
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	169	922	30	187	914	13	297	94	57	360	83	32
Arrive On Green	0.57	0.52	0.52	0.57	0.52	0.52	0.19	0.14	0.14	0.19	0.14	0.14
Sat Flow, veh/h	11	1766	57	37	1752	24	535	657	397	748	578	221
Grp Volume(v), veh/h	578	0	0	679	0	0	80	0	0	35	0	0
Grp Sat Flow(s),veh/h/ln	1835	0	0	1813	0	0	1589	0	0	1547	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.7	0.0	0.0	5.9	0.0	0.0	0.9	0.0	0.0	0.4	0.0	0.0
Prop In Lane	0.02		0.03	0.04		0.01	0.37		0.25	0.57		0.14
Lane Grp Cap(c), veh/h	1203	0	0	1194	0	0	520	0	0	543	0	0
V/C Ratio(X)	0.48	0.00	0.00	0.57	0.00	0.00	0.15	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	4691	0	0	4596	0	0	1694	0	0	1645	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.7	0.0	0.0	4.0	0.0	0.0	8.4	0.0	0.0	8.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	2.6	0.0	0.0	0.4	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	3.8	0.0	0.0	4.1	0.0	0.0	8.5	0.0	0.0	8.2	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h		578			679			80			35	
Approach Delay, s/veh		3.8			4.1			8.5			8.2	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		16.2		6.2		16.2		6.2
Change Period (Y+Rc), s		4.5		3.0		4.5		3.0
Max Green Setting (Gmax), s		55.0		20.0		55.0		20.0
Max Q Clear Time (g_c+I1), s		6.7		2.4		7.9		2.9
Green Ext Time (p_c), s		3.8		0.2		3.8		0.2

Intersection Summary		
HCM 2010 Ctrl Delay		4.3
HCM 2010 LOS		A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	620	50	30	830	60	80
Number	6	16	5	2	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1900
Adj Flow Rate, veh/h	620	46	30	830	60	30
Adj No. of Lanes	1	0	1	1	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	852	63	451	1225	105	52
Arrive On Green	0.50	0.50	0.04	0.66	0.09	0.09
Sat Flow, veh/h	1713	127	1774	1863	1119	560
Grp Volume(v), veh/h	0	666	30	830	91	0
Grp Sat Flow(s),veh/h/ln	0	1840	1774	1863	1697	0
Q Serve(g_s), s	0.0	9.2	0.2	8.9	1.7	0.0
Cycle Q Clear(g_c), s	0.0	9.2	0.2	8.9	1.7	0.0
Prop In Lane		0.07	1.00		0.66	0.33
Lane Grp Cap(c), veh/h	0	915	451	1225	159	0
V/C Ratio(X)	0.00	0.73	0.07	0.68	0.57	0.00
Avail Cap(c_a), veh/h	0	3773	717	4397	843	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.4	4.7	3.4	14.0	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.2	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.5	0.1	4.5	0.8	0.0
LnGrp Delay(d),s/veh	0.0	6.8	4.7	3.6	15.2	0.0
LnGrp LOS		A	A	A	B	
Approach Vol, veh/h	666			860	91	
Approach Delay, s/veh	6.8			3.7	15.2	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		25.2		7.0	5.2	20.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		76.0		16.0	6.0	66.0		
Max Q Clear Time (g_c+I1), s		10.9		3.7	2.2	11.2		
Green Ext Time (p_c), s		4.8		0.1	0.0	4.8		

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	740	0	0	270	0	10	0	10	50	10	650
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	0	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	0	740	0	0	270	0	10	0	0	50	10	232
Adj No. of Lanes	1	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	4	958	0	0	958	0	32	0	0	383	77	299
Arrive On Green	0.00	0.51	0.00	0.00	0.51	0.00	0.02	0.00	0.00	0.23	0.26	0.26
Sat Flow, veh/h	1774	1863	0	0	1863	0	1774	0	0	1490	298	1577
Grp Volume(v), veh/h	0	740	0	0	270	0	10	0	0	60	0	232
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1863	0	1774	0	0	1788	0	1577
Q Serve(g_s), s	0.0	14.4	0.0	0.0	3.7	0.0	0.3	0.0	0.0	1.2	0.0	9.3
Cycle Q Clear(g_c), s	0.0	14.4	0.0	0.0	3.7	0.0	0.3	0.0	0.0	1.2	0.0	9.3
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00	0.83		1.00
Lane Grp Cap(c), veh/h	4	958	0	0	958	0	32	0	0	459	0	299
V/C Ratio(X)	0.00	0.77	0.00	0.00	0.28	0.00	0.31	0.00	0.00	0.13	0.00	0.77
Avail Cap(c_a), veh/h	551	1364	0	0	1447	0	472	0	0	754	0	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.8	0.0	0.0	6.2	0.0	21.8	0.0	0.0	13.2	0.0	34.5
Incr Delay (d2), s/veh	0.0	2.3	0.0	0.0	0.2	0.0	2.0	0.0	0.0	0.0	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.8	0.0	0.0	1.9	0.0	0.1	0.0	0.0	0.6	0.0	6.4
LnGrp Delay(d),s/veh	0.0	11.1	0.0	0.0	6.4	0.0	23.8	0.0	0.0	13.3	0.0	36.1
LnGrp LOS		B			A		C			B		D
Approach Vol, veh/h		740			270			10			292	
Approach Delay, s/veh		11.1			6.4			23.8			31.4	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		26.7		14.6	0.0	26.7		3.8
Change Period (Y+Rc), s		3.5		3.0	3.0	3.5		3.0
Max Green Setting (Gmax), s		33.0		19.0	14.0	35.0		12.0
Max Q Clear Time (g_c+I1), s		16.4		11.3	0.0	5.7		2.3
Green Ext Time (p_c), s		6.7		0.5	0.0	8.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.8
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	630	40	130	60	20	90	250	390	20	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863			
Adj Flow Rate, veh/h	630	40	81	60	20	13	250	390	5			
Adj No. of Lanes	1	1	0	0	1	1	1	1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Cap, veh/h	733	326	661	240	63	212	450	473	402			
Arrive On Green	0.41	0.60	0.60	0.14	0.14	0.14	0.25	0.25	0.25			
Sat Flow, veh/h	1774	541	1096	938	466	1561	1774	1863	1583			
Grp Volume(v), veh/h	630	0	121	80	0	13	250	390	5			
Grp Sat Flow(s),veh/h/ln	1774	0	1637	1404	0	1561	1774	1863	1583			
Q Serve(g_s), s	18.0	0.0	1.8	2.1	0.0	0.4	6.8	11.0	0.1			
Cycle Q Clear(g_c), s	18.0	0.0	1.8	2.7	0.0	0.4	6.8	11.0	0.1			
Prop In Lane	1.00		0.67	0.75		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	733	0	987	316	0	212	450	473	402			
V/C Ratio(X)	0.86	0.00	0.12	0.25	0.00	0.06	0.56	0.82	0.01			
Avail Cap(c_a), veh/h	1240	0	987	571	0	504	731	768	653			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	14.9	0.0	4.8	21.8	0.0	21.0	18.1	19.6	15.6			
Incr Delay (d2), s/veh	3.3	0.0	0.1	0.2	0.0	0.0	0.4	1.7	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	9.4	0.0	0.8	1.1	0.0	0.2	3.4	5.9	0.1			
LnGrp Delay(d),s/veh	18.2	0.0	4.8	21.9	0.0	21.1	18.5	21.3	15.6			
LnGrp LOS	B		A	C		C	B	C	B			
Approach Vol, veh/h		751			93			645				
Approach Delay, s/veh		16.0			21.8			20.2				
Approach LOS		B			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		38.1		17.7	26.1	12.1		
Change Period (Y+Rc), s		* 4.5		3.5	3.0	4.5		
Max Green Setting (Gmax), s		* 23		23.0	39.0	18.0		
Max Q Clear Time (g_c+I1), s		3.8		13.0	20.0	4.7		
Green Ext Time (p_c), s		0.9		1.1	3.0	0.3		

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	20	650	10	10	180
Conflicting Peds, #/hr	0	2	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	20	650	10	10	180

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	857	657	0	0	662	0
Stage 1	657	-	-	-	-	-
Stage 2	200	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	328	465	-	-	927	-
Stage 1	516	-	-	-	-	-
Stage 2	834	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	324	464	-	-	927	-
Mov Cap-2 Maneuver	324	-	-	-	-	-
Stage 1	515	-	-	-	-	-
Stage 2	824	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.6	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	406	927	-
HCM Lane V/C Ratio	-	-	0.074	0.011	-
HCM Control Delay (s)	-	-	14.6	8.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	10	10	10	640	650	10	0	190	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	10	10	10	640	650	10	0	190	10

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	2130	2135	655	200	0	0	660	0	0
Stage 1	1935	1935	-	-	-	-	-	-	-
Stage 2	195	200	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	55	49	466	1372	-	-	928	-	-
Stage 1	124	113	-	-	-	-	-	-	-
Stage 2	838	736	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	29	0	466	1372	-	-	928	-	-
Mov Cap-2 Maneuver	29	0	-	-	-	-	-	-	-
Stage 1	66	0	-	-	-	-	-	-	-
Stage 2	838	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	131	4.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1372	-	-	55	928	-	-
HCM Lane V/C Ratio	0.466	-	-	0.545	-	-	-
HCM Control Delay (s)	9.9	-	-	131	0	-	-
HCM Lane LOS	A	-	-	F	A	-	-
HCM 95th %tile Q(veh)	2.6	-	-	2.1	0	-	-

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	20	70	0	20	50	0	140	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	20	70	0	20	50	0	140	10
Number of Lanes	0	1	0	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.4	7.2	8.3
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	22%	93%
Vol Thru, %	29%	0%	7%
Vol Right, %	71%	78%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	70	90	150
LT Vol	0	20	140
Through Vol	20	0	10
RT Vol	50	70	0
Lane Flow Rate	70	90	150
Geometry Grp	1	1	1
Degree of Util (X)	0.073	0.1	0.181
Departure Headway (Hd)	3.777	3.997	4.333
Convergence, Y/N	Yes	Yes	Yes
Cap	934	902	824
Service Time	1.86	1.997	2.382
HCM Lane V/C Ratio	0.075	0.1	0.182
HCM Control Delay	7.2	7.4	8.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.7

Intersection	
Intersection Delay, s/veh	18.3
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	0	140	130	0	370	60	0	0	0	0	0	0	180	220	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	140	130	0	370	60	0	0	0	0	0	0	180	220	40
Number of Lanes	0	0	1	0	0	1	1	0	0	0	0	0	0	0	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	15.1	22.7	16
HCM LOS	C	C	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	62%	0%
Vol Thru, %	52%	0%	100%	38%	73%
Vol Right, %	48%	0%	0%	0%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	270	370	60	290	150
LT Vol	0	370	0	180	0
Through Vol	140	0	60	110	110
RT Vol	130	0	0	0	40
Lane Flow Rate	270	370	60	290	150
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.477	0.708	0.106	0.561	0.269
Departure Headway (Hd)	6.359	6.89	6.381	6.96	6.454
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	564	522	560	516	555
Service Time	4.423	4.651	4.143	4.72	4.215
HCM Lane V/C Ratio	0.479	0.709	0.107	0.562	0.27
HCM Control Delay	15.1	24.8	9.9	18.3	11.6
HCM Lane LOS	C	C	A	C	B
HCM 95th-tile Q	2.6	5.6	0.4	3.4	1.1

Intersection	
Intersection Delay, s/veh	56
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	150	100	70	0	20	220	320	0	70	830	150	0	40	20	140
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	150	100	70	0	20	220	320	0	70	830	150	0	40	20	140
Number of Lanes	0	0	1	0	0	0	2	0	0	0	2	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	37.3	47.7	72.7	21.4
HCM LOS	E	E	F	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	14%	0%	47%	15%	0%	20%
Vol Thru, %	86%	73%	31%	85%	26%	10%
Vol Right, %	0%	27%	22%	0%	74%	70%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	485	565	320	130	430	200
LT Vol	70	0	150	20	0	40
Through Vol	415	415	100	110	110	20
RT Vol	0	150	70	0	320	140
Lane Flow Rate	485	565	320	130	430	200
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	1	1	0.784	0.307	0.943	0.51
Departure Headway (Hd)	8.537	8.269	8.821	8.608	8.01	9.175
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	427	441	413	420	456	394
Service Time	6.272	6.004	6.844	6.308	5.71	7.204
HCM Lane V/C Ratio	1.136	1.281	0.775	0.31	0.943	0.508
HCM Control Delay	73.4	72.1	37.3	15.1	57.6	21.4
HCM Lane LOS	F	F	E	C	F	C
HCM 95th-tile Q	12.5	12.8	6.7	1.3	11.1	2.8

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	30	220	0	0	410	10	0	0	0	10	0	70
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	150	75	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	220	0	0	410	10	0	0	0	10	0	70

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	422	0	0	222	0	0	489	704	114	589	699	214
Stage 1	-	-	-	-	-	-	282	282	-	417	417	-
Stage 2	-	-	-	-	-	-	207	422	-	172	282	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1134	-	-	1344	-	-	462	360	917	392	362	791
Stage 1	-	-	-	-	-	-	701	676	-	584	590	-
Stage 2	-	-	-	-	-	-	776	587	-	813	676	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1132	-	-	1342	-	-	411	349	914	383	351	788
Mov Cap-2 Maneuver	-	-	-	-	-	-	411	349	-	383	351	-
Stage 1	-	-	-	-	-	-	681	657	-	568	589	-
Stage 2	-	-	-	-	-	-	706	586	-	790	657	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0	0	10.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	1132	-	-	1342	-	-	696
HCM Lane V/C Ratio	-	-	0.027	-	-	-	-	-	0.115
HCM Control Delay (s)	0	0	8.3	-	-	0	-	-	10.8
HCM Lane LOS	A	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	90	140	0	10	290	30	10	0	10	10	10	120
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	90	140	0	10	290	30	10	0	10	10	10	120

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	320	0	0	140	0	0	490	660	73	575	645	163
Stage 1	-	-	-	-	-	-	320	320	-	325	325	-
Stage 2	-	-	-	-	-	-	170	340	-	250	320	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1237	-	-	1441	-	-	461	382	974	401	389	853
Stage 1	-	-	-	-	-	-	666	651	-	661	648	-
Stage 2	-	-	-	-	-	-	815	638	-	732	651	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1234	-	-	1437	-	-	363	351	972	372	358	851
Mov Cap-2 Maneuver	-	-	-	-	-	-	363	351	-	372	358	-
Stage 1	-	-	-	-	-	-	617	604	-	613	643	-
Stage 2	-	-	-	-	-	-	682	633	-	670	604	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.2	0.2	12.1	11.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	529	1234	-	-	1437	-	-	715
HCM Lane V/C Ratio	0.038	0.073	-	-	0.007	-	-	0.196
HCM Control Delay (s)	12.1	8.1	-	-	7.5	0	-	11.3
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	9.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	160	0	10	10	0	20	0	870	0	0	110	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	15	15	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	160	0	10	10	0	20	0	870	0	0	110	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	990	980	125	980	980	885	110	0	0	870	0	0
Stage 1	110	110	-	870	870	-	-	-	-	-	-	-
Stage 2	880	870	-	110	110	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	225	250	926	229	250	344	1480	-	-	775	-	-
Stage 1	895	804	-	346	369	-	-	-	-	-	-	-
Stage 2	342	369	-	895	804	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	209	250	914	224	250	340	1462	-	-	765	-	-
Mov Cap-2 Maneuver	209	250	-	224	250	-	-	-	-	-	-	-
Stage 1	895	804	-	346	369	-	-	-	-	-	-	-
Stage 2	318	369	-	874	804	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	59.6	18.8	0	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1462	-	-	209	914	290	765	-	-
HCM Lane V/C Ratio	-	-	-	0.766	0.011	0.103	-	-	-
HCM Control Delay (s)	0	-	-	62.8	9	18.8	0	-	-
HCM Lane LOS	A	-	-	F	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	5.3	0	0.3	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	170	30	80	210	130	60	630	80	90	380	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.93	0.97		0.93	1.00		0.95	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	70	170	24	80	210	112	60	630	75	90	380	45
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	286	36	121	256	127	77	782	93	99	803	95
Arrive On Green	0.31	0.29	0.29	0.31	0.29	0.29	0.04	0.48	0.48	0.06	0.49	0.49
Sat Flow, veh/h	273	983	126	253	883	439	1774	1623	193	1774	1627	193
Grp Volume(v), veh/h	264	0	0	402	0	0	60	0	705	90	0	425
Grp Sat Flow(s),veh/h/ln	1382	0	0	1574	0	0	1774	0	1817	1774	0	1819
Q Serve(g_s), s	0.0	0.0	0.0	7.0	0.0	0.0	3.0	0.0	29.6	4.5	0.0	13.9
Cycle Q Clear(g_c), s	14.3	0.0	0.0	21.2	0.0	0.0	3.0	0.0	29.6	4.5	0.0	13.9
Prop In Lane	0.27		0.09	0.20		0.28	1.00		0.11	1.00		0.11
Lane Grp Cap(c), veh/h	483	0	0	540	0	0	77	0	875	99	0	898
V/C Ratio(X)	0.55	0.00	0.00	0.74	0.00	0.00	0.78	0.00	0.81	0.91	0.00	0.47
Avail Cap(c_a), veh/h	530	0	0	590	0	0	158	0	875	99	0	898
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.58	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.8	0.0	0.0	29.8	0.0	0.0	42.6	0.0	19.7	42.3	0.0	15.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	2.3	0.0	0.0	6.2	0.0	7.8	62.2	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	0.0	9.3	0.0	0.0	1.6	0.0	16.6	3.9	0.0	7.4
LnGrp Delay(d),s/veh	27.2	0.0	0.0	32.1	0.0	0.0	48.8	0.0	27.6	104.5	0.0	16.8
LnGrp LOS	C			C			D		C	F		B
Approach Vol, veh/h		264			402			765			515	
Approach Delay, s/veh		27.2			32.1			29.2			32.2	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		31.1	7.9	51.0		31.1	9.0	49.9
Change Period (Y+Rc), s		5.0	4.0	6.5		5.0	4.0	6.5
Max Green Setting (Gmax), s		29.0	8.0	37.5		29.0	5.0	40.5
Max Q Clear Time (g_c+I1), s		16.3	5.0	15.9		23.2	6.5	31.6
Green Ext Time (p_c), s		1.7	0.0	2.8		1.1	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	30.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	200	60	70	250	230	60	490	60	140	200	70
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.99	0.99		0.94	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1937	1900	1900	1937	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	90	200	50	70	250	196	60	490	47	140	200	42
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	211	390	86	148	328	236	173	1074	100	338	546	121
Arrive On Green	0.38	0.36	0.36	0.38	0.36	0.36	0.40	0.37	0.37	0.40	0.37	0.37
Sat Flow, veh/h	303	1087	240	159	915	657	207	2879	268	514	1463	324
Grp Volume(v), veh/h	340	0	0	516	0	0	312	0	285	172	0	210
Grp Sat Flow(s),veh/h/ln	1630	0	0	1730	0	0	1725	0	1629	677	0	1624
Q Serve(g_s), s	0.0	0.0	0.0	4.9	0.0	0.0	0.0	0.0	6.0	6.2	0.0	4.2
Cycle Q Clear(g_c), s	6.7	0.0	0.0	11.6	0.0	0.0	5.5	0.0	6.0	12.2	0.0	4.2
Prop In Lane	0.26		0.15	0.14		0.38	0.19		0.16	0.82		0.20
Lane Grp Cap(c), veh/h	723	0	0	750	0	0	778	0	608	414	0	606
V/C Ratio(X)	0.47	0.00	0.00	0.69	0.00	0.00	0.40	0.00	0.47	0.41	0.00	0.35
Avail Cap(c_a), veh/h	1192	0	0	1271	0	0	1418	0	1239	782	0	1235
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.1	0.0	0.0	12.8	0.0	0.0	10.4	0.0	10.6	13.9	0.0	10.1
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.2	0.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	0.0	5.4	0.0	0.0	2.8	0.0	2.7	1.8	0.0	1.9
LnGrp Delay(d),s/veh	11.3	0.0	0.0	13.2	0.0	0.0	10.6	0.0	10.9	14.1	0.0	10.2
LnGrp LOS	B			B			B		B	B		B
Approach Vol, veh/h		340			516			597			382	
Approach Delay, s/veh		11.3			13.2			10.7			12.0	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		22.7		22.0		22.7		22.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		30.0		34.0		30.0
Max Q Clear Time (g_c+I1), s		8.0		13.6		14.2		8.7
Green Ext Time (p_c), s		2.6		2.4		2.5		2.6

Intersection Summary		
HCM 2010 Ctrl Delay		11.8
HCM 2010 LOS		B

Intersection	
Int Delay, s/veh	13.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	50	350	30	60	490	30
Conflicting Peds, #/hr	0	7	7	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	350	30	60	490	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	50	0	170	57
Stage 1	-	-	-	-	50	-
Stage 2	-	-	-	-	120	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1557	-	820	1009
Stage 1	-	0	-	-	972	-
Stage 2	-	0	-	-	905	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1548	-	804	1003
Mov Cap-2 Maneuver	-	-	-	-	804	-
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	887	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	813	-	1548	-
HCM Lane V/C Ratio	0.64	-	0.019	-
HCM Control Delay (s)	16.9	-	7.4	0
HCM Lane LOS	C	-	A	A
HCM 95th %tile Q(veh)	4.7	-	0.1	-

Intersection	
Intersection Delay, s/veh	14.6
Intersection LOS	B

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	70	230	0	300	40	0	220	200
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	70	230	0	300	40	0	220	200
Number of Lanes	0	1	1	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	11.7	13.8	17.3
HCM LOS	B	B	C

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	52%
Vol Thru, %	88%	0%	0%	48%
Vol Right, %	12%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	340	70	230	420
LT Vol	0	70	0	220
Through Vol	300	0	0	200
RT Vol	40	0	230	0
Lane Flow Rate	340	70	230	420
Geometry Grp	2	7	7	2
Degree of Util (X)	0.507	0.136	0.37	0.632
Departure Headway (Hd)	5.368	7.015	5.794	5.419
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	670	511	621	668
Service Time	3.407	4.76	3.538	3.455
HCM Lane V/C Ratio	0.507	0.137	0.37	0.629
HCM Control Delay	13.8	10.9	11.9	17.3
HCM Lane LOS	B	B	B	C
HCM 95th-tile Q	2.9	0.5	1.7	4.5

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	260	10	70	280	10	30
Conflicting Peds, #/hr	0	9	9	0	0	8
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	260	10	70	280	10	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	278	0	553	152
Stage 1	-	-	-	-	273	-
Stage 2	-	-	-	-	280	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1282	-	463	867
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	742	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1272	-	431	855
Mov Cap-2 Maneuver	-	-	-	-	431	-
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	696	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	686	-	-	1272	-
HCM Lane V/C Ratio	0.058	-	-	0.055	-
HCM Control Delay (s)	10.6	-	-	8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	20	30	40	30	40	30	80	160	60	220	30
Conflicting Peds, #/hr	0	0	70	70	0	0	98	0	0	0	0	98
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	20	30	40	30	40	30	80	160	60	220	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	670	635	293	520	650	248	320	0	0	150	0	0
Stage 1	425	425	-	210	210	-	-	-	-	-	-	-
Stage 2	245	210	-	310	440	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.14	-	-	4.12	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.22	-	-	2.218	-	-
Pot Cap-1 Maneuver	356	395	704	453	387	790	1237	-	-	1431	-	-
Stage 1	578	586	-	791	728	-	-	-	-	-	-	-
Stage 2	758	728	-	676	577	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	254	324	609	335	317	683	1136	-	-	1314	-	-
Mov Cap-2 Maneuver	254	324	-	335	317	-	-	-	-	-	-	-
Stage 1	527	527	-	722	664	-	-	-	-	-	-	-
Stage 2	606	664	-	542	519	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	17.2	0.9	1.5
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1136	-	-	399	404	1314	-	-
HCM Lane V/C Ratio	0.026	-	-	0.15	0.272	0.046	-	-
HCM Control Delay (s)	8.3	0	-	15.6	17.2	7.9	-	-
HCM Lane LOS	A	A	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	1.1	0.1	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	50	190	700	90	20	100
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	190	700	90	20	100

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	885	747	0	0	790	0
Stage 1	745	-	-	-	-	-
Stage 2	140	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	315	413	-	-	830	-
Stage 1	469	-	-	-	-	-
Stage 2	887	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	306	412	-	-	829	-
Mov Cap-2 Maneuver	306	-	-	-	-	-
Stage 1	469	-	-	-	-	-
Stage 2	862	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.6	0	1.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	306	412	829	-
HCM Lane V/C Ratio	-	-	0.163	0.461	0.024	-
HCM Control Delay (s)	-	-	19	21	9.5	0
HCM Lane LOS	-	-	C	C	A	A
HCM 95th %tile Q(veh)	-	-	0.6	2.4	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	20	750	40	30	120
Conflicting Peds, #/hr	0	2	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	20	750	40	30	120

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	932	754	0	-	752	0
Stage 1	752	-	-	-	-	-
Stage 2	180	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	296	409	-	0	858	-
Stage 1	466	-	-	0	-	-
Stage 2	851	-	-	0	-	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	285	408	-	-	857	-
Mov Cap-2 Maneuver	285	-	-	-	-	-
Stage 1	465	-	-	-	-	-
Stage 2	821	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBL	SBT
Capacity (veh/h)	-	570	857	-
HCM Lane V/C Ratio	-	0.07	0.035	-
HCM Control Delay (s)	-	11.8	9.4	-
HCM Lane LOS	-	B	A	-
HCM 95th %tile Q(veh)	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	40	80	700	40	40	100
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	80	700	40	40	100

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	900	723	0	0	740	0
Stage 1	720	-	-	-	-	-
Stage 2	180	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	309	426	-	-	867	-
Stage 1	482	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	293	425	-	-	865	-
Mov Cap-2 Maneuver	293	-	-	-	-	-
Stage 1	482	-	-	-	-	-
Stage 2	807	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.3	0	2.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	370	865	-
HCM Lane V/C Ratio	-	-	0.324	0.046	-
HCM Control Delay (s)	-	-	19.3	9.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.1	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	70	670	20	30	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	70	670	20	30	120

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	860	680	0	0	690	0
Stage 1	680	-	-	-	-	-
Stage 2	180	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	326	451	-	-	905	-
Stage 1	503	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	314	451	-	-	905	-
Mov Cap-2 Maneuver	314	-	-	-	-	-
Stage 1	503	-	-	-	-	-
Stage 2	820	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17	0	1.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	399	905	-
HCM Lane V/C Ratio	-	-	0.251	0.033	-
HCM Control Delay (s)	-	-	17	9.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	270	550	80	140	720	180	170	450	160	200	860	190
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.98	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	270	550	70	140	720	96	170	450	61	200	860	174
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	291	1054	134	170	948	413	188	911	123	233	921	186
Arrive On Green	0.16	0.34	0.34	0.10	0.27	0.27	0.11	0.29	0.29	0.13	0.32	0.32
Sat Flow, veh/h	1774	3138	398	1774	3539	1544	1774	3114	419	1774	2902	587
Grp Volume(v), veh/h	270	309	311	140	720	96	170	254	257	200	524	510
Grp Sat Flow(s),veh/h/ln	1774	1770	1766	1774	1770	1544	1774	1770	1764	1774	1770	1719
Q Serve(g_s), s	16.6	15.5	15.7	8.6	20.7	5.4	10.5	13.1	13.3	12.2	31.7	31.8
Cycle Q Clear(g_c), s	16.6	15.5	15.7	8.6	20.7	5.4	10.5	13.1	13.3	12.2	31.7	31.8
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.24	1.00		0.34
Lane Grp Cap(c), veh/h	291	594	593	170	948	413	188	517	516	233	562	546
V/C Ratio(X)	0.93	0.52	0.52	0.82	0.76	0.23	0.90	0.49	0.50	0.86	0.93	0.93
Avail Cap(c_a), veh/h	291	594	593	267	1058	461	188	517	516	345	580	563
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.5	29.5	29.6	49.0	37.2	31.6	48.8	32.3	32.4	47.0	36.5	36.6
Incr Delay (d2), s/veh	34.5	0.8	0.8	11.1	2.9	0.3	40.0	0.7	0.7	13.4	22.0	22.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	7.7	7.7	4.7	10.5	2.3	7.2	6.5	6.6	6.9	18.9	18.4
LnGrp Delay(d),s/veh	80.0	30.3	30.4	60.1	40.1	31.9	88.8	33.0	33.1	60.3	58.5	59.0
LnGrp LOS	F	C	C	E	D	C	F	C	C	E	E	E
Approach Vol, veh/h		890			956			681			1234	
Approach Delay, s/veh		45.4			42.2			47.0			59.0	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	39.6	21.6	34.1	18.0	36.8	14.1	41.6
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	11.7	36.2	18.1	33.0	21.5	26.4	16.6	34.5
Max Q Clear Time (g_c+I1), s	12.5	33.8	18.6	22.7	14.2	15.3	10.6	17.7
Green Ext Time (p_c), s	0.0	1.3	0.0	4.2	0.3	7.1	0.2	8.6

Intersection Summary	
HCM 2010 Ctrl Delay	49.3
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	840	30	10	970	20	40	20	20	20	30	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	0.94		0.92	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	30	840	29	10	970	19	40	20	8	20	30	8
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	2547	87	43	2759	54	135	62	19	85	111	24
Arrive On Green	0.80	0.80	0.80	0.80	0.80	0.80	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	74	3177	108	12	3442	67	773	574	180	385	1034	227
Grp Volume(v), veh/h	453	0	446	522	0	477	68	0	0	58	0	0
Grp Sat Flow(s),veh/h/ln	1692	0	1668	1840	0	1680	1526	0	0	1645	0	0
Q Serve(g_s), s	0.0	0.0	8.0	0.0	0.0	8.6	0.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.0	0.0	8.0	8.5	0.0	8.6	4.1	0.0	0.0	3.3	0.0	0.0
Prop In Lane	0.07		0.07	0.02		0.04	0.59		0.12	0.34		0.14
Lane Grp Cap(c), veh/h	1391	0	1337	1509	0	1347	216	0	0	221	0	0
V/C Ratio(X)	0.33	0.00	0.33	0.35	0.00	0.35	0.31	0.00	0.00	0.26	0.00	0.00
Avail Cap(c_a), veh/h	1391	0	1337	1509	0	1347	323	0	0	337	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.00	0.74	0.92	0.00	0.92	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.9	0.0	3.0	3.0	0.0	3.0	45.6	0.0	0.0	45.3	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.5	0.0	0.0	0.1	0.3	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	3.8	4.4	0.0	4.0	1.9	0.0	0.0	1.6	0.0	0.0
LnGrp Delay(d),s/veh	3.3	0.0	3.4	3.1	0.0	3.1	45.9	0.0	0.0	45.5	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		899			999			68			58	
Approach Delay, s/veh		3.4			3.1			45.9			45.5	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		93.2		16.8		93.2		16.8
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		10.0		5.3		10.6		6.1
Green Ext Time (p_c), s		12.2		0.4		12.2		0.4

Intersection Summary		
HCM 2010 Ctrl Delay		5.9
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	800	70	30	900	30	80	40	40	30	50	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.93	0.89		0.86	0.91		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	800	65	30	900	28	80	40	28	30	50	17
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	2387	192	87	2480	76	150	69	39	93	139	40
Arrive On Green	0.51	0.51	0.51	0.77	0.77	0.77	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	41	3112	250	68	3233	99	702	483	276	355	981	284
Grp Volume(v), veh/h	462	0	423	488	0	470	148	0	0	97	0	0
Grp Sat Flow(s),veh/h/ln	1776	0	1627	1732	0	1668	1461	0	0	1620	0	0
Q Serve(g_s), s	0.0	0.0	16.8	0.0	0.0	10.0	4.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.9	0.0	16.8	9.1	0.0	10.0	10.2	0.0	0.0	5.6	0.0	0.0
Prop In Lane	0.04		0.15	0.06		0.06	0.54		0.19	0.31		0.18
Lane Grp Cap(c), veh/h	1396	0	1248	1363	0	1279	258	0	0	273	0	0
V/C Ratio(X)	0.33	0.00	0.34	0.36	0.00	0.37	0.57	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	1396	0	1248	1363	0	1279	349	0	0	374	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	0.92	0.00	0.92	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.1	0.0	10.3	4.0	0.0	4.2	44.6	0.0	0.0	42.9	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.7	0.1	0.0	0.1	0.7	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	0.0	7.8	4.6	0.0	4.6	4.3	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	10.7	0.0	11.0	4.1	0.0	4.2	45.3	0.0	0.0	43.2	0.0	0.0
LnGrp LOS	B		B	A		A	D			D		
Approach Vol, veh/h		885			958			148			97	
Approach Delay, s/veh		10.9			4.2			45.3			43.2	
Approach LOS		B			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.4		20.6		89.4		20.6
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		77.0		23.0		77.0		23.0
Max Q Clear Time (g_c+I1), s		18.8		7.6		12.0		12.2
Green Ext Time (p_c), s		11.6		0.9		11.7		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		11.7
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	760	100	50	820	20	80	50	50	30	70	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.92	0.98		0.92	0.81		0.71	0.91		0.69
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	760	92	50	820	19	80	50	37	30	70	26
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	2262	271	145	2310	53	130	70	43	78	150	49
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	41	2983	357	144	3047	70	539	464	285	248	995	323
Grp Volume(v), veh/h	460	0	412	433	0	456	167	0	0	126	0	0
Grp Sat Flow(s),veh/h/ln	1784	0	1598	1584	0	1676	1288	0	0	1566	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	13.8	0.0	0.0	7.9	0.0	0.0
Prop In Lane	0.04		0.22	0.12		0.04	0.48		0.22	0.24		0.21
Lane Grp Cap(c), veh/h	1387	0	1211	1238	0	1271	243	0	0	277	0	0
V/C Ratio(X)	0.33	0.00	0.34	0.35	0.00	0.36	0.69	0.00	0.00	0.46	0.00	0.00
Avail Cap(c_a), veh/h	1387	0	1211	1238	0	1271	314	0	0	362	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.00	0.93	0.64	0.00	0.64	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	45.3	0.0	0.0	43.0	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.7	0.0	0.0	0.0	2.2	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.0	0.0	0.0	5.1	0.0	0.0	3.6	0.0	0.0
LnGrp Delay(d),s/veh	0.6	0.0	0.7	0.0	0.0	0.0	47.5	0.0	0.0	43.4	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		872			889			167			126	
Approach Delay, s/veh		0.7			0.0			47.5			43.4	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		88.4		21.6		88.4		21.6
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		77.0		23.0		77.0		23.0
Max Q Clear Time (g_c+I1), s		2.0		9.9		2.0		15.8
Green Ext Time (p_c), s		11.1		1.2		11.1		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		6.8
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	150	580	140	120	720	150	110	360	60	150	330	110
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.96	1.00		0.95	1.00		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1937	1900	1863	1937	1900
Adj Flow Rate, veh/h	150	580	122	120	720	135	110	360	55	150	330	99
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	177	1052	220	146	1029	193	136	409	63	178	383	115
Arrive On Green	0.13	0.49	0.49	0.11	0.46	0.46	0.08	0.25	0.25	0.10	0.28	0.28
Sat Flow, veh/h	1774	2872	602	1774	2953	553	1774	1630	249	1774	1392	418
Grp Volume(v), veh/h	150	356	346	120	431	424	110	0	415	150	0	429
Grp Sat Flow(s),veh/h/ln	1774	1770	1705	1774	1770	1737	1774	0	1879	1774	0	1809
Q Serve(g_s), s	9.1	15.5	15.7	7.3	21.3	21.3	6.7	0.0	23.4	9.1	0.0	24.8
Cycle Q Clear(g_c), s	9.1	15.5	15.7	7.3	21.3	21.3	6.7	0.0	23.4	9.1	0.0	24.8
Prop In Lane	1.00		0.35	1.00		0.32	1.00		0.13	1.00		0.23
Lane Grp Cap(c), veh/h	177	648	624	146	617	605	136	0	472	178	0	498
V/C Ratio(X)	0.85	0.55	0.55	0.82	0.70	0.70	0.81	0.00	0.88	0.84	0.00	0.86
Avail Cap(c_a), veh/h	194	648	624	161	617	605	145	0	478	194	0	510
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	0.77	0.77	0.77	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.9	21.9	21.9	48.2	24.9	24.9	50.0	0.0	39.6	48.6	0.0	37.9
Incr Delay (d2), s/veh	22.8	3.1	3.3	18.8	5.1	5.2	24.4	0.0	16.2	23.6	0.0	13.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	8.0	7.9	4.3	11.2	11.0	4.2	0.0	14.2	5.7	0.0	14.2
LnGrp Delay(d),s/veh	69.6	25.0	25.2	67.0	30.0	30.1	74.4	0.0	55.8	72.3	0.0	51.1
LnGrp LOS	E	C	C	E	C	C	E		E	E		D
Approach Vol, veh/h		852			975			525			579	
Approach Delay, s/veh		32.9			34.6			59.7			56.6	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	47.3	16.0	32.6	16.0	45.3	13.4	35.3
Change Period (Y+Rc), s	5.0	7.0	5.0	5.0	5.0	7.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	38.0	12.0	28.0	12.0	36.0	9.0	31.0
Max Q Clear Time (g_c+I1), s	9.3	17.7	11.1	25.4	11.1	23.3	8.7	26.8
Green Ext Time (p_c), s	0.0	4.0	0.0	0.7	0.0	3.5	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	43.0
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	730	50	40	560	110	220	390	60	130	130	140
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	80	730	46	40	560	96	220	390	55	130	130	103
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	281	1352	85	80	864	148	251	424	60	158	205	162
Arrive On Green	0.32	0.80	0.80	0.01	0.09	0.09	0.14	0.27	0.27	0.09	0.21	0.21
Sat Flow, veh/h	1774	3381	213	1774	3018	516	1774	1595	225	1774	958	759
Grp Volume(v), veh/h	80	382	394	40	328	328	220	0	445	130	0	233
Grp Sat Flow(s),veh/h/ln	1774	1770	1824	1774	1770	1764	1774	0	1820	1774	0	1716
Q Serve(g_s), s	3.7	8.4	8.4	2.5	19.6	19.8	13.4	0.0	26.1	7.9	0.0	13.6
Cycle Q Clear(g_c), s	3.7	8.4	8.4	2.5	19.6	19.8	13.4	0.0	26.1	7.9	0.0	13.6
Prop In Lane	1.00		0.12	1.00		0.29	1.00		0.12	1.00		0.44
Lane Grp Cap(c), veh/h	281	708	730	80	507	505	251	0	484	158	0	367
V/C Ratio(X)	0.28	0.54	0.54	0.50	0.65	0.65	0.88	0.00	0.92	0.82	0.00	0.63
Avail Cap(c_a), veh/h	281	708	730	115	507	505	314	0	587	202	0	445
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.77	0.77	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.9	7.4	7.4	53.0	44.4	44.5	46.3	0.0	39.2	49.3	0.0	39.3
Incr Delay (d2), s/veh	0.2	2.3	2.2	1.8	6.2	6.4	17.5	0.0	16.2	15.4	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.2	4.4	1.3	10.5	10.6	7.8	0.0	15.3	4.6	0.0	6.5
LnGrp Delay(d),s/veh	33.0	9.7	9.6	54.8	50.7	50.8	63.8	0.0	55.4	64.7	0.0	40.4
LnGrp LOS	C	A	A	D	D	D	E		E	E		D
Approach Vol, veh/h		856			696			665			363	
Approach Delay, s/veh		11.9			51.0			58.2			49.1	
Approach LOS		B			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.9	37.0	15.3	34.8	10.4	49.5	21.0	29.0
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	8.5	31.5	12.5	35.5	7.1	32.9	19.5	28.5
Max Q Clear Time (g_c+I1), s	5.7	21.8	9.9	28.1	4.5	10.4	15.4	15.6
Green Ext Time (p_c), s	0.7	1.2	0.1	1.1	0.0	2.0	0.2	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	39.6
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	900	10	20	660	10	10	0	20	30	0	40
Conflicting Peds, #/hr	5	0	5	5	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	900	10	20	660	10	10	0	20	30	0	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	670	0	0	910	0	0	1275	1615	460	1155	1615	340
Stage 1	-	-	-	-	-	-	905	905	-	705	705	-
Stage 2	-	-	-	-	-	-	370	710	-	450	910	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	916	-	-	744	-	-	124	103	548	152	103	656
Stage 1	-	-	-	-	-	-	298	353	-	393	437	-
Stage 2	-	-	-	-	-	-	622	435	-	558	352	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	912	-	-	741	-	-	114	100	546	143	100	653
Mov Cap-2 Maneuver	-	-	-	-	-	-	114	100	-	143	100	-
Stage 1	-	-	-	-	-	-	298	353	-	393	425	-
Stage 2	-	-	-	-	-	-	566	423	-	535	352	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	22.1	24.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	241	912	-	-	741	-	-	258
HCM Lane V/C Ratio	0.124	-	-	-	0.027	-	-	0.271
HCM Control Delay (s)	22.1	0	-	-	10	-	-	24.1
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	900	20	10	650	30	10	10	30	270	10	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	30	900	19	10	650	28	10	10	8	270	10	26
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	567	2427	51	350	2367	102	170	169	118	357	11	28
Arrive On Green	0.23	0.23	0.23	0.91	0.91	0.91	0.22	0.23	0.23	0.22	0.23	0.23
Sat Flow, veh/h	758	3544	75	605	3457	149	538	722	504	1267	47	122
Grp Volume(v), veh/h	30	449	470	10	333	345	28	0	0	306	0	0
Grp Sat Flow(s),veh/h/ln	758	1770	1849	605	1770	1836	1764	0	0	1436	0	0
Q Serve(g_s), s	3.4	23.6	23.6	0.7	2.5	2.5	0.0	0.0	0.0	21.7	0.0	0.0
Cycle Q Clear(g_c), s	5.9	23.6	23.6	24.3	2.5	2.5	1.4	0.0	0.0	23.1	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.08	0.36		0.29	0.88		0.08
Lane Grp Cap(c), veh/h	567	1212	1266	350	1212	1257	440	0	0	384	0	0
V/C Ratio(X)	0.05	0.37	0.37	0.03	0.27	0.27	0.06	0.00	0.00	0.80	0.00	0.00
Avail Cap(c_a), veh/h	567	1212	1266	350	1212	1257	574	0	0	510	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.56	0.56	0.56	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.7	22.6	22.6	7.2	1.7	1.7	33.0	0.0	0.0	41.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.9	0.8	0.1	0.3	0.3	0.0	0.0	0.0	4.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	11.9	12.4	0.1	1.2	1.2	0.7	0.0	0.0	9.8	0.0	0.0
LnGrp Delay(d),s/veh	16.9	23.4	23.4	7.2	2.0	2.0	33.0	0.0	0.0	46.1	0.0	0.0
LnGrp LOS	B	C	C	A	A	A	C			D		
Approach Vol, veh/h		949			688			28			306	
Approach Delay, s/veh		23.2			2.0			33.0			46.1	
Approach LOS		C			A			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		80.3		29.7		80.3		29.7
Change Period (Y+Rc), s		5.0		4.0		5.0		* 4
Max Green Setting (Gmax), s		66.0		35.0		43.0		* 36
Max Q Clear Time (g_c+I1), s		25.6		3.4		26.3		25.1
Green Ext Time (p_c), s		4.4		0.8		4.0		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	100	1130	0	20	730	430	10	120	30	90	0	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	0.94		0.95	0.95		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	100	1130	0	20	730	367	10	120	23	90	0	0
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	2	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	121	2599	0	44	1557	781	41	192	35	369	245	0
Arrive On Green	0.05	0.49	0.00	0.02	0.69	0.69	0.12	0.13	0.13	0.13	0.00	0.00
Sat Flow, veh/h	1774	3632	0	1774	2252	1130	50	1460	267	2353	1863	0
Grp Volume(v), veh/h	100	1130	0	20	573	524	153	0	0	90	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	0	1774	1770	1613	1777	0	0	1176	1863	0
Q Serve(g_s), s	6.1	22.7	0.0	1.2	16.3	16.3	1.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.1	22.7	0.0	1.2	16.3	16.3	9.0	0.0	0.0	6.2	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.70	0.07		0.15	1.00		0.00
Lane Grp Cap(c), veh/h	121	2599	0	44	1223	1115	252	0	0	369	245	0
V/C Ratio(X)	0.83	0.43	0.00	0.45	0.47	0.47	0.61	0.00	0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h	121	2599	0	98	1223	1115	349	0	0	648	466	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	51.8	13.2	0.0	52.9	7.8	7.8	45.4	0.0	0.0	44.2	0.0	0.0
Incr Delay (d2), s/veh	33.5	0.5	0.0	7.0	1.3	1.4	2.3	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	11.3	0.0	0.7	8.2	7.6	4.7	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	85.3	13.7	0.0	59.9	9.0	9.2	47.8	0.0	0.0	44.5	0.0	0.0
LnGrp LOS	F	B		E	A	A	D			D		
Approach Vol, veh/h		1230			1117			153			90	
Approach Delay, s/veh		19.5			10.0			47.8			44.5	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.2	85.8		18.0	11.0	81.0		18.0
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5
Max Green Setting (Gmax), s	5.1	40.4		27.5	7.5	39.0		20.5
Max Q Clear Time (g_c+I1), s	3.2	24.7		8.2	8.1	18.3		11.0
Green Ext Time (p_c), s	0.0	10.2		1.0	0.0	12.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	48.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	50	220	1220	30	130	1130
Conflicting Peds, #/hr	2	2	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	220	1220	30	130	1130

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2062	630	0	0	1252	0
Stage 1	1237	-	-	-	-	-
Stage 2	825	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 47	424	-	-	552	-
Stage 1	237	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 36	422	-	-	551	-
Mov Cap-2 Maneuver	~ 36	-	-	-	-	-
Stage 1	237	-	-	-	-	-
Stage 2	298	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 490.1	0	1.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	141	551	-
HCM Lane V/C Ratio	-	-	1.915	0.236	-
HCM Control Delay (s)	-	-	$ 490.1	13.5	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	21	0.9	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	0	0	0	0	1030	530	390	1160	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	4	4	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	1030	530	390	1160	100

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	2505	3020	630	1260	0	-	1030	0	0
Stage 1	1990	1990	-	-	-	-	-	-	-
Stage 2	515	1030	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	23	13	424	548	-	0	670	-	-
Stage 1	92	104	-	-	-	0	-	-	-
Stage 2	565	309	-	-	-	0	-	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	10	0	424	548	-	-	668	-	-
Mov Cap-2 Maneuver	31	0	-	-	-	-	-	-	-
Stage 1	38	0	-	-	-	-	-	-	-
Stage 2	565	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	4.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	548	-	-	668	-	-
HCM Lane V/C Ratio	-	-	-	0.584	-	-
HCM Control Delay (s)	0	-	0	17.7	-	-
HCM Lane LOS	A	-	A	C	-	-
HCM 95th %tile Q(veh)	0	-	-	3.8	-	-

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **2040 No Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 38 **I-580 EB Off-Ramp-98th Avenue/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn	10	9	94.0%	2.0	7	13	0.2	54.3	10.9	40.8	71.1	D
	Second Left												
	Left Turn	80	86	107.4%	5.4	77	92	0.6	57.6	8.1	48.8	76.4	E
	Through												
	Right Turn	940	945	100.5%	18.3	920	973	0.2	5.3	1.6	3.7	8.1	A
	Second Right												
	Subtotal	1,030	1,040	101.0%	17.2	1,015	1,068	0.3	10.1	2.1	7.9	14.5	B
SB	U Turn												
	Second Left												
	Left Turn	150	145	96.4%	9.3	123	156	0.4	50.4	4.0	42.3	54.5	D
	Through	820	820	100.0%	23.8	780	847	0.0	46.8	3.6	41.2	54.5	D
	Right Turn	40	40	98.8%	5.7	29	47	0.1	34.8	5.7	26.2	45.6	C
	Second Right												
	Subtotal	1,010	1,004	99.4%	22.4	970	1,040	0.2	46.8	3.5	41.7	53.8	D
EB	U Turn												
	Second Left												
	Left Turn												
	Through	90	92	102.0%	11.8	71	106	0.2	47.0	4.4	36.0	52.0	D
	Right Turn	220	219	99.7%	16.9	199	253	0.0	21.6	2.1	17.2	23.6	C
	Second Right												
	Subtotal	310	311	100.4%	23.8	270	359	0.1	29.1	1.9	25.4	31.7	C
WB	U Turn												
	Second Left												
	Left Turn	600	470	78.3%	23.9	431	502	5.6	38.0	3.6	33.7	44.1	D
	Through	220	171	77.9%	8.8	161	189	3.5	25.0	3.2	19.9	31.2	C
	Right Turn												
	Second Right												
	Subtotal	820	641	78.1%	24.9	605	670	6.6	34.5	2.7	30.9	38.7	C
Total		3,170	2,997	94.5%	23.5	2,963	3,031	3.1	29.6	1.2	27.5	31.0	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **2040 No Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 39 **I-580 Ramps/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	400	404	101.0%	15.2	376	427	0.2	38.1	2.7	32.5	41.0	D
	Through	10	10	104.0%	3.5	5	16	0.1	37.4	5.4	30.3	45.2	D
	Right Turn	450	460	102.2%	11.7	446	481	0.5	37.1	4.1	30.4	44.4	D
	Second Right												
	Subtotal	860	874	101.6%	20.7	834	902	0.5	37.6	2.8	34.3	42.5	D
SB	U Turn												
	Second Left												
	Left Turn												
	Through												
	Right Turn												
	Second Right												
	Subtotal												
EB	U Turn												
	Second Left												
	Left Turn	570	565	99.1%	17.3	536	598	0.2	60.2	2.9	56.7	65.7	E
	Through	610	607	99.4%	25.4	570	639	0.1	27.5	1.8	25.2	29.9	C
	Right Turn												
	Second Right												
	Subtotal	1,180	1,171	99.3%	27.0	1,126	1,207	0.3	43.3	1.7	40.4	46.2	D
WB	U Turn												
	Second Left												
	Left Turn												
	Through	420	234	55.7%	14.6	209	260	10.3	33.1	1.3	31.6	35.1	C
	Right Turn	180	97	53.7%	7.9	89	116	7.1	24.4	1.9	20.8	27.0	C
	Second Right												
	Subtotal	600	331	55.1%	9.1	318	349	12.5	30.5	1.1	28.7	32.4	C
Total		2,640	2,376	90.0%	30.0	2,318	2,423	5.3	39.4	1.0	37.9	41.0	D

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **2040 No Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 40 **Mountain Boulevard-Oakland Zoo Driveway/Golf Links Road** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	10	9	89.0%	2.0	5	12	0.4	70.1	17.0	53.3	105.2	F
	Through	10	9	94.0%	3.1	4	12	0.2	30.6	16.4	18.7	71.5	D
	Right Turn												
	Second Right												
	Subtotal	20	18	91.5%	3.1	13	22	0.4	48.8	12.6	35.8	67.6	E
SB	U Turn												
	Second Left												
	Left Turn	20	21	104.0%	4.4	13	29	0.2	90.8	27.0	56.4	134.1	F
	Through	10	10	103.0%	2.5	7	14	0.1	84.7	21.5	57.2	116.0	F
	Right Turn	150	151	100.7%	11.9	136	172	0.1	66.4	17.3	42.6	89.1	F
	Second Right												
	Subtotal	180	182	101.2%	14.4	166	209	0.2	70.0	17.6	45.4	93.0	F
EB	U Turn	40	41	103.0%	8.3	25	56	0.2	8.7	2.4	5.6	12.8	A
	Second Left												
	Left Turn	620	628	101.3%	24.1	595	673	0.3	3.7	1.0	2.7	5.8	A
	Through	340	334	98.3%	10.1	317	354	0.3	2.5	0.5	1.9	3.5	A
	Right Turn	60	60	100.2%	7.5	49	77	0.0	1.5	0.6	0.9	2.5	A
	Second Right												
	Subtotal	1,060	1,064	100.3%	32.6	1,015	1,097	0.1	3.4	0.8	2.5	5.1	A
WB	U Turn												
	Second Left												
	Left Turn	10	3	32.0%	2.0	1	8	2.6	400.8	85.1	306.4	584.9	F
	Through	400	132	32.9%	7.9	119	142	16.5	426.4	28.9	391.5	481.7	F
	Right Turn	40	13	31.3%	3.3	9	19	5.4	410.1	52.2	344.5	530.0	F
	Second Right												
	Subtotal	450	147	32.8%	9.4	130	161	17.5	424.0	28.9	390.4	482.7	F
Total		1,710	1,412	82.5%	29.5	1,358	1,437	7.6	56.4	3.1	51.7	61.0	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	150	510	150	60	840	160	240	640	120	120	460	270
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	150	510	64	60	840	147	240	640	107	120	460	118
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	1282	572	77	918	161	266	916	153	231	1026	449
Arrive On Green	0.10	0.36	0.36	0.04	0.31	0.31	0.15	0.30	0.30	0.13	0.29	0.29
Sat Flow, veh/h	1774	3539	1579	1774	3000	525	1774	3036	507	1774	3539	1549
Grp Volume(v), veh/h	150	510	64	60	496	491	240	373	374	120	460	118
Grp Sat Flow(s),veh/h/ln	1774	1770	1579	1774	1770	1755	1774	1770	1773	1774	1770	1549
Q Serve(g_s), s	10.0	12.9	3.2	4.0	32.4	32.4	16.0	22.4	22.4	7.6	12.7	7.0
Cycle Q Clear(g_c), s	10.0	12.9	3.2	4.0	32.4	32.4	16.0	22.4	22.4	7.6	12.7	7.0
Prop In Lane	1.00		1.00	1.00		0.30	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	176	1282	572	77	542	537	266	534	535	231	1026	449
V/C Ratio(X)	0.85	0.40	0.11	0.78	0.91	0.91	0.90	0.70	0.70	0.52	0.45	0.26
Avail Cap(c_a), veh/h	192	1282	572	133	565	560	281	534	535	231	1026	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.2	28.5	25.4	56.8	40.1	40.1	50.1	37.1	37.1	48.7	34.8	32.7
Incr Delay (d2), s/veh	27.1	0.2	0.1	15.2	19.2	19.3	28.7	7.4	7.4	2.1	1.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	6.3	1.4	2.3	18.7	18.6	9.9	12.0	12.0	3.8	6.4	3.2
LnGrp Delay(d),s/veh	80.2	28.7	25.5	72.0	59.3	59.4	78.9	44.5	44.5	50.7	36.2	34.2
LnGrp LOS	F	C	C	E	E	E	E	D	D	D	D	C
Approach Vol, veh/h		724			1047			987			698	
Approach Delay, s/veh		39.1			60.1			52.8			38.3	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.6	41.2	9.2	49.0	22.0	39.8	15.9	42.2
Change Period (Y+Rc), s	5.0	* 5	4.0	5.5	4.0	5.0	4.0	5.5
Max Green Setting (Gmax), s	14.6	* 36	9.0	42.3	19.0	31.2	13.0	38.3
Max Q Clear Time (g_c+I1), s	19.6	24.4	6.0	14.9	18.0	14.7	12.0	34.4
Green Ext Time (p_c), s	1.6	3.7	0.0	12.4	0.1	3.5	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	49.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	77

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	940	10	10	360	0	10	0	10	220	120	740
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	940	10	10	360	0	10	0	10	220	120	740

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	362	0	0	952	0	0	1389	1329	480	854	1334	365
Stage 1	-	-	-	-	-	-	947	947	-	382	382	-
Stage 2	-	-	-	-	-	-	442	382	-	472	952	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.218	-	-	2.22	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1197	-	-	717	-	-	111	154	533	265	153	~ 679
Stage 1	-	-	-	-	-	-	282	339	-	640	612	-
Stage 2	-	-	-	-	-	-	594	612	-	543	337	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1194	-	-	715	-	-	-	151	531	256	150	~ 676
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	151	-	256	150	-
Stage 1	-	-	-	-	-	-	282	338	-	639	602	-
Stage 2	-	-	-	-	-	-	-	602	-	531	336	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3		172.4
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1194	-	-	715	-	-	205	676
HCM Lane V/C Ratio	-	-	-	-	0.014	-	-	1.659	1.095
HCM Control Delay (s)	-	0	-	-	10.1	-	-	$ 358	87.1
HCM Lane LOS	-	A	-	-	B	-	-	F	F
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	22.5	21.1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	60.9
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	610	480	60	0	0	0	0	0	30	90	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	610	480	60	0	0	0	0	0	30	90	40
Number of Lanes	0	1	1	0	0	0	0	0	0	0	1	0

Approach	EB	NB
Opposing Approach		SB
Opposing Lanes	0	2
Conflicting Approach Left	SB	EB
Conflicting Lanes Left	2	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	68.7	14.2
HCM LOS	F	B

Lane	NBLn1	EBLn1	EBLn2	SBLn1	SBLn2
Vol Left, %	19%	100%	0%	100%	0%
Vol Thru, %	56%	0%	89%	0%	29%
Vol Right, %	25%	0%	11%	0%	71%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	160	610	540	540	480
LT Vol	30	610	0	540	0
Through Vol	90	0	480	0	140
RT Vol	40	0	60	0	340
Lane Flow Rate	160	610	540	540	480
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.334	1	1	1	0.914
Departure Headway (Hd)	7.509	7.863	7.287	7.847	6.854
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	482	470	502	464	528
Service Time	5.515	5.563	4.987	5.624	4.63
HCM Lane V/C Ratio	0.332	1.298	1.076	1.164	0.909
HCM Control Delay	14.2	70	67.3	70.3	47.1
HCM Lane LOS	B	F	F	F	E
HCM 95th-tile Q	1.5	13.1	13.6	13.1	10.8

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	540	140	340
Peak Hour Factor	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	540	140	340
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	
Conflicting Lanes Left	0
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	59.4
HCM LOS	F

Lane

Intersection	
Int Delay, s/veh	1578

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	0	700	310	100	20	690	10	0	0	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	300	125	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	0	700	310	100	20	690	10	0	0	10	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1465	1405	15	1755	1410	10	20	0	0	10	0	0
Stage 1	15	15	-	1390	1390	-	-	-	-	-	-	-
Stage 2	1450	1390	-	365	20	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	106	139	1065	~ 67	138	1071	1596	-	-	1610	-	-
Stage 1	1005	883	-	~ 176	209	-	-	-	-	-	-	-
Stage 2	163	209	-	654	879	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	79	1065	~ 15	~ 78	1071	1596	-	-	1610	-	-
Mov Cap-2 Maneuver	-	79	-	~ 15	~ 78	-	-	-	-	-	-	-
Stage 1	571	883	-	~ 100	119	-	-	-	-	-	-	-
Stage 2	14	119	-	~ 224	879	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s		$ 6811.6	8.8	0
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1596	-	-	-	15	92	1610	-	-
HCM Lane V/C Ratio	0.432	-	-	-	20.667	1.304	-	-	-
HCM Control Delay (s)	9	-	-	-	$ 9340.4	278.9	0	-	-
HCM Lane LOS	A	-	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	2.2	-	-	-	39.8	8.7	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	190	650	200	90	480	70	290	750	90	150	400	190
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	190	650	98	90	480	66	290	750	85	150	400	0
Adj No. of Lanes	1	1	1	1	1	0	0	2	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	620	484	59	464	64	215	589	69	408	428	0
Arrive On Green	0.08	0.33	0.33	0.03	0.29	0.29	0.25	0.24	0.24	0.23	0.23	0.00
Sat Flow, veh/h	1774	1863	1455	1774	1594	219	890	2436	286	1774	1863	0
Grp Volume(v), veh/h	190	650	98	90	0	546	593	0	532	150	400	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1455	1774	0	1813	1818	0	1794	1774	1863	0
Q Serve(g_s), s	9.0	39.9	5.8	4.0	0.0	34.9	29.0	0.0	29.0	8.5	25.3	0.0
Cycle Q Clear(g_c), s	9.0	39.9	5.8	4.0	0.0	34.9	29.0	0.0	29.0	8.5	25.3	0.0
Prop In Lane	1.00		1.00	1.00		0.12	0.49		0.16	1.00		0.00
Lane Grp Cap(c), veh/h	133	620	484	59	0	528	439	0	434	408	428	0
V/C Ratio(X)	1.43	1.05	0.20	1.52	0.00	1.03	1.35	0.00	1.23	0.37	0.93	0.00
Avail Cap(c_a), veh/h	133	620	484	59	0	528	439	0	434	429	450	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.82	0.00	0.82	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.5	40.0	28.6	58.0	0.0	42.5	45.3	0.0	45.5	38.9	45.3	0.0
Incr Delay (d2), s/veh	230.3	49.5	0.9	293.4	0.0	44.8	171.5	0.0	121.4	0.2	25.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	29.0	2.4	6.8	0.0	24.0	35.5	0.0	29.0	4.2	16.0	0.0
LnGrp Delay(d),s/veh	285.8	89.6	29.6	351.4	0.0	87.3	216.7	0.0	166.9	39.1	70.9	0.0
LnGrp LOS	F	F	C	F		F	F		F	D	E	
Approach Vol, veh/h		938			636			1125			550	
Approach Delay, s/veh		123.1			124.7			193.2			62.3	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.0	45.4		32.6	13.0	40.4		34.0
Change Period (Y+Rc), s	4.0	5.5		5.0	4.0	5.5		5.0
Max Green Setting (Gmax), s	4.0	38.5		29.0	9.0	33.5		29.0
Max Q Clear Time (g_c+I1), s	6.0	41.9		27.3	11.0	36.9		31.0
Green Ext Time (p_c), s	0.0	0.0		0.3	0.0	0.0		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		137.4
HCM 2010 LOS		F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	20	840	30	60	570	30	10	20	40	20	30	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.98		0.98	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	840	29	60	570	28	10	20	5	20	30	5
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	1084	37	192	963	45	212	116	27	237	108	17
Arrive On Green	0.65	0.62	0.62	0.65	0.62	0.62	0.15	0.11	0.11	0.15	0.11	0.11
Sat Flow, veh/h	16	1757	60	81	1561	73	398	1034	239	531	955	149
Grp Volume(v), veh/h	889	0	0	658	0	0	35	0	0	55	0	0
Grp Sat Flow(s),veh/h/ln	1832	0	0	1715	0	0	1671	0	0	1635	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	9.3	0.0	0.0	5.7	0.0	0.0	0.5	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.02		0.03	0.09		0.04	0.29		0.14	0.36		0.09
Lane Grp Cap(c), veh/h	1329	0	0	1262	0	0	415	0	0	420	0	0
V/C Ratio(X)	0.67	0.00	0.00	0.52	0.00	0.00	0.08	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	3790	0	0	3412	0	0	1411	0	0	1400	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.8	0.0	0.0	3.1	0.0	0.0	11.0	0.0	0.0	11.1	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	0.0	2.5	0.0	0.0	0.2	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	4.0	0.0	0.0	3.2	0.0	0.0	11.0	0.0	0.0	11.1	0.0	0.0
LnGrp LOS	A			A			B			B		
Approach Vol, veh/h		889			658			35			55	
Approach Delay, s/veh		4.0			3.2			11.0			11.1	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		21.6		6.1		21.6		6.1
Change Period (Y+Rc), s		4.5		3.0		4.5		3.0
Max Green Setting (Gmax), s		55.0		20.0		55.0		20.0
Max Q Clear Time (g_c+I1), s		11.3		2.8		7.7		2.5
Green Ext Time (p_c), s		5.8		0.1		5.8		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		4.1
HCM 2010 LOS		A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	790	60	70	620	30	20
Number	6	16	5	2	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1900
Adj Flow Rate, veh/h	790	57	70	620	30	1
Adj No. of Lanes	1	0	1	1	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	958	69	435	1371	79	3
Arrive On Green	0.56	0.56	0.07	0.74	0.05	0.05
Sat Flow, veh/h	1714	124	1774	1863	1658	55
Grp Volume(v), veh/h	0	847	70	620	32	0
Grp Sat Flow(s),veh/h/ln	0	1837	1774	1863	1769	0
Q Serve(g_s), s	0.0	14.0	0.5	4.9	0.6	0.0
Cycle Q Clear(g_c), s	0.0	14.0	0.5	4.9	0.6	0.0
Prop In Lane		0.07	1.00		0.94	0.03
Lane Grp Cap(c), veh/h	0	1027	435	1371	84	0
V/C Ratio(X)	0.00	0.82	0.16	0.45	0.38	0.00
Avail Cap(c_a), veh/h	0	3277	600	3826	765	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.7	5.8	1.9	17.1	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.1	0.1	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.0	0.3	2.4	0.3	0.0
LnGrp Delay(d),s/veh	0.0	7.3	5.9	2.0	18.1	0.0
LnGrp LOS		A	A	A	B	
Approach Vol, veh/h	847			690	32	
Approach Delay, s/veh	7.3			2.4	18.1	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		31.2		5.8	6.6	24.7		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		76.0		16.0	6.0	66.0		
Max Q Clear Time (g_c+I1), s		6.9		2.6	2.5	16.0		
Green Ext Time (p_c), s		4.7		0.0	0.0	4.7		

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	860	10	10	250	0	20	0	20	120	10	420
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	0	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	0	860	10	10	250	0	20	0	0	120	10	113
Adj No. of Lanes	1	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	4	1055	12	93	1038	0	61	0	0	301	25	185
Arrive On Green	0.00	0.57	0.57	0.57	0.57	0.00	0.03	0.00	0.00	0.16	0.18	0.18
Sat Flow, veh/h	1774	1837	21	19	1807	0	1774	0	0	1644	137	1575
Grp Volume(v), veh/h	0	0	870	260	0	0	20	0	0	130	0	113
Grp Sat Flow(s),veh/h/ln	1774	0	1858	1826	0	0	1774	0	0	1781	0	1575
Q Serve(g_s), s	0.0	0.0	17.1	0.0	0.0	0.0	0.5	0.0	0.0	3.0	0.0	6.1
Cycle Q Clear(g_c), s	0.0	0.0	17.1	3.2	0.0	0.0	0.5	0.0	0.0	3.0	0.0	6.1
Prop In Lane	1.00		0.01	0.04		0.00	1.00		0.00	0.92		1.00
Lane Grp Cap(c), veh/h	4	0	1068	1131	0	0	61	0	0	326	0	185
V/C Ratio(X)	0.00	0.00	0.81	0.23	0.00	0.00	0.33	0.00	0.00	0.40	0.00	0.61
Avail Cap(c_a), veh/h	543	0	1341	1462	0	0	466	0	0	740	0	551
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	7.8	4.8	0.0	0.0	21.6	0.0	0.0	16.9	0.0	57.6
Incr Delay (d2), s/veh	0.0	0.0	3.7	0.1	0.0	0.0	1.2	0.0	0.0	0.3	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	9.5	1.6	0.0	0.0	0.3	0.0	0.0	1.5	0.0	0.1
LnGrp Delay(d),s/veh	0.0	0.0	11.4	5.0	0.0	0.0	22.7	0.0	0.0	17.2	0.0	58.8
LnGrp LOS			B	A			C			B		E
Approach Vol, veh/h		870			260			20			243	
Approach Delay, s/veh		11.4			5.0			22.7			36.5	
Approach LOS		B			A			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		29.8		11.4	0.0	29.8		4.6
Change Period (Y+Rc), s		3.5		3.0	3.0	3.5		3.0
Max Green Setting (Gmax), s		33.0		19.0	14.0	35.0		12.0
Max Q Clear Time (g_c+I1), s		19.1		8.1	0.0	5.2		2.5
Green Ext Time (p_c), s		7.1		0.5	0.0	10.6		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		14.8
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	640	80	280	30	30	30	230	30	40	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.99	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863			
Adj Flow Rate, veh/h	640	80	185	30	30	5	230	30	9			
Adj No. of Lanes	1	1	0	0	1	1	1	1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Cap, veh/h	772	319	739	196	147	231	306	321	266			
Arrive On Green	0.43	0.65	0.65	0.16	0.15	0.15	0.17	0.17	0.17			
Sat Flow, veh/h	1774	491	1137	514	990	1561	1774	1863	1542			
Grp Volume(v), veh/h	640	0	265	60	0	5	230	30	9			
Grp Sat Flow(s),veh/h/ln	1774	0	1628	1504	0	1561	1774	1863	1542			
Q Serve(g_s), s	14.4	0.0	3.1	0.0	0.0	0.1	5.5	0.6	0.2			
Cycle Q Clear(g_c), s	14.4	0.0	3.1	1.3	0.0	0.1	5.5	0.6	0.2			
Prop In Lane	1.00		0.70	0.50		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	772	0	1058	360	0	231	306	321	266			
V/C Ratio(X)	0.83	0.00	0.25	0.17	0.00	0.02	0.75	0.09	0.03			
Avail Cap(c_a), veh/h	1537	0	1058	707	0	624	906	952	788			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	11.2	0.0	3.3	16.8	0.0	16.4	17.7	15.7	15.5			
Incr Delay (d2), s/veh	2.4	0.0	0.2	0.1	0.0	0.0	1.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.4	0.0	1.4	0.7	0.0	0.1	2.8	0.3	0.0			
LnGrp Delay(d),s/veh	13.6	0.0	3.5	16.8	0.0	16.4	19.1	15.7	15.5			
LnGrp LOS	B		A	B		B	B	B	B			
Approach Vol, veh/h		905			65			269				
Approach Delay, s/veh		10.7			16.8			18.6				
Approach LOS		B			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		33.8		11.3	22.6	11.2		
Change Period (Y+Rc), s		* 4.5		3.5	3.0	4.5		
Max Green Setting (Gmax), s		* 23		23.0	39.0	18.0		
Max Q Clear Time (g_c+I1), s		5.1		7.5	16.4	3.3		
Green Ext Time (p_c), s		1.8		0.5	3.2	0.3		

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	20	280	10	20	290
Conflicting Peds, #/hr	0	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	20	280	10	20	290

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	615	290	0	0	290	0
Stage 1	285	-	-	-	-	-
Stage 2	330	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	455	749	-	-	1272	-
Stage 1	763	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	444	746	-	-	1267	-
Mov Cap-2 Maneuver	444	-	-	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	711	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	608	1267	-
HCM Lane V/C Ratio	-	-	0.049	0.016	-
HCM Control Delay (s)	-	-	11.2	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	10	10	10	370	280	10	0	300	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	10	10	10	370	280	10	0	300	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1325	1325	290	300	0	0	290	0	0
Stage 1	1025	1025	-	-	-	-	-	-	-
Stage 2	300	300	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	172	156	749	1261	-	-	1272	-	-
Stage 1	346	312	-	-	-	-	-	-	-
Stage 2	752	666	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	121	0	746	1256	-	-	1267	-	-
Mov Cap-2 Maneuver	121	0	-	-	-	-	-	-	-
Stage 1	244	0	-	-	-	-	-	-	-
Stage 2	749	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.2	5.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1256	-	-	208	1267	-	-
HCM Lane V/C Ratio	0.295	-	-	0.144	-	-	-
HCM Control Delay (s)	9.1	-	-	25.2	0	-	-
HCM Lane LOS	A	-	-	D	A	-	-
HCM 95th %tile Q(veh)	1.2	-	-	0.5	0	-	-

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	60	130	0	10	30	0	120	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	60	130	0	10	30	0	120	20
Number of Lanes	0	1	0	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.1	7.2	8.5
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	32%	86%
Vol Thru, %	25%	0%	14%
Vol Right, %	75%	68%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	40	190	140
LT Vol	0	60	120
Through Vol	10	0	20
RT Vol	30	130	0
Lane Flow Rate	40	190	140
Geometry Grp	1	1	1
Degree of Util (X)	0.045	0.211	0.174
Departure Headway (Hd)	4.048	4.006	4.472
Convergence, Y/N	Yes	Yes	Yes
Cap	888	901	791
Service Time	2.058	2.008	2.564
HCM Lane V/C Ratio	0.045	0.211	0.177
HCM Control Delay	7.2	8.1	8.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.8	0.6

Intersection	
Intersection Delay, s/veh	24.4
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	0	90	120	0	370	130	0	0	0	0	0	0	270	290	90
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	90	120	0	370	130	0	0	0	0	0	0	270	290	90
Number of Lanes	0	0	1	0	0	1	1	0	0	0	0	0	0	0	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	14.6	25.4	26.7
HCM LOS	B	D	D

Lane	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	65%	0%
Vol Thru, %	43%	0%	100%	35%	62%
Vol Right, %	57%	0%	0%	0%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	210	370	130	415	235
LT Vol	0	370	0	270	0
Through Vol	90	0	130	145	145
RT Vol	120	0	0	0	90
Lane Flow Rate	210	370	130	415	235
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.402	0.76	0.249	0.814	0.421
Departure Headway (Hd)	6.886	7.396	6.886	7.059	6.456
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	521	488	519	510	555
Service Time	4.961	5.17	4.66	4.828	4.225
HCM Lane V/C Ratio	0.403	0.758	0.25	0.814	0.423
HCM Control Delay	14.6	30.1	12	34	13.9
HCM Lane LOS	B	D	B	D	B
HCM 95th-tile Q	1.9	6.5	1	7.9	2.1

Intersection	
Intersection Delay, s/veh	52.3
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	90	200	70	0	20	210	200	0	140	370	230	0	110	50	150
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	90	200	70	0	20	210	200	0	140	370	230	0	110	50	150
Number of Lanes	0	0	1	0	0	0	2	0	0	0	2	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	65.8	30	61.5	45.3
HCM LOS	F	D	F	E

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	43%	0%	25%	16%	0%	35%
Vol Thru, %	57%	45%	56%	84%	34%	16%
Vol Right, %	0%	55%	19%	0%	66%	48%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	325	415	360	125	305	310
LT Vol	140	0	90	20	0	110
Through Vol	185	185	200	105	105	50
RT Vol	0	230	70	0	200	150
Lane Flow Rate	325	415	360	125	305	310
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	0.839	0.999	0.948	0.331	0.76	0.827
Departure Headway (Hd)	9.297	8.668	9.484	9.532	8.969	9.607
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	387	419	382	376	403	375
Service Time	7.091	6.462	7.565	7.31	6.746	7.696
HCM Lane V/C Ratio	0.84	0.99	0.942	0.332	0.757	0.827
HCM Control Delay	45.6	74	65.8	17	35.3	45.3
HCM Lane LOS	E	F	F	C	E	E
HCM 95th-tile Q	7.8	12.4	10.4	1.4	6.2	7.4

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	50	400	0	0	360	10	0	0	0	10	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	150	75	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	400	0	0	360	10	0	0	0	10	0	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	370	0	0	400	0	0	680	870	200	665	865	185
Stage 1	-	-	-	-	-	-	500	500	-	365	365	-
Stage 2	-	-	-	-	-	-	180	370	-	300	500	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1185	-	-	1155	-	-	337	288	808	345	290	826
Stage 1	-	-	-	-	-	-	521	541	-	627	622	-
Stage 2	-	-	-	-	-	-	804	619	-	684	541	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1185	-	-	1155	-	-	314	276	808	334	278	826
Mov Cap-2 Maneuver	-	-	-	-	-	-	314	276	-	334	278	-
Stage 1	-	-	-	-	-	-	499	518	-	601	622	-
Stage 2	-	-	-	-	-	-	775	619	-	655	518	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	0	11.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	1185	-	-	1155	-	-	604
HCM Lane V/C Ratio	-	-	0.042	-	-	-	-	-	0.066
HCM Control Delay (s)	0	0	8.2	-	-	0	-	-	11.4
HCM Lane LOS	A	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	180	220	10	10	170	20	10	10	10	30	10	170
Conflicting Peds, #/hr	5	0	0	0	0	5	3	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	180	220	10	10	170	20	10	10	10	30	10	170

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	193	0	0	233	0	0	701	801	123	681	796	103
Stage 1	-	-	-	-	-	-	588	588	-	203	203	-
Stage 2	-	-	-	-	-	-	113	213	-	478	593	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1378	-	-	1332	-	-	325	316	905	336	318	932
Stage 1	-	-	-	-	-	-	462	494	-	780	732	-
Stage 2	-	-	-	-	-	-	880	725	-	537	492	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1372	-	-	1326	-	-	229	271	899	287	273	926
Mov Cap-2 Maneuver	-	-	-	-	-	-	229	271	-	287	273	-
Stage 1	-	-	-	-	-	-	400	428	-	676	724	-
Stage 2	-	-	-	-	-	-	700	717	-	449	426	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.5	0.4	17.1	13.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	327	1372	-	-	1326	-	-	647
HCM Lane V/C Ratio	0.092	0.131	-	-	0.008	-	-	0.325
HCM Control Delay (s)	17.1	8	-	-	7.7	0	-	13.2
HCM Lane LOS	C	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0	-	-	1.4

Intersection	
Int Delay, s/veh	20.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	430	0	40	10	0	30	0	280	0	0	140	0
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	11	11	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	430	0	40	10	0	30	0	280	0	0	140	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	439	424	153	424	424	293	142	0	0	282	0	0
Stage 1	142	142	-	282	282	-	-	-	-	-	-	-
Stage 2	297	282	-	142	142	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	528	522	893	540	522	746	1441	-	-	1280	-	-
Stage 1	861	779	-	725	678	-	-	-	-	-	-	-
Stage 2	712	678	-	861	779	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	501	520	883	510	520	738	1428	-	-	1268	-	-
Mov Cap-2 Maneuver	501	520	-	510	520	-	-	-	-	-	-	-
Stage 1	860	778	-	724	677	-	-	-	-	-	-	-
Stage 2	677	677	-	814	778	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	39.1	10.8	0	0
HCM LOS	E	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1428	-	-	501	883	664	1268	-	-
HCM Lane V/C Ratio	-	-	-	0.858	0.045	0.06	-	-	-
HCM Control Delay (s)	0	-	-	41.9	9.3	10.8	0	-	-
HCM Lane LOS	A	-	-	E	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	9	0.1	0.2	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	150	50	90	180	70	50	500	70	70	710	90
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.91	0.96		0.93	1.00		0.96	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	70	150	40	90	180	59	50	500	65	70	710	86
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	132	252	61	143	241	73	70	817	106	90	840	102
Arrive On Green	0.29	0.27	0.27	0.29	0.27	0.27	0.04	0.51	0.51	0.05	0.52	0.52
Sat Flow, veh/h	301	940	226	344	898	271	1774	1607	209	1774	1617	196
Grp Volume(v), veh/h	260	0	0	329	0	0	50	0	565	70	0	796
Grp Sat Flow(s),veh/h/ln	1466	0	0	1513	0	0	1774	0	1816	1774	0	1813
Q Serve(g_s), s	0.0	0.0	0.0	4.3	0.0	0.0	2.5	0.0	20.0	3.5	0.0	33.9
Cycle Q Clear(g_c), s	13.7	0.0	0.0	18.0	0.0	0.0	2.5	0.0	20.0	3.5	0.0	33.9
Prop In Lane	0.27		0.15	0.27		0.18	1.00		0.12	1.00		0.11
Lane Grp Cap(c), veh/h	477	0	0	491	0	0	70	0	923	90	0	941
V/C Ratio(X)	0.54	0.00	0.00	0.67	0.00	0.00	0.71	0.00	0.61	0.78	0.00	0.85
Avail Cap(c_a), veh/h	558	0	0	573	0	0	99	0	923	118	0	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.67	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.4	0.0	0.0	30.2	0.0	0.0	42.7	0.0	15.8	42.2	0.0	18.5
Incr Delay (d2), s/veh	0.4	0.0	0.0	1.1	0.0	0.0	5.7	0.0	3.0	15.3	0.0	9.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	0.0	7.4	0.0	0.0	1.3	0.0	10.7	2.1	0.0	19.2
LnGrp Delay(d),s/veh	28.7	0.0	0.0	31.2	0.0	0.0	48.4	0.0	18.8	57.5	0.0	27.8
LnGrp LOS	C			C			D		B	E		C
Approach Vol, veh/h		260			329			615			866	
Approach Delay, s/veh		28.7			31.2			21.2			30.2	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		29.2	7.6	53.2		29.2	8.6	52.3
Change Period (Y+Rc), s		5.0	4.0	6.5		5.0	4.0	6.5
Max Green Setting (Gmax), s		29.0	5.0	40.5		29.0	6.0	39.5
Max Q Clear Time (g_c+I1), s		15.7	4.5	35.9		20.0	5.5	22.0
Green Ext Time (p_c), s		1.4	0.0	1.9		1.2	0.0	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	170	50	60	190	150	40	300	60	250	500	130
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.98	0.99		0.91	0.97		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1937	1900	1900	1937	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	60	170	38	60	190	118	40	300	41	250	500	112
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	173	355	71	146	279	157	170	1117	155	416	753	177
Arrive On Green	0.31	0.28	0.28	0.31	0.28	0.28	0.47	0.45	0.45	0.47	0.45	0.45
Sat Flow, veh/h	268	1254	252	191	985	555	164	2467	343	635	1663	390
Grp Volume(v), veh/h	268	0	0	368	0	0	191	0	190	403	0	459
Grp Sat Flow(s),veh/h/ln	1774	0	0	1732	0	0	1380	0	1594	1089	0	1599
Q Serve(g_s), s	0.0	0.0	0.0	3.0	0.0	0.0	0.4	0.0	3.4	11.9	0.0	10.0
Cycle Q Clear(g_c), s	5.3	0.0	0.0	8.3	0.0	0.0	10.5	0.0	3.4	15.3	0.0	10.0
Prop In Lane	0.22		0.14	0.16		0.32	0.21		0.22	0.62		0.24
Lane Grp Cap(c), veh/h	639	0	0	621	0	0	751	0	722	645	0	724
V/C Ratio(X)	0.42	0.00	0.00	0.59	0.00	0.00	0.25	0.00	0.26	0.63	0.00	0.63
Avail Cap(c_a), veh/h	1245	0	0	1247	0	0	1181	0	1191	1003	0	1195
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.5	0.0	0.0	14.5	0.0	0.0	7.6	0.0	7.7	11.5	0.0	9.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.1	0.4	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	4.0	0.0	0.0	1.4	0.0	1.5	4.2	0.0	4.4
LnGrp Delay(d),s/veh	13.7	0.0	0.0	14.9	0.0	0.0	7.7	0.0	7.8	11.9	0.0	9.9
LnGrp LOS	B			B			A		A	B		A
Approach Vol, veh/h		268			368			381			862	
Approach Delay, s/veh		13.7			14.9			7.7			10.8	
Approach LOS		B			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		26.6		18.9		26.6		18.9
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		30.0		34.0		30.0
Max Q Clear Time (g_c+I1), s		12.5		10.3		17.3		7.3
Green Ext Time (p_c), s		3.5		1.7		3.3		1.7

Intersection Summary		
HCM 2010 Ctrl Delay		11.4
HCM 2010 LOS		B

Intersection	
Int Delay, s/veh	9.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	90	390	30	70	330	40
Conflicting Peds, #/hr	0	5	5	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	390	30	70	330	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	93	0	223	98
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	130	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1501	-	765	958
Stage 1	-	0	-	-	931	-
Stage 2	-	0	-	-	896	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1495	-	747	952
Mov Cap-2 Maneuver	-	-	-	-	747	-
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	877	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	14
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	765	-	1495	-
HCM Lane V/C Ratio	0.484	-	0.02	-
HCM Control Delay (s)	14	-	7.5	0
HCM Lane LOS	B	-	A	A
HCM 95th %tile Q(veh)	2.7	-	0.1	-

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	30	150	0	230	30	0	80	350
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	30	150	0	230	30	0	80	350
Number of Lanes	0	1	1	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	9.8	10.6	14
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	19%
Vol Thru, %	88%	0%	0%	81%
Vol Right, %	12%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	260	30	150	430
LT Vol	0	30	0	80
Through Vol	230	0	0	350
RT Vol	30	0	150	0
Lane Flow Rate	260	30	150	430
Geometry Grp	2	7	7	2
Degree of Util (X)	0.351	0.055	0.225	0.569
Departure Headway (Hd)	4.854	6.613	5.397	4.763
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	733	537	657	753
Service Time	2.928	4.411	3.193	2.828
HCM Lane V/C Ratio	0.355	0.056	0.228	0.571
HCM Control Delay	10.6	9.8	9.8	14
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	1.6	0.2	0.9	3.6

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	110	10	40	160	20	10
Conflicting Peds, #/hr	0	5	5	0	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	110	10	40	160	20	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	122	0	277	67
Stage 1	-	-	-	-	117	-
Stage 2	-	-	-	-	160	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1463	-	690	983
Stage 1	-	-	-	-	895	-
Stage 2	-	-	-	-	852	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1457	-	667	977
Mov Cap-2 Maneuver	-	-	-	-	667	-
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	825	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	746	-	-	1457	-
HCM Lane V/C Ratio	0.04	-	-	0.027	-
HCM Control Delay (s)	10	-	-	7.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	40	10	20	10	10	10	30	80	20	170	40
Conflicting Peds, #/hr	2	0	0	0	0	2	19	0	3	3	0	19
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	40	10	20	10	10	10	30	80	20	170	40

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	294	284	126	199	304	51	212	0	0	32	0	0
Stage 1	232	232	-	52	52	-	-	-	-	-	-	-
Stage 2	62	52	-	147	252	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.14	-	-	4.12	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.22	-	-	2.218	-	-
Pot Cap-1 Maneuver	647	624	901	751	609	1017	1356	-	-	1580	-	-
Stage 1	751	712	-	960	851	-	-	-	-	-	-	-
Stage 2	949	851	-	841	698	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	611	609	885	682	594	999	1335	-	-	1555	-	-
Mov Cap-2 Maneuver	611	609	-	682	594	-	-	-	-	-	-	-
Stage 1	744	702	-	951	843	-	-	-	-	-	-	-
Stage 2	906	843	-	762	688	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	10.4	0.6	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1335	-	-	643	712	1555	-	-
HCM Lane V/C Ratio	0.007	-	-	0.093	0.056	0.013	-	-
HCM Control Delay (s)	7.7	0	-	11.2	10.4	7.3	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.2	0	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	110	160	10	30	130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	110	160	10	30	130

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	355	165	0	0	170	0
Stage 1	165	-	-	-	-	-
Stage 2	190	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	643	879	-	-	1407	-
Stage 1	864	-	-	-	-	-
Stage 2	842	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	628	879	-	-	1407	-
Mov Cap-2 Maneuver	628	-	-	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	823	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	628	879	1407	-
HCM Lane V/C Ratio	-	-	0.048	0.125	0.021	-
HCM Control Delay (s)	-	-	11	9.7	7.6	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.4	0.1	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	30	140	10	0	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	30	140	10	0	150

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	290	140	0	-	140	0
Stage 1	140	-	-	-	-	-
Stage 2	150	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	701	908	-	0	1443	-
Stage 1	887	-	-	0	-	-
Stage 2	878	-	-	0	-	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	701	908	-	-	1443	-
Mov Cap-2 Maneuver	701	-	-	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	878	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	7.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	WBLn1	SBL	SBT
Capacity (veh/h)	-	1513	1443	-
HCM Lane V/C Ratio	-	0.033	-	-
HCM Control Delay (s)	-	7.5	0	-
HCM Lane LOS	-	A	A	-
HCM 95th %tile Q(veh)	-	0.1	0	-

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	70	80	70	80	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	70	80	70	80	90

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	365	115	0	0	150	0
Stage 1	115	-	-	-	-	-
Stage 2	250	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	635	937	-	-	1431	-
Stage 1	910	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	598	937	-	-	1431	-
Mov Cap-2 Maneuver	598	-	-	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	745	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	3.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	801	1431	-
HCM Lane V/C Ratio	-	-	0.125	0.056	-
HCM Control Delay (s)	-	-	10.1	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.2	-

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	20	130	10	30	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	20	130	10	30	90

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	285	135	0	0	140	0
Stage 1	135	-	-	-	-	-
Stage 2	150	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	705	914	-	-	1443	-
Stage 1	891	-	-	-	-	-
Stage 2	878	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	689	914	-	-	1443	-
Mov Cap-2 Maneuver	689	-	-	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	859	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	1.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	824	1443	-
HCM Lane V/C Ratio	-	-	0.036	0.021	-
HCM Control Delay (s)	-	-	9.5	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	300	830	290	220	510	190	170	730	220	270	600	180
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.95	1.00		0.89	1.00		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	300	830	257	220	510	69	170	730	193	270	600	153
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	832	257	230	1016	433	198	712	188	261	820	208
Arrive On Green	0.16	0.32	0.32	0.13	0.29	0.29	0.11	0.26	0.26	0.15	0.30	0.30
Sat Flow, veh/h	1774	2600	804	1774	3539	1509	1774	2694	712	1774	2738	696
Grp Volume(v), veh/h	300	565	522	220	510	69	170	479	444	270	387	366
Grp Sat Flow(s),veh/h/ln	1774	1770	1635	1774	1770	1509	1774	1770	1637	1774	1770	1664
Q Serve(g_s), s	18.7	36.6	36.7	14.2	13.8	3.9	10.8	30.4	30.4	16.9	22.6	22.7
Cycle Q Clear(g_c), s	18.7	36.6	36.7	14.2	13.8	3.9	10.8	30.4	30.4	16.9	22.6	22.7
Prop In Lane	1.00		0.49	1.00		1.00	1.00		0.44	1.00		0.42
Lane Grp Cap(c), veh/h	288	566	523	230	1016	433	198	468	433	261	530	498
V/C Ratio(X)	1.04	1.00	1.00	0.96	0.50	0.16	0.86	1.02	1.03	1.04	0.73	0.73
Avail Cap(c_a), veh/h	288	566	523	230	1016	433	231	468	433	261	530	498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.2	39.0	39.1	49.7	34.2	30.6	50.2	42.3	42.3	49.1	36.1	36.2
Incr Delay (d2), s/veh	63.8	37.0	39.0	47.3	0.4	0.2	23.3	48.1	49.8	65.3	5.1	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.2	23.7	22.2	10.0	6.8	1.6	6.6	21.1	19.7	13.0	11.7	11.2
LnGrp Delay(d),s/veh	111.9	76.0	78.0	97.0	34.5	30.8	73.5	90.4	92.1	114.4	41.2	41.7
LnGrp LOS	F	E	E	F	C	C	E	F	F	F	D	D
Approach Vol, veh/h		1387			799			1093			1023	
Approach Delay, s/veh		84.5			51.4			88.5			60.7	
Approach LOS		F			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.4	38.9	22.2	37.5	20.4	34.9	18.4	41.3
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	15.0	32.3	18.7	33.0	16.9	30.4	14.9	36.8
Max Q Clear Time (g_c+I1), s	12.8	24.7	20.7	15.8	18.9	32.4	16.2	38.7
Green Ext Time (p_c), s	0.1	5.6	0.0	10.4	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	73.7
HCM 2010 LOS	E

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	1210	40	10	870	20	20	10	10	30	20	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.94	1.00		0.94	0.96		0.93	0.95		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	50	1210	39	10	870	19	20	10	1	30	20	8
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	2599	83	45	2806	61	130	56	4	103	61	18
Arrive On Green	0.82	0.82	0.82	0.82	0.82	0.82	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	91	3156	101	14	3407	74	886	650	51	628	717	215
Grp Volume(v), veh/h	655	0	644	468	0	431	31	0	0	58	0	0
Grp Sat Flow(s),veh/h/ln	1679	0	1669	1819	0	1676	1587	0	0	1560	0	0
Q Serve(g_s), s	0.0	0.0	12.2	0.0	0.0	6.7	0.0	0.0	0.0	1.9	0.0	0.0
Cycle Q Clear(g_c), s	10.5	0.0	12.2	6.5	0.0	6.7	1.8	0.0	0.0	3.7	0.0	0.0
Prop In Lane	0.08		0.06	0.02		0.04	0.65		0.03	0.52		0.14
Lane Grp Cap(c), veh/h	1418	0	1375	1531	0	1380	190	0	0	183	0	0
V/C Ratio(X)	0.46	0.00	0.47	0.31	0.00	0.31	0.16	0.00	0.00	0.32	0.00	0.00
Avail Cap(c_a), veh/h	1418	0	1375	1531	0	1380	330	0	0	328	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	0.92	0.00	0.92	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.6	0.0	2.8	2.3	0.0	2.3	46.8	0.0	0.0	47.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	5.6	3.3	0.0	3.0	0.9	0.0	0.0	1.7	0.0	0.0
LnGrp Delay(d),s/veh	2.7	0.0	2.9	2.3	0.0	2.4	46.9	0.0	0.0	47.9	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1299			899			31			58	
Approach Delay, s/veh		2.8			2.3			46.9			47.9	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		95.6		14.4		95.6		14.4
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		14.2		5.7		8.7		3.8
Green Ext Time (p_c), s		16.8		0.2		17.0		0.2

Intersection Summary		
HCM 2010 Ctrl Delay		4.4
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	1140	50	40	790	50	60	30	40	20	30	60
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	0.99		0.92	0.85		0.80	0.87		0.80
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	30	1140	48	40	790	46	60	30	25	20	30	19
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	2491	104	117	2237	129	139	67	43	87	117	61
Arrive On Green	1.00	1.00	1.00	0.77	0.77	0.77	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	48	3248	135	106	2918	168	627	468	304	314	819	430
Grp Volume(v), veh/h	630	0	588	424	0	452	115	0	0	69	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1658	1543	0	1649	1399	0	0	1563	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	9.7	3.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	7.6	0.0	9.7	7.9	0.0	0.0	4.1	0.0	0.0
Prop In Lane	0.05		0.08	0.09		0.10	0.52		0.22	0.29		0.28
Lane Grp Cap(c), veh/h	1394	0	1271	1219	0	1264	249	0	0	265	0	0
V/C Ratio(X)	0.45	0.00	0.46	0.35	0.00	0.36	0.46	0.00	0.00	0.26	0.00	0.00
Avail Cap(c_a), veh/h	1394	0	1271	1219	0	1264	300	0	0	321	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.00	0.85	0.87	0.00	0.87	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.9	0.0	4.1	43.6	0.0	0.0	42.2	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.0	0.1	0.0	0.1	0.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.4	3.8	0.0	4.4	3.3	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	0.9	0.0	1.0	3.9	0.0	4.2	44.1	0.0	0.0	42.4	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1218			876			115			69	
Approach Delay, s/veh		1.0			4.1			44.1			42.4	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.3		20.7		89.3		20.7
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		2.0		6.1		11.7		9.9
Green Ext Time (p_c), s		15.9		0.6		15.8		0.5

Intersection Summary		
HCM 2010 Ctrl Delay		5.6
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	1120	40	80	800	80	50	30	40	10	30	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	0.99		0.95	0.95		0.93	0.96		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	1120	38	80	800	75	50	30	22	10	30	3
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	2654	89	204	1963	182	117	67	37	66	160	14
Arrive On Green	1.00	1.00	1.00	0.80	0.80	0.80	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	28	3337	112	208	2467	229	605	589	328	226	1405	122
Grp Volume(v), veh/h	613	0	565	417	0	538	102	0	0	43	0	0
Grp Sat Flow(s),veh/h/ln	1809	0	1668	1264	0	1640	1522	0	0	1754	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	11.0	4.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.5	0.0	11.0	6.8	0.0	0.0	2.3	0.0	0.0
Prop In Lane	0.03		0.07	0.19		0.14	0.49		0.22	0.23		0.07
Lane Grp Cap(c), veh/h	1473	0	1327	1045	0	1305	222	0	0	240	0	0
V/C Ratio(X)	0.42	0.00	0.43	0.40	0.00	0.41	0.46	0.00	0.00	0.18	0.00	0.00
Avail Cap(c_a), veh/h	1473	0	1327	1045	0	1305	322	0	0	353	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.00	0.85	0.61	0.00	0.61	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.0	0.0	3.4	46.1	0.0	0.0	44.3	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.9	0.1	0.0	0.0	0.6	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	3.3	0.0	4.8	3.0	0.0	0.0	1.2	0.0	0.0
LnGrp Delay(d),s/veh	0.7	0.0	0.9	3.0	0.0	3.5	46.6	0.0	0.0	44.4	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1178			955			102			43	
Approach Delay, s/veh		0.8			3.3			46.6			44.4	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		92.5		17.5		92.5		17.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		2.0		4.3		13.0		8.8
Green Ext Time (p_c), s		17.4		0.5		17.1		0.4

Intersection Summary		
HCM 2010 Ctrl Delay		4.7
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	150	860	140	80	750	180	80	330	70	140	370	130
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.95	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1937	1900	1863	1937	1900
Adj Flow Rate, veh/h	150	860	129	80	750	162	80	330	63	140	370	118
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	1172	176	110	1037	224	102	381	73	168	394	126
Arrive On Green	0.03	0.13	0.13	0.08	0.48	0.48	0.06	0.24	0.24	0.09	0.28	0.28
Sat Flow, veh/h	1774	3070	461	1774	2874	621	1774	1568	299	1774	1403	447
Grp Volume(v), veh/h	150	496	493	80	462	450	80	0	393	140	0	488
Grp Sat Flow(s),veh/h/ln	1774	1770	1761	1774	1770	1725	1774	0	1867	1774	0	1851
Q Serve(g_s), s	9.2	29.7	29.7	4.8	22.9	22.9	4.9	0.0	22.2	8.5	0.0	28.3
Cycle Q Clear(g_c), s	9.2	29.7	29.7	4.8	22.9	22.9	4.9	0.0	22.2	8.5	0.0	28.3
Prop In Lane	1.00		0.26	1.00		0.36	1.00		0.16	1.00		0.24
Lane Grp Cap(c), veh/h	180	676	672	110	639	623	102	0	454	168	0	519
V/C Ratio(X)	0.83	0.73	0.73	0.72	0.72	0.72	0.79	0.00	0.87	0.83	0.00	0.94
Avail Cap(c_a), veh/h	194	676	672	113	639	623	113	0	475	177	0	538
HCM Platoon Ratio	0.33	0.33	0.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	0.60	0.60	0.60	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.2	42.7	42.7	49.5	24.2	24.2	51.2	0.0	39.9	49.0	0.0	38.7
Incr Delay (d2), s/veh	20.5	6.2	6.2	11.0	4.3	4.4	24.3	0.0	14.1	24.9	0.0	23.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	15.7	15.6	2.7	11.8	11.5	3.1	0.0	13.2	5.4	0.0	17.9
LnGrp Delay(d),s/veh	72.7	48.9	48.9	60.5	28.5	28.6	75.5	0.0	54.0	73.8	0.0	62.6
LnGrp LOS	E	D	D	E	C	C	E		D	E		E
Approach Vol, veh/h		1139			992			473			628	
Approach Delay, s/veh		52.0			31.1			57.6			65.1	
Approach LOS		D			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	49.0	15.4	31.8	16.2	46.7	11.3	35.9
Change Period (Y+Rc), s	7.0	* 7	5.0	5.0	5.0	7.0	5.0	5.0
Max Green Setting (Gmax), s	7.8	* 42	11.0	28.0	12.0	37.0	7.0	32.0
Max Q Clear Time (g_c+I1), s	6.8	31.7	10.5	24.2	11.2	24.9	6.9	30.3
Green Ext Time (p_c), s	0.0	2.0	0.0	1.0	0.0	2.2	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	49.0
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	810	150	40	720	130	210	280	40	130	300	80
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	90	810	138	40	720	117	210	280	35	130	300	71
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	224	1170	199	80	933	151	240	452	57	158	337	80
Arrive On Green	0.25	0.77	0.77	0.01	0.10	0.10	0.14	0.28	0.28	0.09	0.23	0.23
Sat Flow, veh/h	1774	3021	515	1774	3045	495	1774	1623	203	1774	1448	343
Grp Volume(v), veh/h	90	475	473	40	418	419	210	0	315	130	0	371
Grp Sat Flow(s),veh/h/ln	1774	1770	1766	1774	1770	1770	1774	0	1826	1774	0	1790
Q Serve(g_s), s	4.6	14.3	14.3	2.5	25.3	25.4	12.8	0.0	16.5	7.9	0.0	22.1
Cycle Q Clear(g_c), s	4.6	14.3	14.3	2.5	25.3	25.4	12.8	0.0	16.5	7.9	0.0	22.1
Prop In Lane	1.00		0.29	1.00		0.28	1.00		0.11	1.00		0.19
Lane Grp Cap(c), veh/h	224	686	684	80	542	542	240	0	509	158	0	416
V/C Ratio(X)	0.40	0.69	0.69	0.50	0.77	0.77	0.88	0.00	0.62	0.82	0.00	0.89
Avail Cap(c_a), veh/h	224	686	684	115	542	542	282	0	558	190	0	454
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.62	0.62	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.7	9.2	9.2	53.0	45.7	45.7	46.7	0.0	34.6	49.3	0.0	40.9
Incr Delay (d2), s/veh	0.3	3.6	3.6	1.8	10.2	10.2	20.5	0.0	1.1	18.2	0.0	17.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	7.3	7.3	1.3	14.0	14.0	7.6	0.0	8.5	4.7	0.0	12.9
LnGrp Delay(d),s/veh	38.0	12.8	12.8	54.8	55.9	55.9	67.1	0.0	35.7	67.4	0.0	58.2
LnGrp LOS	D	B	B	D	E	E	E		D	E		E
Approach Vol, veh/h		1038			877			525			501	
Approach Delay, s/veh		15.0			55.9			48.3			60.6	
Approach LOS		B			E			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	39.2	15.3	36.2	10.4	48.1	20.4	31.1
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	3.9	33.7	11.8	33.6	7.1	35.5	17.5	27.9
Max Q Clear Time (g_c+I1), s	6.6	27.4	9.9	18.5	4.5	16.3	14.8	24.1
Green Ext Time (p_c), s	0.6	1.3	0.0	1.5	0.0	2.5	0.1	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	40.9
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	970	10	10	890	20	0	0	20	20	0	10
Conflicting Peds, #/hr	3	0	2	2	0	3	2	0	3	3	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	970	10	10	890	20	0	0	20	20	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	913	0	0	983	0	0	1446	1911	496	1411	1906	461
Stage 1	-	-	-	-	-	-	978	978	-	923	923	-
Stage 2	-	-	-	-	-	-	468	933	-	488	983	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	742	-	-	698	-	-	92	67	519	98	68	547
Stage 1	-	-	-	-	-	-	269	327	-	290	347	-
Stage 2	-	-	-	-	-	-	545	343	-	530	325	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	740	-	-	696	-	-	89	66	516	93	67	544
Mov Cap-2 Maneuver	-	-	-	-	-	-	89	66	-	93	67	-
Stage 1	-	-	-	-	-	-	268	326	-	289	341	-
Stage 2	-	-	-	-	-	-	526	337	-	508	324	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	12.3	41.2
HCM LOS			B	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	516	740	-	-	696	-	-	129
HCM Lane V/C Ratio	0.039	-	-	-	0.014	-	-	0.233
HCM Control Delay (s)	12.3	0	-	-	10.2	-	-	41.2
HCM Lane LOS	B	A	-	-	B	-	-	E
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	980	10	20	900	20	10	0	20	110	10	10
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	980	10	20	900	19	10	0	3	110	10	7
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	553	2893	30	481	2857	60	191	8	42	203	13	9
Arrive On Green	0.81	0.81	0.81	1.00	1.00	1.00	0.10	0.00	0.11	0.10	0.11	0.11
Sat Flow, veh/h	605	3589	37	566	3544	75	1184	73	377	1264	115	80
Grp Volume(v), veh/h	20	483	507	20	449	470	13	0	0	127	0	0
Grp Sat Flow(s),veh/h/ln	605	1770	1856	566	1770	1850	1634	0	0	1459	0	0
Q Serve(g_s), s	0.7	8.0	8.0	0.4	0.0	0.0	0.0	0.0	0.0	8.6	0.0	0.0
Cycle Q Clear(g_c), s	0.7	8.0	8.0	8.4	0.0	0.0	0.7	0.0	0.0	9.4	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.04	0.77		0.23	0.87		0.06
Lane Grp Cap(c), veh/h	553	1426	1496	481	1426	1491	226	0	0	211	0	0
V/C Ratio(X)	0.04	0.34	0.34	0.04	0.32	0.32	0.06	0.00	0.00	0.60	0.00	0.00
Avail Cap(c_a), veh/h	553	1426	1496	481	1426	1491	442	0	0	429	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.88	0.88	0.88	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.1	2.8	2.8	0.4	0.0	0.0	44.0	0.0	0.0	47.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.6	0.6	0.1	0.5	0.5	0.0	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.1	4.3	0.1	0.2	0.2	0.4	0.0	0.0	3.9	0.0	0.0
LnGrp Delay(d),s/veh	2.3	3.5	3.5	0.5	0.5	0.5	44.1	0.0	0.0	48.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D			D		
Approach Vol, veh/h		1010			939			13			127	
Approach Delay, s/veh		3.5			0.5			44.1			48.9	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		93.7		16.3		93.7		16.3
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0
Max Green Setting (Gmax), s		72.0		29.0		72.0		29.0
Max Q Clear Time (g_c+I1), s		10.0		2.7		10.4		11.4
Green Ext Time (p_c), s		5.8		0.3		5.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.1
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	1080	10	30	990	150	0	10	30	120	0	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	0.95		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	30	1080	10	30	990	143	0	10	1	120	0	0
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	2	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	2732	25	58	2360	341	0	163	16	375	182	0
Arrive On Green	0.07	1.00	1.00	0.03	0.76	0.76	0.00	0.10	0.10	0.10	0.00	0.00
Sat Flow, veh/h	1774	3593	33	1774	3104	448	0	1661	166	2645	1863	0
Grp Volume(v), veh/h	30	532	558	30	564	569	0	0	11	120	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1857	1774	1770	1783	0	0	1827	1323	1863	0
Q Serve(g_s), s	1.8	0.0	0.0	1.8	12.3	12.4	0.0	0.0	0.6	4.7	0.0	0.0
Cycle Q Clear(g_c), s	1.8	0.0	0.0	1.8	12.3	12.4	0.0	0.0	0.6	5.3	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.25	0.00		0.09	1.00		0.00
Lane Grp Cap(c), veh/h	58	1345	1412	58	1345	1355	0	0	179	375	182	0
V/C Ratio(X)	0.52	0.40	0.40	0.52	0.42	0.42	0.00	0.00	0.06	0.32	0.00	0.00
Avail Cap(c_a), veh/h	202	1345	1412	202	1345	1355	0	0	191	778	466	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	50.6	0.0	0.0	52.3	4.6	4.6	0.0	0.0	45.0	47.5	0.0	0.0
Incr Delay (d2), s/veh	6.5	0.8	0.8	6.9	1.0	1.0	0.0	0.0	0.1	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.3	0.3	1.0	6.3	6.4	0.0	0.0	0.3	1.8	0.0	0.0
LnGrp Delay(d),s/veh	57.1	0.8	0.8	59.3	5.6	5.6	0.0	0.0	45.2	47.9	0.0	0.0
LnGrp LOS	E	A	A	E	A	A			D	D		
Approach Vol, veh/h		1120			1163			11			120	
Approach Delay, s/veh		2.3			7.0			45.2			47.9	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.1	88.6		14.3	7.1	88.6		14.3
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5
Max Green Setting (Gmax), s	12.5	43.0		27.5	12.5	43.0		11.5
Max Q Clear Time (g_c+I1), s	3.8	2.0		7.3	3.8	14.4		2.6
Green Ext Time (p_c), s	0.0	15.4		0.5	0.0	13.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	70	1200	30	60	1140
Conflicting Peds, #/hr	2	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	70	1200	30	60	1140

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1907	617	0	0	1232	0
Stage 1	1217	-	-	-	-	-
Stage 2	690	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	60	433	-	-	561	-
Stage 1	243	-	-	-	-	-
Stage 2	459	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	53	432	-	-	561	-
Mov Cap-2 Maneuver	53	-	-	-	-	-
Stage 1	243	-	-	-	-	-
Stage 2	410	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	49.3	0	0.6
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	167	561	-
HCM Lane V/C Ratio	-	-	0.539	0.107	-
HCM Control Delay (s)	-	-	49.3	12.2	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	2.7	0.4	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	0	0	0	0	900	370	350	1200	0
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	900	370	350	1200	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	2352	2802	604	1202	0	-	900	0	0
Stage 1	1902	1902	-	-	-	-	-	-	-
Stage 2	450	900	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	30	18	441	576	-	0	751	-	-
Stage 1	103	116	-	-	-	0	-	-	-
Stage 2	609	355	-	-	-	0	-	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	16	0	440	575	-	-	750	-	-
Mov Cap-2 Maneuver	45	0	-	-	-	-	-	-	-
Stage 1	55	0	-	-	-	-	-	-	-
Stage 2	608	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	3.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	575	-	-	750	-	-
HCM Lane V/C Ratio	-	-	-	0.467	-	-
HCM Control Delay (s)	0	-	0	13.9	-	-
HCM Lane LOS	A	-	A	B	-	-
HCM 95th %tile Q(veh)	0	-	-	2.5	-	-

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **2040 No Project**
Volume and Delay by Movement **PM Peak Hour**

Intersection 38 **I-580 EB Off-Ramp-98th Avenue/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn	10	10	102.0%	3.9	4	15	0.1	69.3	10.6	52.7	82.9	E
	Second Left												
	Left Turn	70	69	98.1%	6.0	58	78	0.2	63.6	6.6	54.4	72.9	E
	Through												
	Right Turn	820	810	98.7%	15.5	782	838	0.4	15.7	5.8	8.9	25.9	B
	Second Right												
	Subtotal	900	889	98.7%	18.0	849	920	0.4	20.0	5.9	12.6	29.8	B
SB	U Turn												
	Second Left												
	Left Turn	140	140	100.2%	14.1	119	172	0.0	57.7	10.3	45.3	79.1	E
	Through	760	744	97.9%	22.3	715	783	0.6	58.3	8.8	48.8	78.5	E
	Right Turn	40	43	106.3%	4.3	35	49	0.4	48.4	14.6	32.9	73.5	D
	Second Right												
	Subtotal	940	927	98.6%	21.8	884	958	0.4	57.7	9.2	48.0	78.4	E
EB	U Turn												
	Second Left												
	Left Turn												
	Through	130	125	95.9%	11.1	110	150	0.5	48.0	4.8	39.7	55.4	D
	Right Turn	180	186	103.1%	14.3	169	215	0.4	24.3	3.2	20.6	30.2	C
	Second Right												
	Subtotal	310	310	100.1%	16.9	290	341	0.0	33.8	3.1	30.7	41.3	C
WB	U Turn												
	Second Left												
	Left Turn	600	528	87.9%	19.2	501	560	3.0	18.2	0.9	16.5	19.4	B
	Through	240	206	85.8%	12.6	189	226	2.3	6.7	0.7	5.7	7.7	A
	Right Turn												
	Second Right												
	Subtotal	840	734	87.3%	20.3	708	771	3.8	15.0	0.8	13.8	16.0	B
Total		2,990	2,859	95.6%	36.7	2,796	2,937	2.4	32.5	4.1	28.1	39.5	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **2040 No Project**
Volume and Delay by Movement **PM Peak Hour**

Intersection 39 **I-580 Ramps/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	520	528	101.5%	15.1	508	556	0.3	38.6	2.6	34.8	42.0	D
	Through	10	11	107.0%	3.5	7	17	0.2	38.8	9.7	28.4	57.9	D
	Right Turn	300	305	101.8%	15.6	277	330	0.3	13.3	1.5	10.0	14.8	B
	Second Right												
	Subtotal	830	844	101.7%	20.3	808	864	0.5	29.5	2.1	26.4	32.3	C
SB	U Turn												
	Second Left												
	Left Turn												
	Through												
	Right Turn												
	Second Right												
	Subtotal												
EB	U Turn												
	Second Left												
	Left Turn	780	754	96.7%	15.3	726	773	0.9	55.2	2.0	52.2	57.4	E
	Through	310	303	97.6%	10.6	281	315	0.4	20.8	1.7	17.5	23.1	C
	Right Turn												
	Second Right												
	Subtotal	1,090	1,056	96.9%	20.4	1,020	1,083	1.0	45.3	1.6	43.3	47.3	D
WB	U Turn												
	Second Left												
	Left Turn												
	Through	320	208	64.8%	6.5	198	218	6.9	51.0	2.2	46.2	54.2	D
	Right Turn	150	102	68.2%	8.1	90	113	4.2	37.6	3.1	33.4	42.9	D
	Second Right												
	Subtotal	470	310	65.9%	8.7	299	328	8.1	46.6	1.9	42.0	48.3	D
Total		2,390	2,210	92.5%	25.7	2,179	2,248	3.7	39.4	0.9	38.3	41.1	D

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **2040 No Project**
Volume and Delay by Movement **PM Peak Hour**

Intersection 40 **Mountain Boulevard-Oakland Zoo Driveway/Golf Links Road** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	30	30	101.3%	5.6	21	39	0.1	47.4	7.7	37.1	56.9	E
	Through	10	10	104.0%	3.0	6	16	0.1	12.0	2.8	8.6	17.7	B
	Right Turn	10	11	113.0%	3.8	5	17	0.4	3.7	0.6	2.5	4.6	A
	Second Right												
	Subtotal	50	52	104.2%	9.4	34	64	0.3	30.8	4.3	23.0	37.2	D
SB	U Turn												
	Second Left												
	Left Turn	20	21	104.5%	3.0	16	26	0.2	40.3	12.9	22.4	58.6	E
	Through	10	10	95.0%	3.2	5	15	0.2	47.5	20.6	24.9	94.4	E
	Right Turn	80	73	91.5%	11.4	53	90	0.8	56.9	14.1	34.1	83.4	F
	Second Right												
	Subtotal	110	104	94.2%	12.0	86	123	0.6	52.5	13.8	30.6	78.8	F
EB	U Turn	40	40	99.3%	3.6	35	47	0.0	20.0	3.3	14.9	25.6	C
	Second Left												
	Left Turn	130	132	101.3%	13.8	115	156	0.1	6.2	1.6	3.1	8.4	A
	Through	430	426	99.1%	22.9	397	471	0.2	1.6	0.2	1.1	1.9	A
	Right Turn	10	11	114.0%	4.3	5	17	0.4	0.8	0.4	0.3	1.5	A
	Second Right												
	Subtotal	610	609	99.9%	18.4	570	640	0.0	3.8	0.7	2.5	4.8	A
WB	U Turn												
	Second Left												
	Left Turn	10	4	42.0%	2.9	0	10	2.2	307.0	132.9	0.0	450.1	F
	Through	320	165	51.7%	12.3	147	185	9.9	359.6	23.9	324.4	403.5	F
	Right Turn	10	6	56.0%	2.7	2	11	1.6	324.7	51.8	216.4	380.5	F
	Second Right												
	Subtotal	340	175	51.5%	13.0	156	193	10.3	358.4	23.9	322.2	400.2	F
Total		1,110	940	84.7%	19.3	902	961	5.3	76.6	2.9	71.5	81.4	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	210	820	250	110	800	120	270	660	180	210	1000	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	210	820	157	110	800	110	270	660	159	210	1000	56
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	1127	492	135	842	116	281	825	199	269	1038	464
Arrive On Green	0.13	0.32	0.32	0.08	0.27	0.27	0.16	0.29	0.29	0.15	0.29	0.29
Sat Flow, veh/h	1774	3539	1546	1774	3127	430	1774	2830	681	1774	3539	1583
Grp Volume(v), veh/h	210	820	157	110	453	457	270	413	406	210	1000	56
Grp Sat Flow(s),veh/h/ln	1774	1770	1546	1774	1770	1787	1774	1770	1741	1774	1770	1583
Q Serve(g_s), s	14.1	24.7	9.2	7.3	30.1	30.2	18.1	25.8	25.9	13.7	33.4	3.1
Cycle Q Clear(g_c), s	14.1	24.7	9.2	7.3	30.1	30.2	18.1	25.8	25.9	13.7	33.4	3.1
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	222	1127	492	135	476	481	281	516	508	269	1038	464
V/C Ratio(X)	0.95	0.73	0.32	0.82	0.95	0.95	0.96	0.80	0.80	0.78	0.96	0.12
Avail Cap(c_a), veh/h	222	1127	492	148	479	484	281	516	508	281	1038	464
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	36.3	31.0	54.6	43.1	43.1	50.1	39.3	39.3	49.0	41.8	31.1
Incr Delay (d2), s/veh	45.6	2.4	0.4	26.9	28.8	28.7	43.0	12.2	12.5	12.8	19.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	12.4	4.0	4.6	18.5	18.7	12.2	14.4	14.2	7.7	19.1	1.4
LnGrp Delay(d),s/veh	97.7	38.7	31.4	81.6	71.9	71.7	93.2	51.5	51.8	61.7	61.4	31.2
LnGrp LOS	F	D	C	F	E	E	F	D	D	E	E	C
Approach Vol, veh/h		1187			1020			1089			1266	
Approach Delay, s/veh		48.2			72.9			61.9			60.1	
Approach LOS		D			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.2	40.0	13.1	43.7	23.0	40.2	19.0	37.8
Change Period (Y+Rc), s	5.0	* 5	4.0	5.5	4.0	5.0	4.0	5.5
Max Green Setting (Gmax), s	18.3	* 35	10.0	37.5	19.0	35.0	15.0	32.5
Max Q Clear Time (g_c+I1), s	16.1	27.9	9.3	26.7	20.1	35.4	16.1	32.2
Green Ext Time (p_c), s	2.2	3.0	0.0	7.9	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	60.3
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Signal Warrant Worksheets

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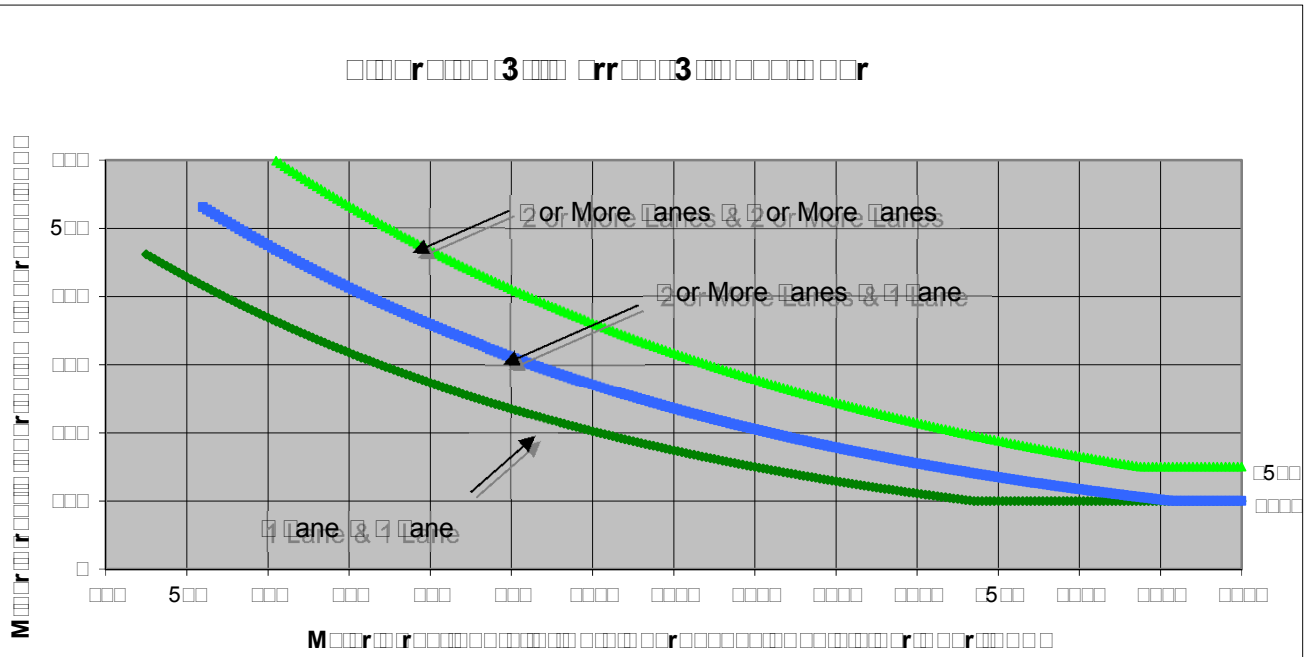

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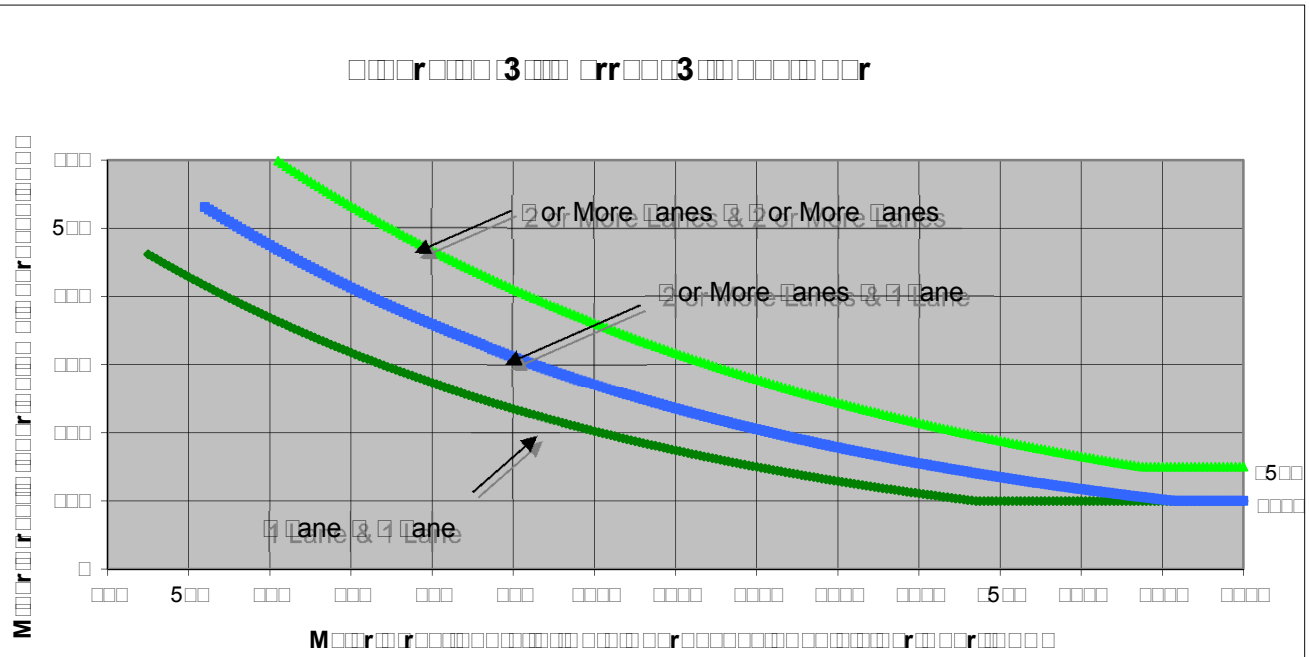

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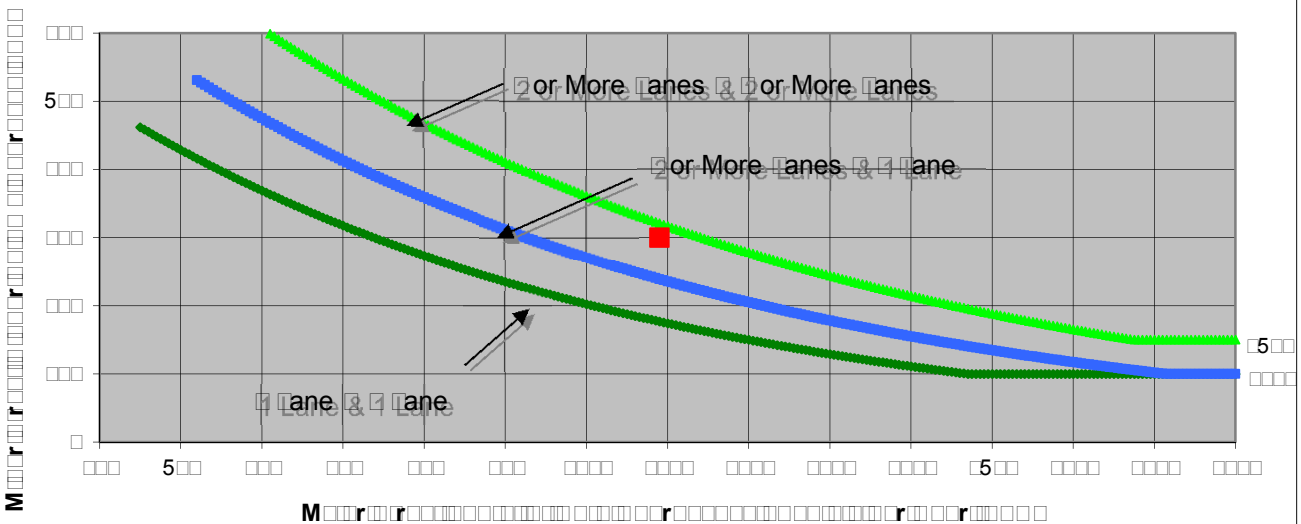
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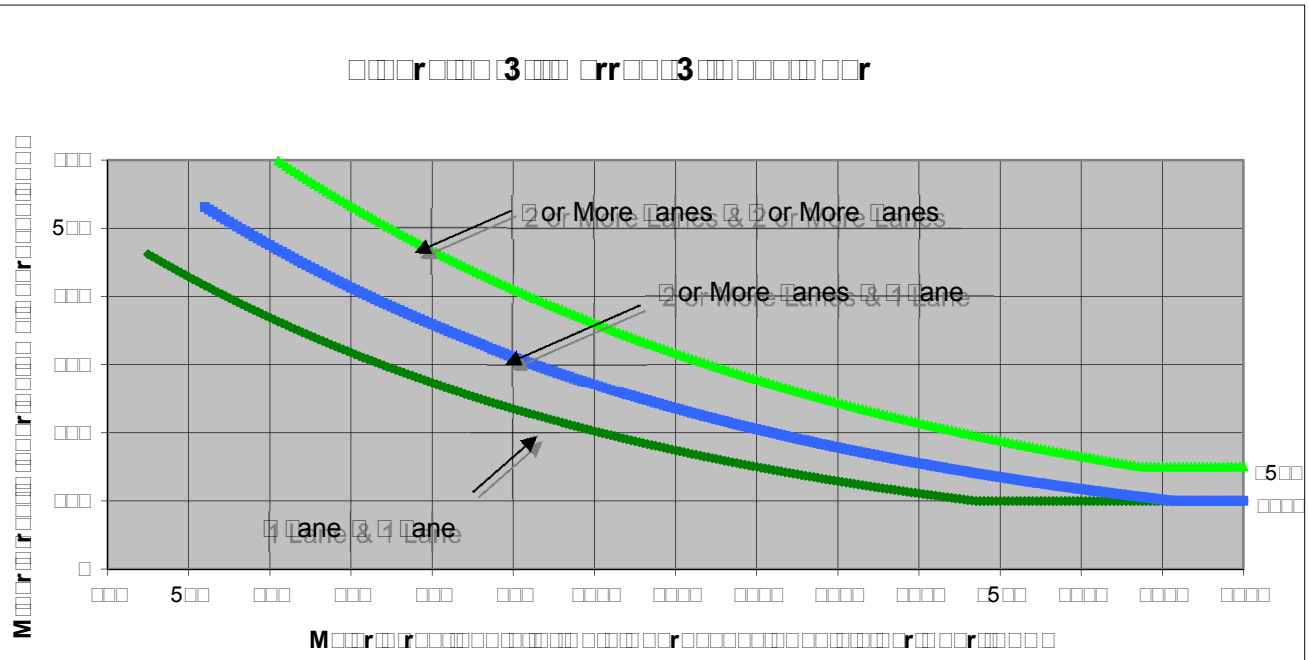
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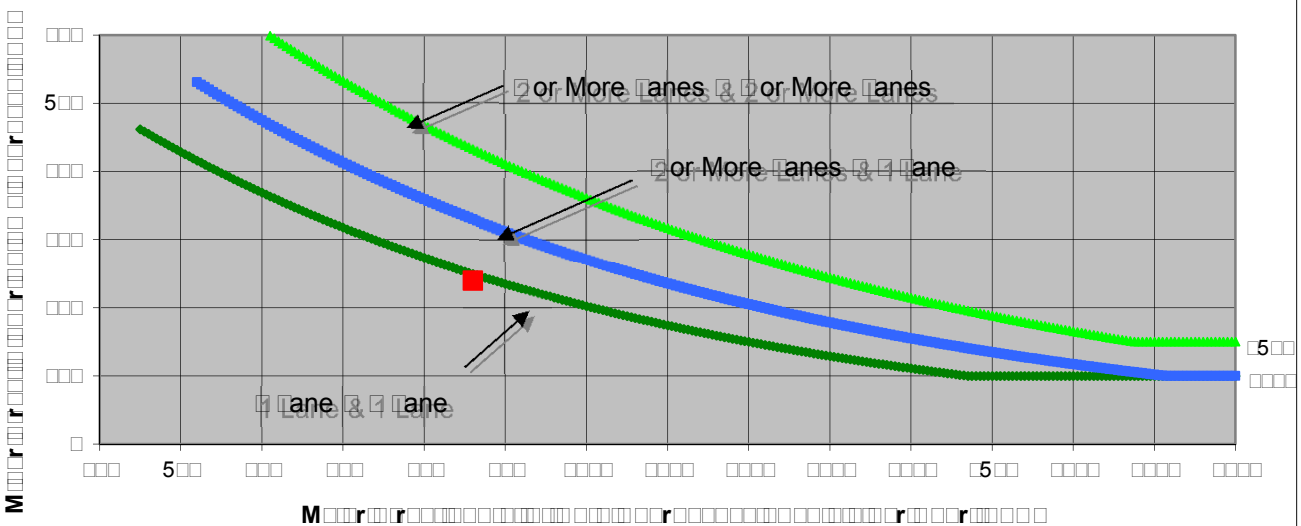
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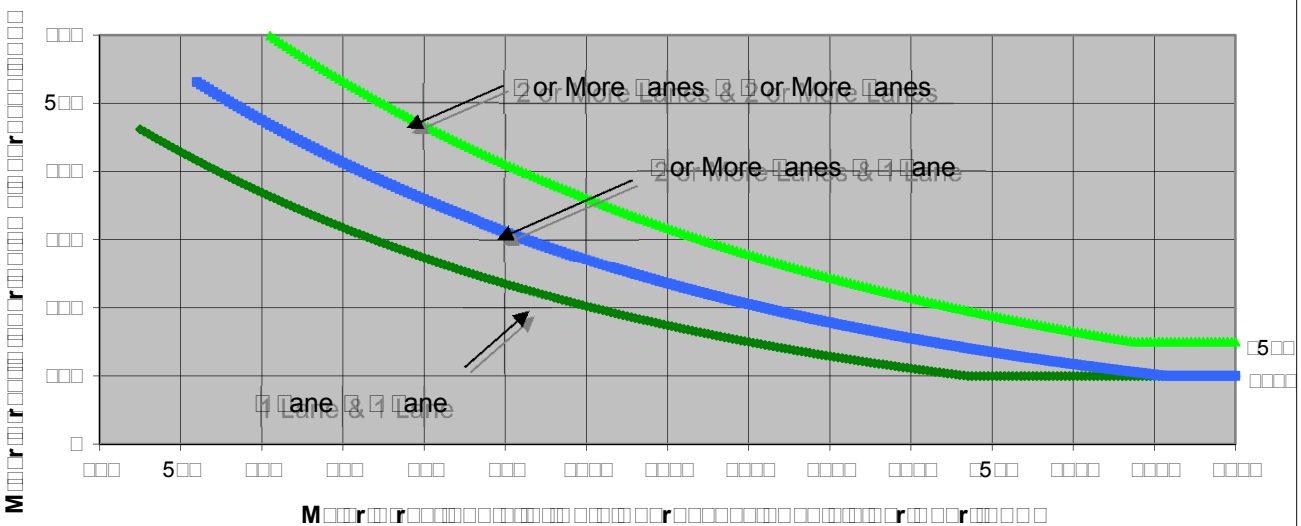
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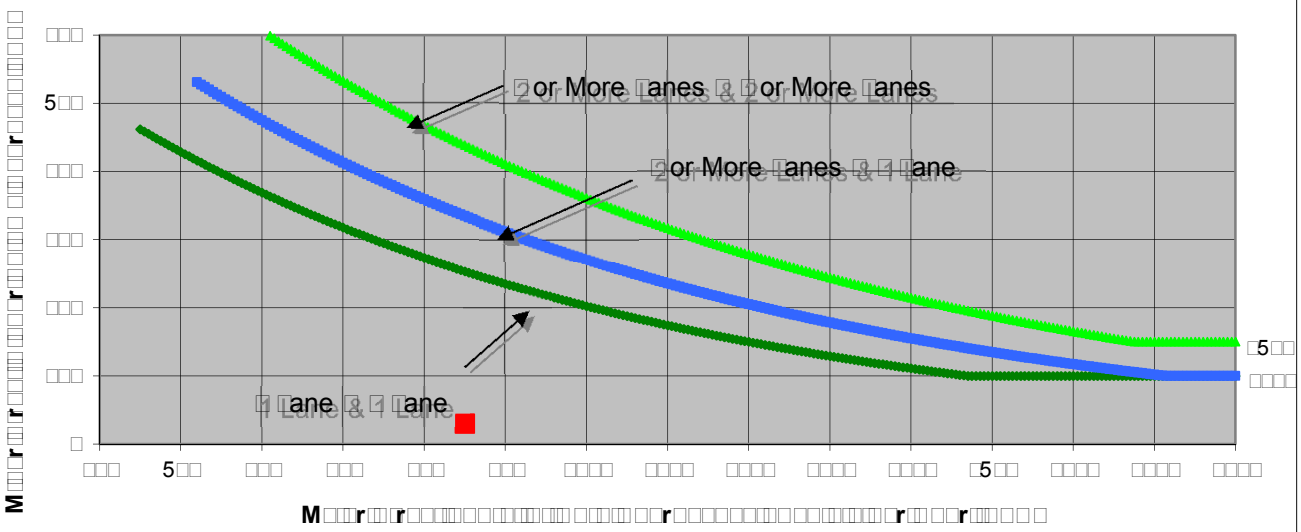

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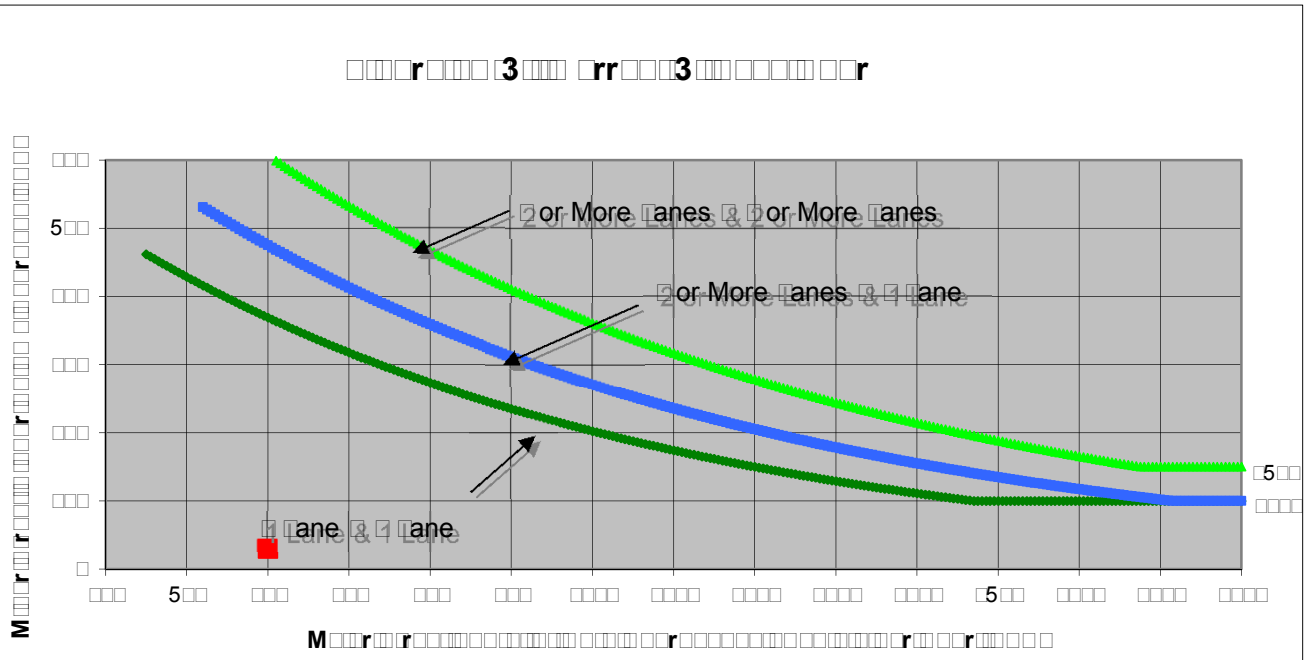
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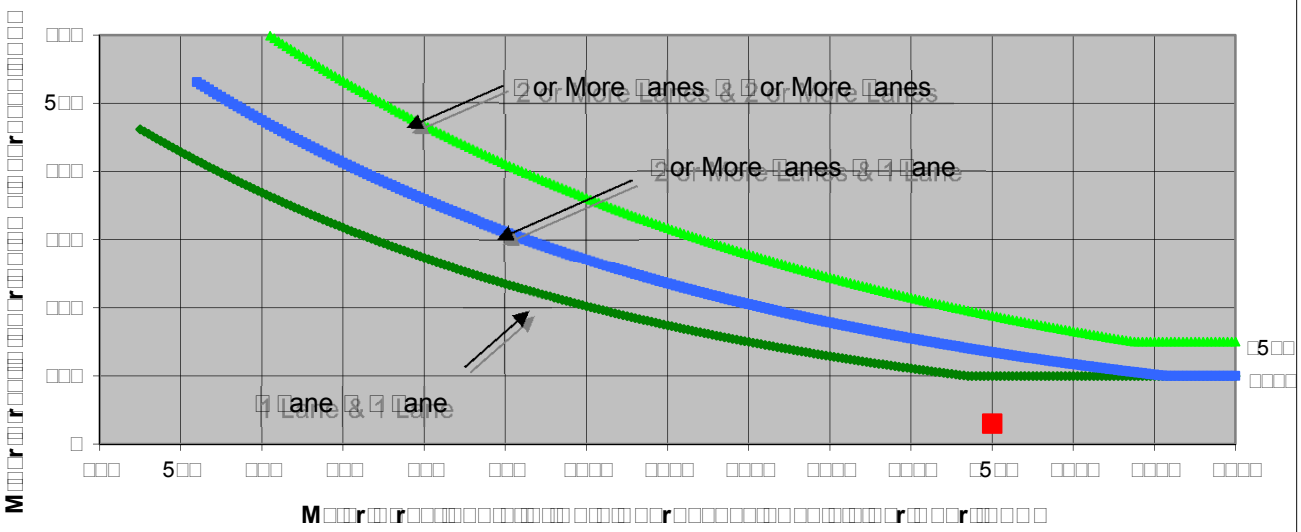

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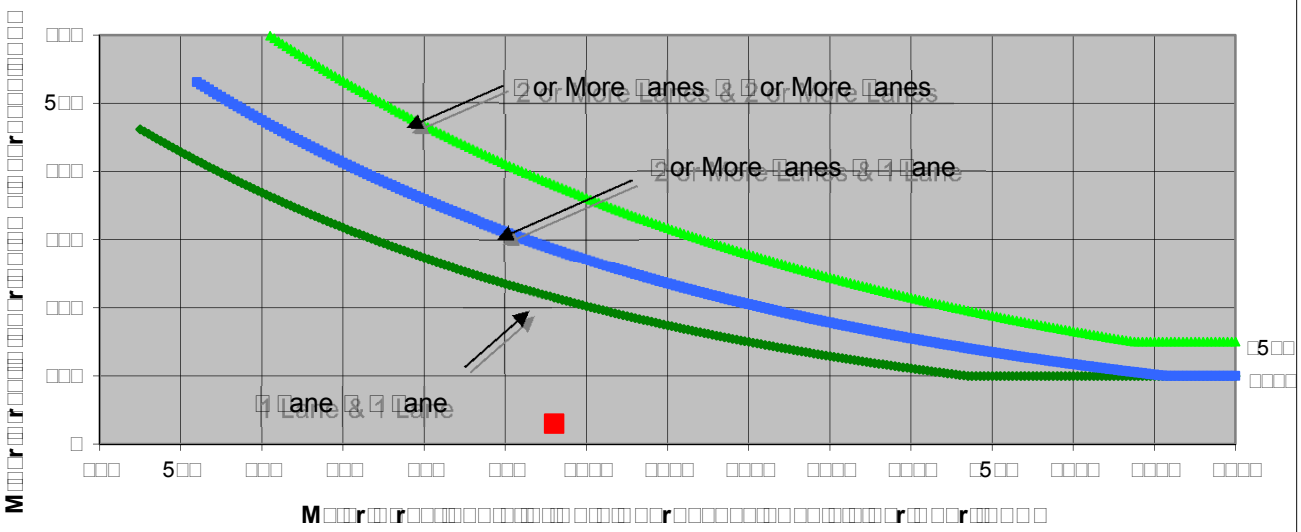

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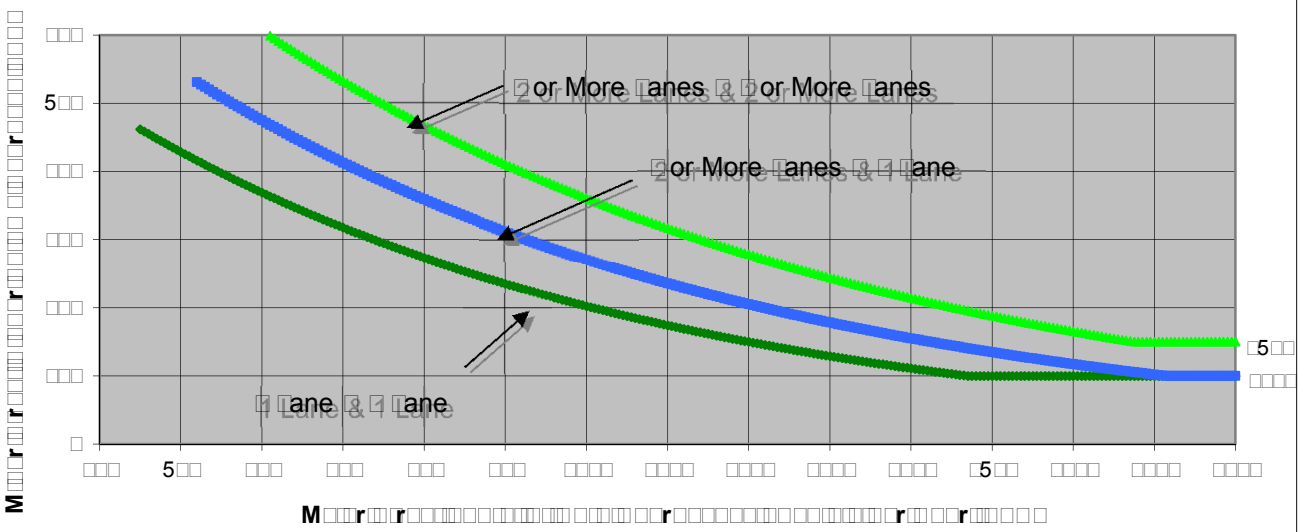

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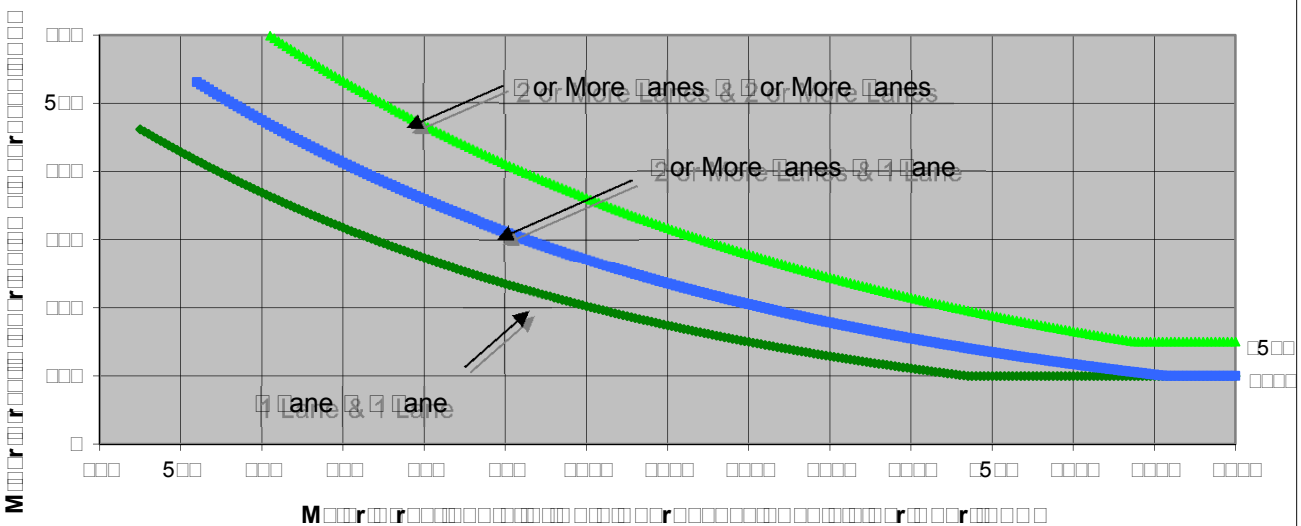

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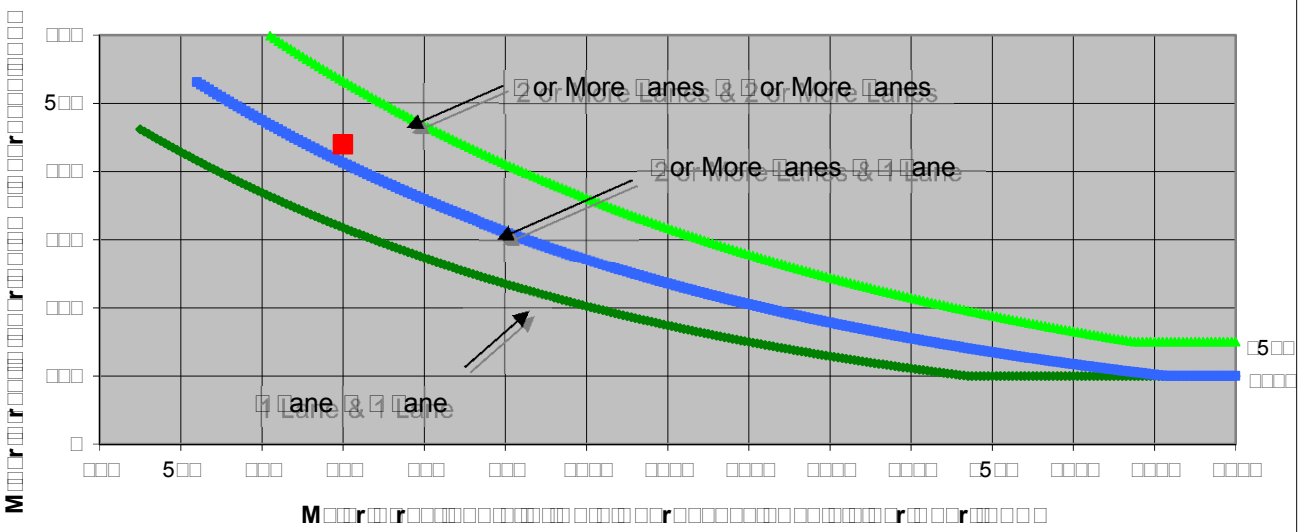
Sheet No	1 of 5
Project	Main Avenue
Scenario	Alternative No Project
Year	AM
Major Street	Center Avenue
Minor Street	5th Street

Turning Movements

	EB	SB	WB	NB
Left	0	100	0	100
Through	0	100	100	50
Right	0	50	100	0
Total	0	250	200	150

Major Street Direction

	North/South
0	East/West



Note: 500 values are taken as the lower threshold volume for a minor street approach with two or more lanes and 100 values as the lower threshold volume for a minor street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices* 2003 edition

	Major Street	Minor Street	Critical Gap
	Center Avenue	5th Street	
Number of lanes for through traffic on street	2	2	0.5
Direction	EB	SB	

Note: Grade correction for Major Street is 0.0 for all movements
Grade correction for Minor Street is 0.0 for all movements

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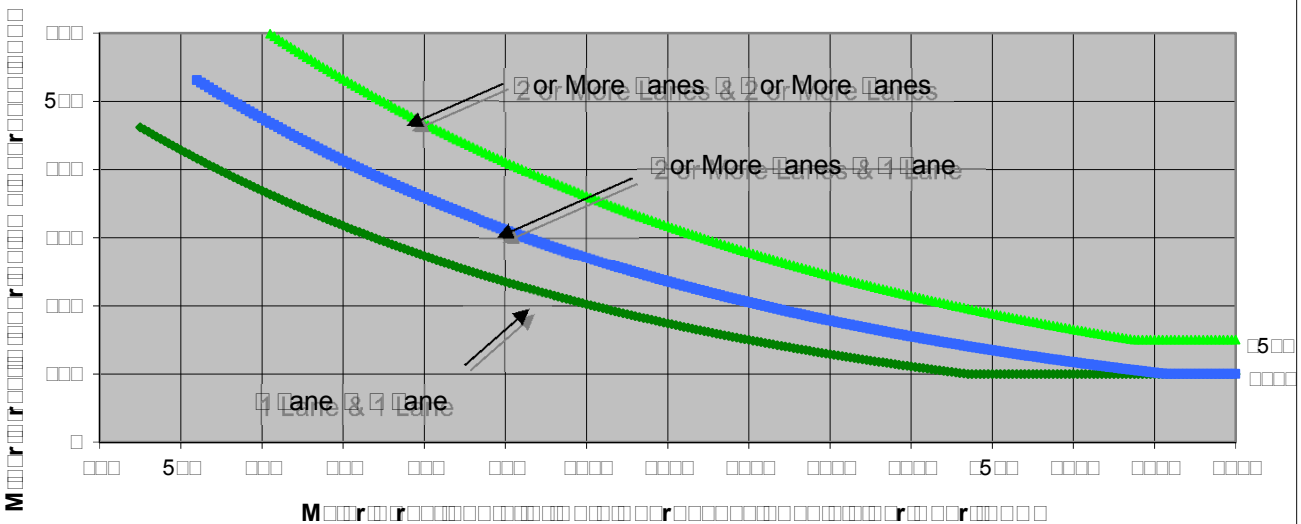

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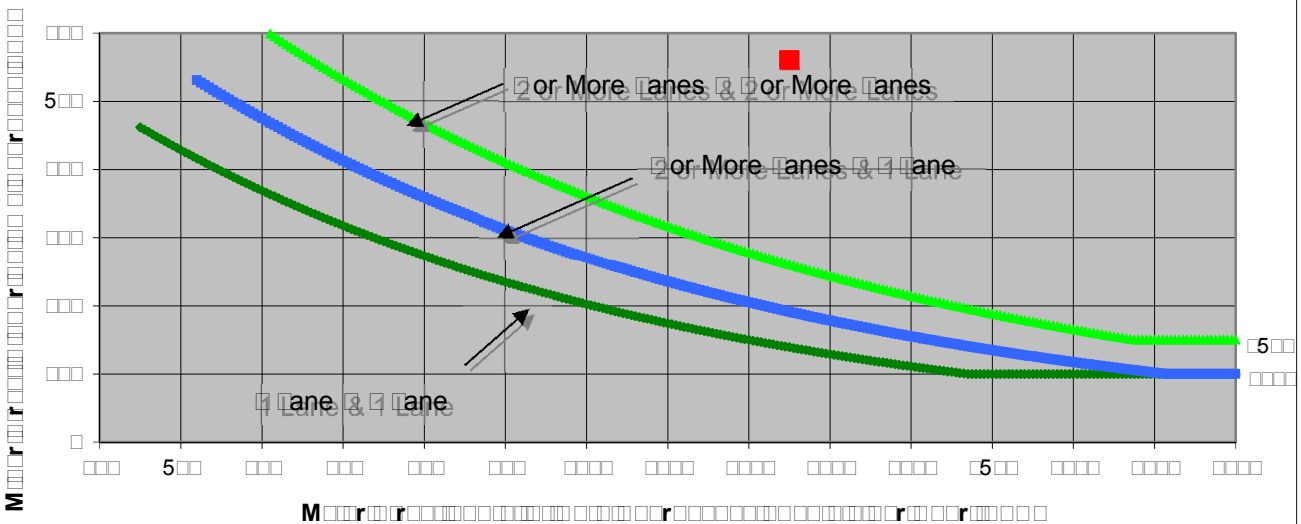

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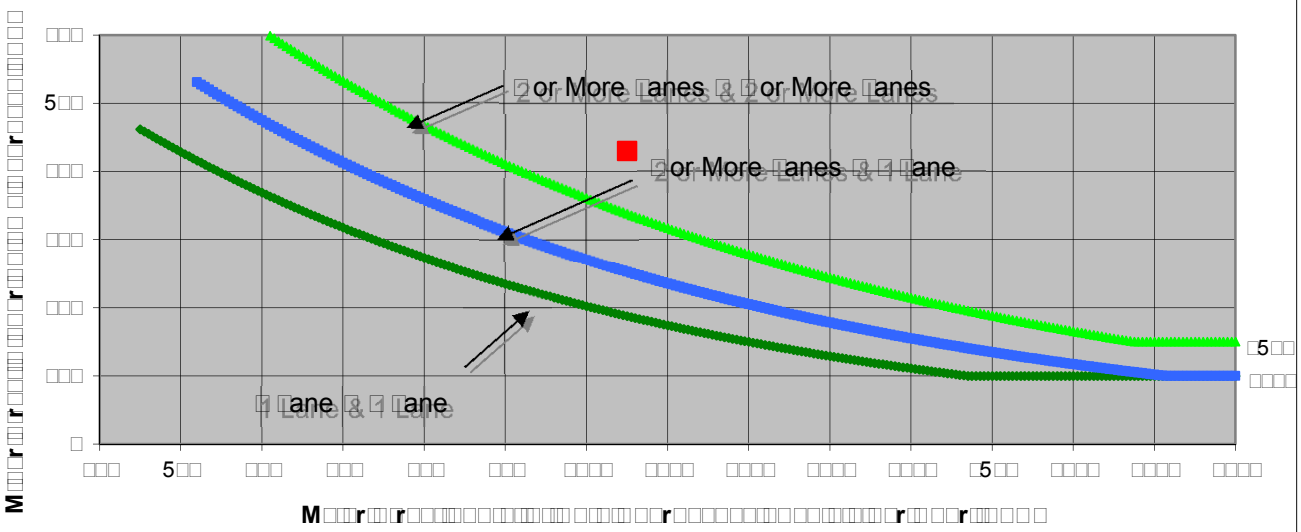

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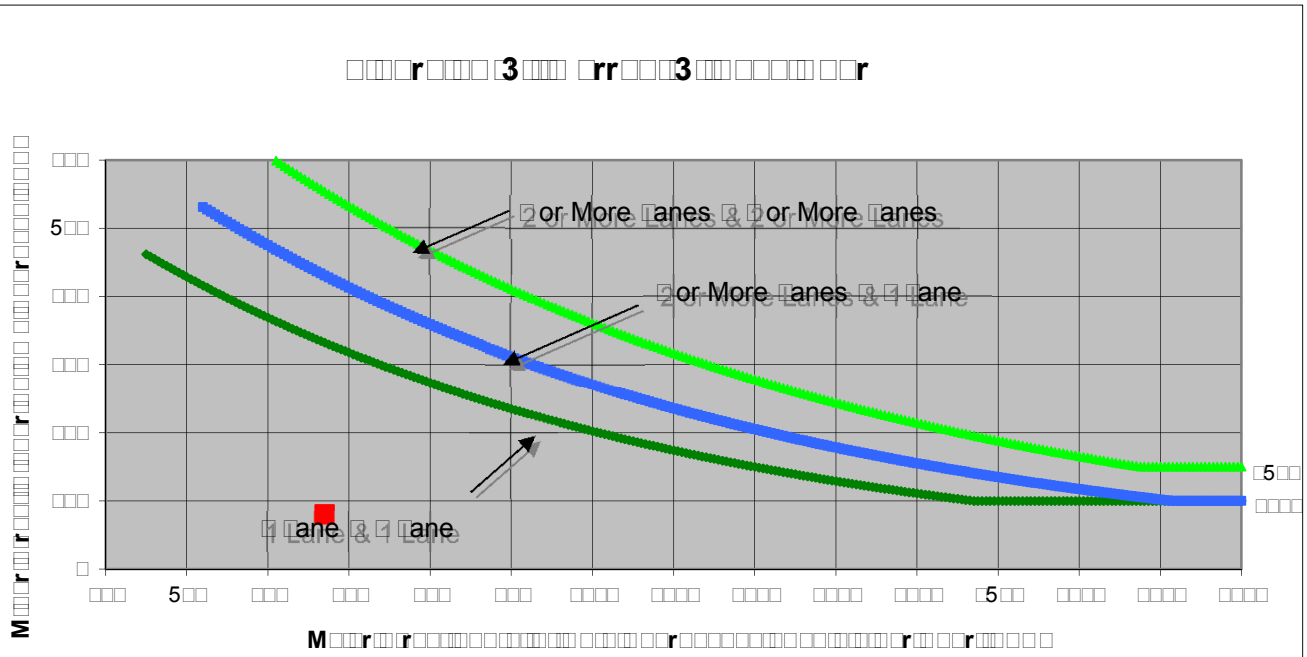
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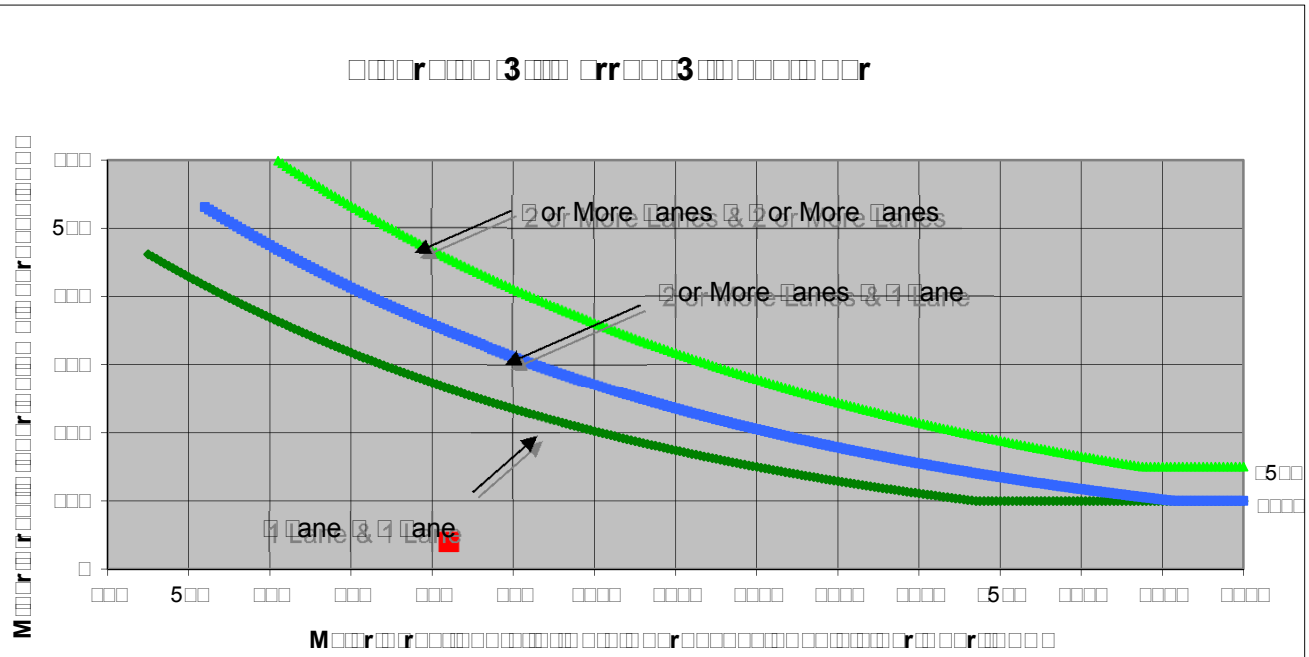
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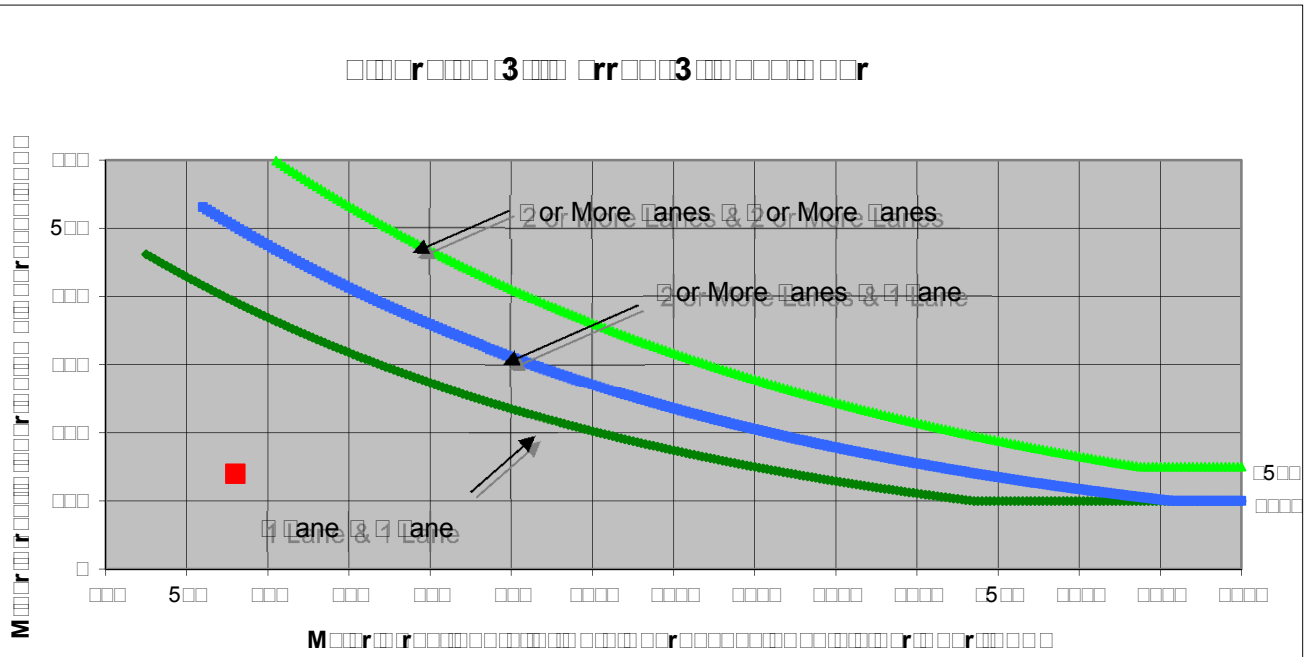
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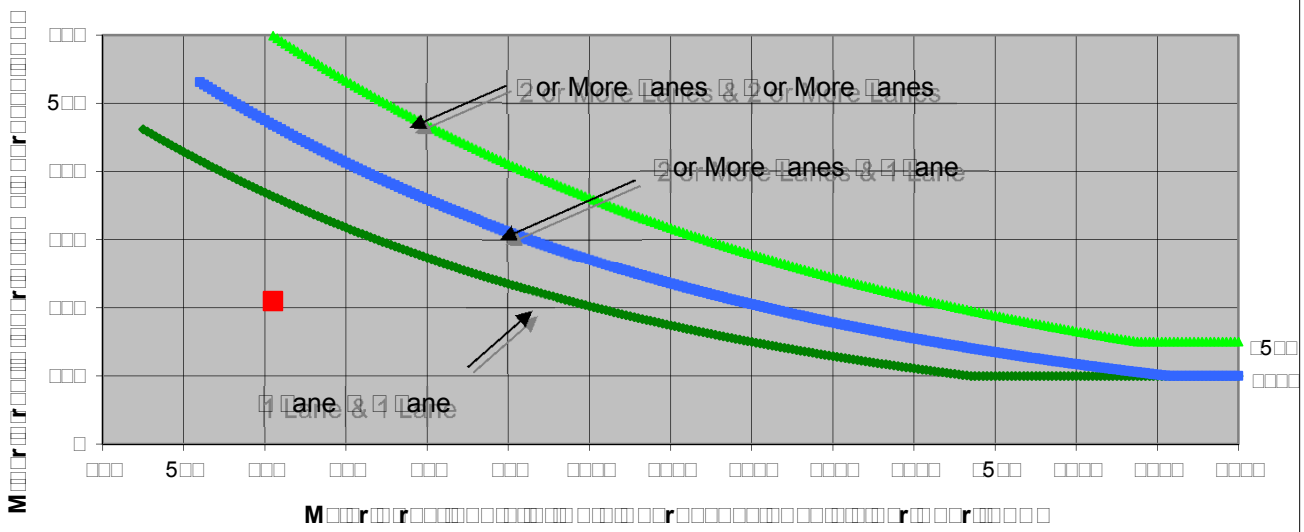
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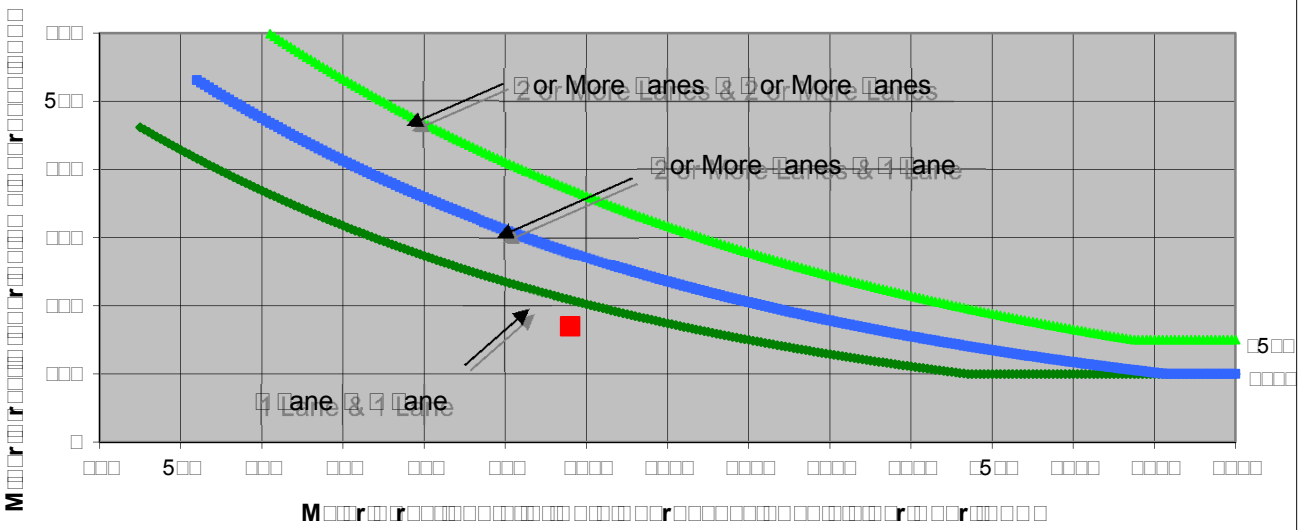
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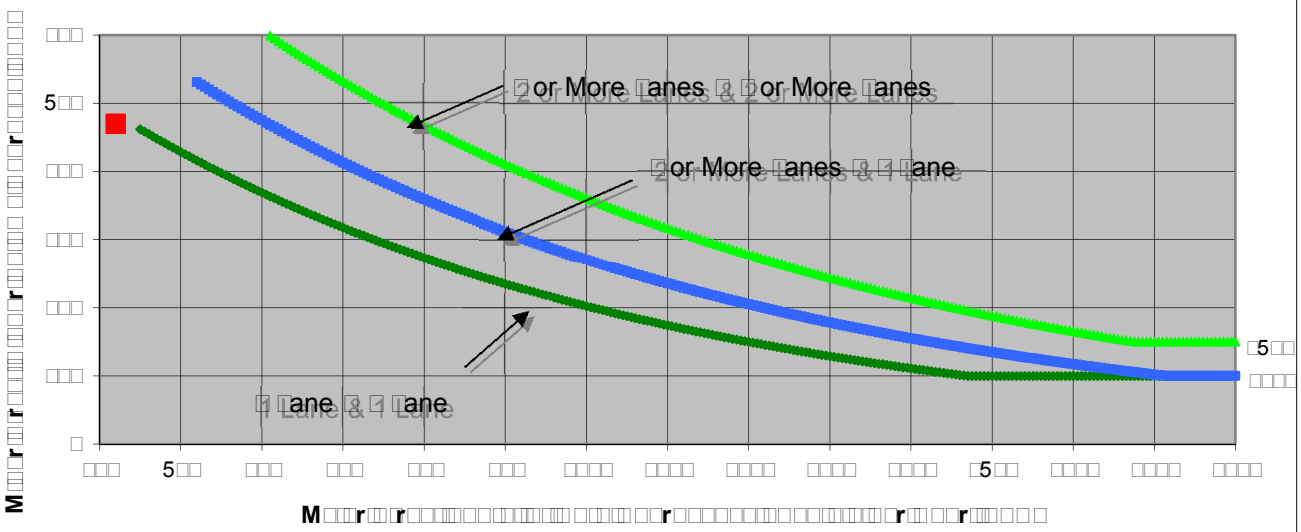
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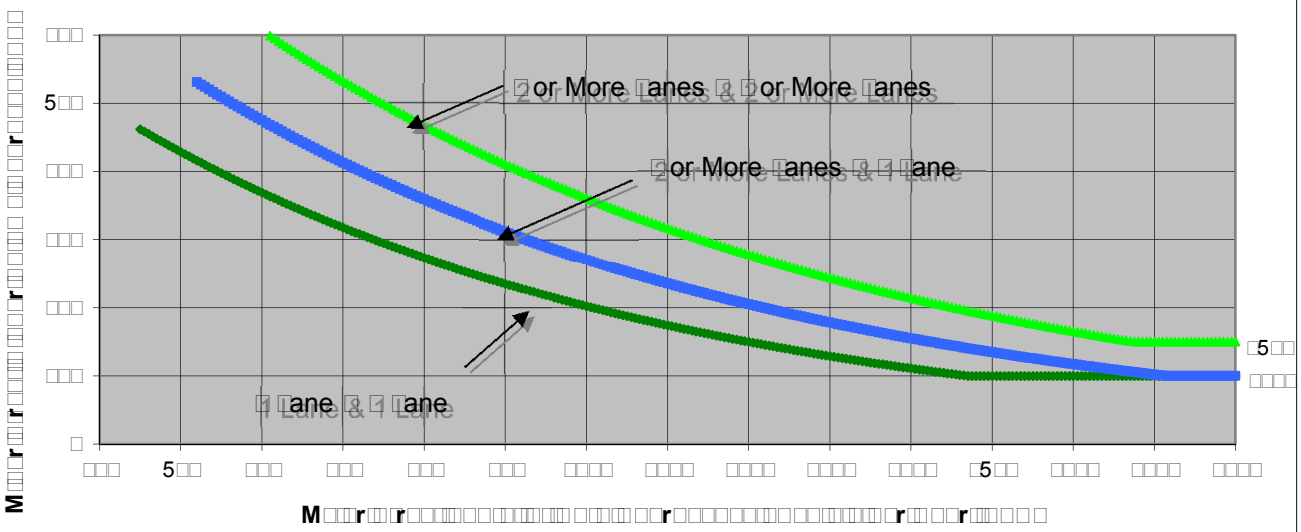

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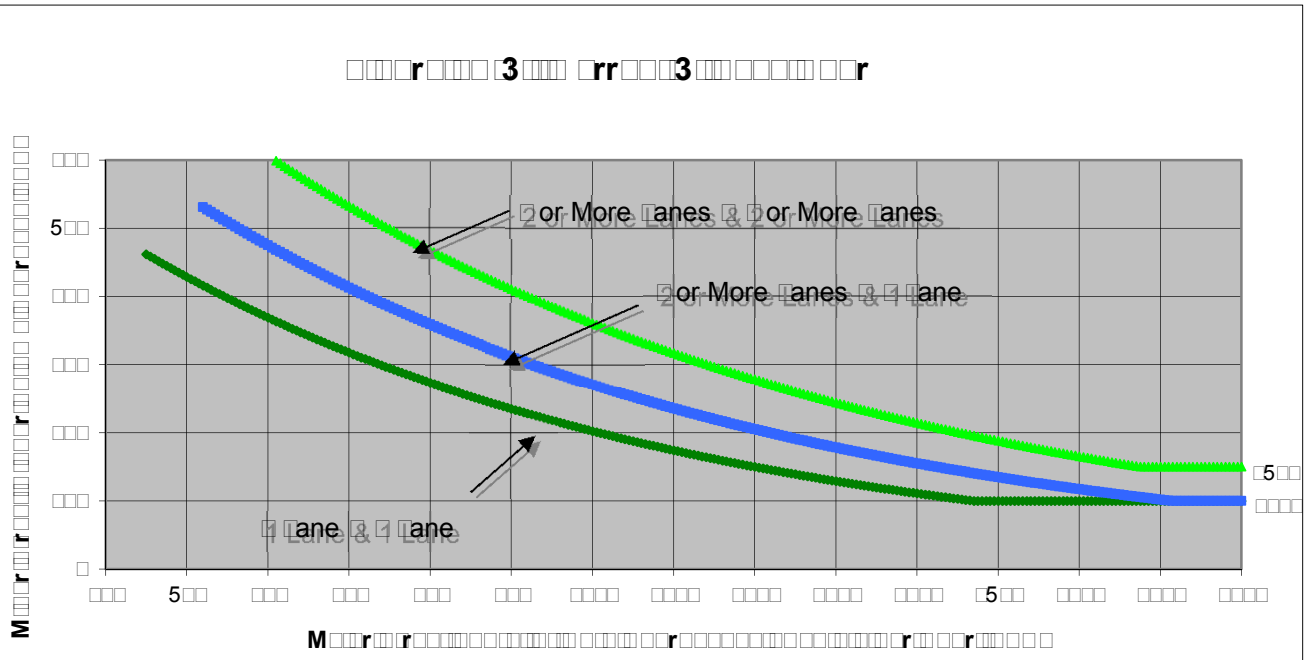
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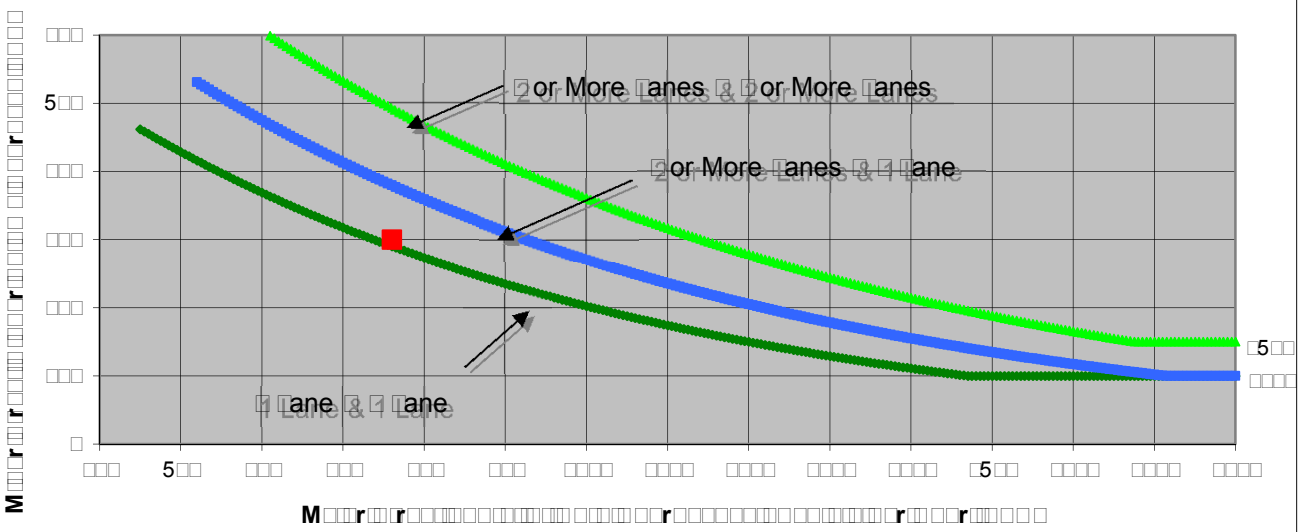

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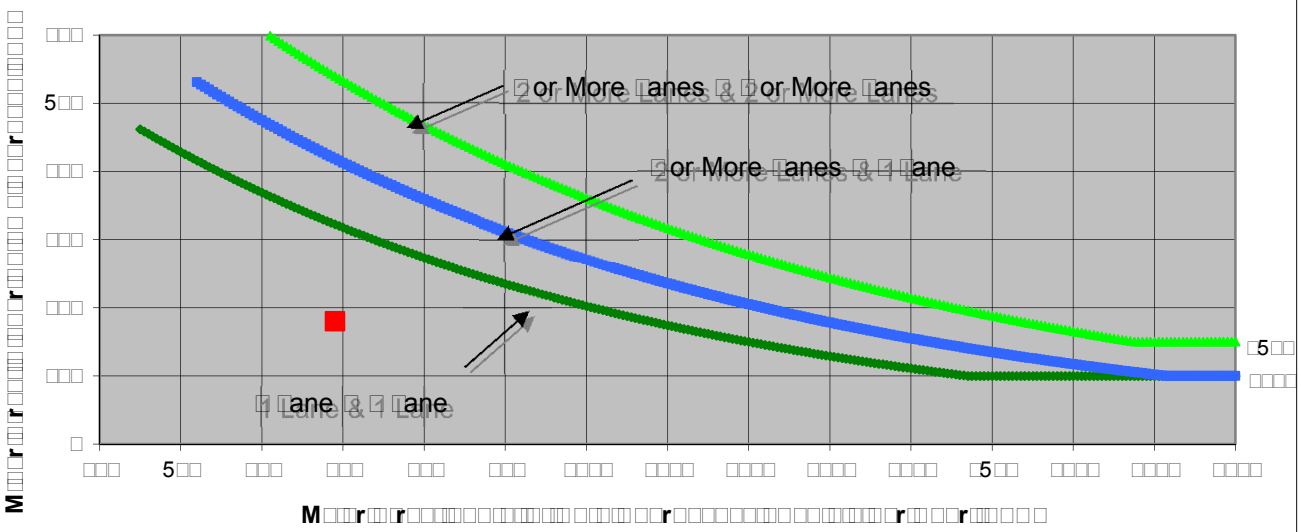

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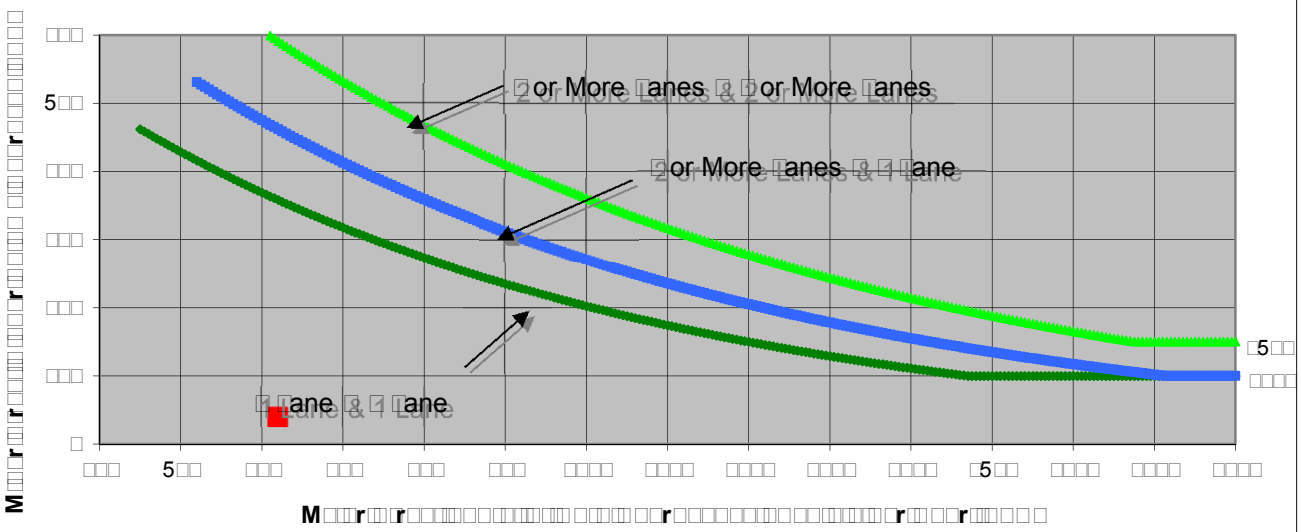

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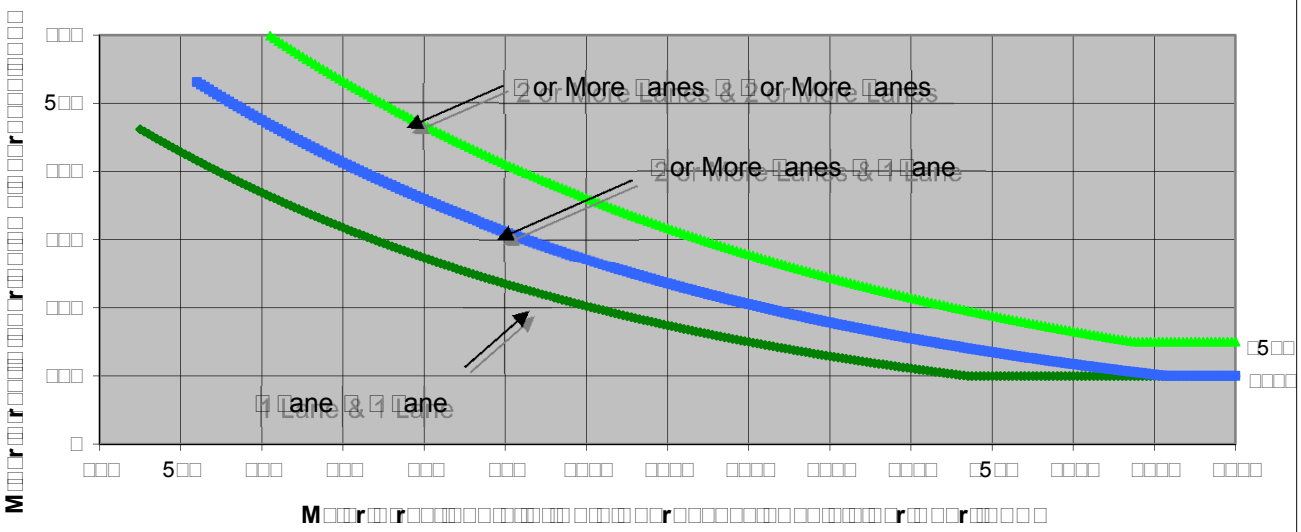

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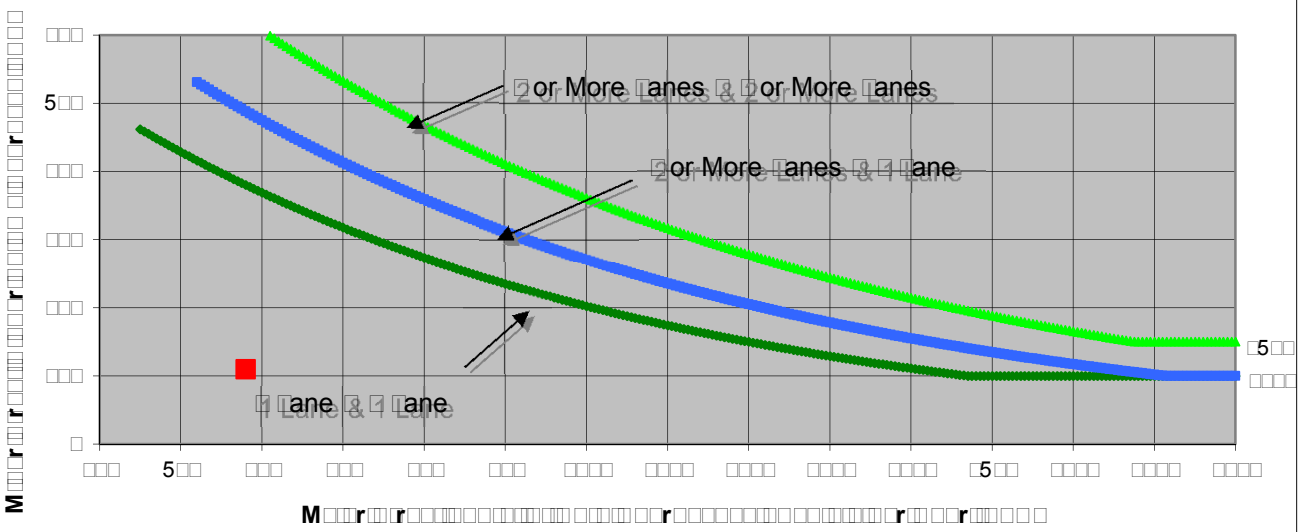
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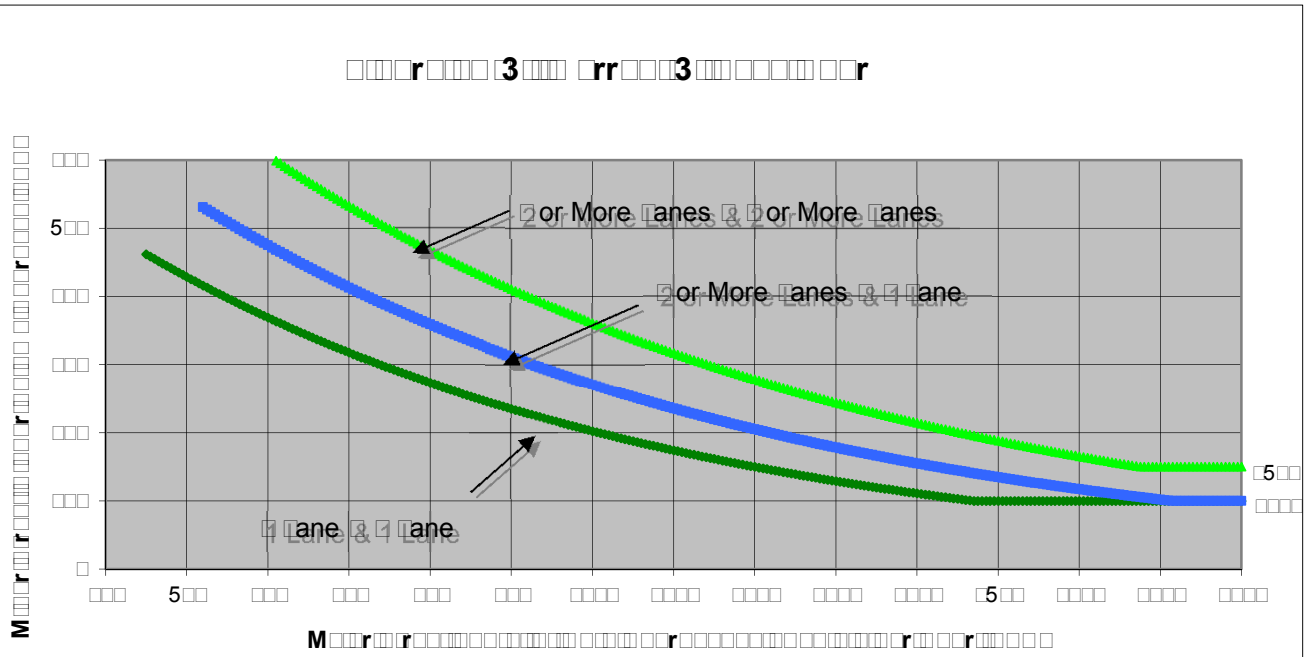
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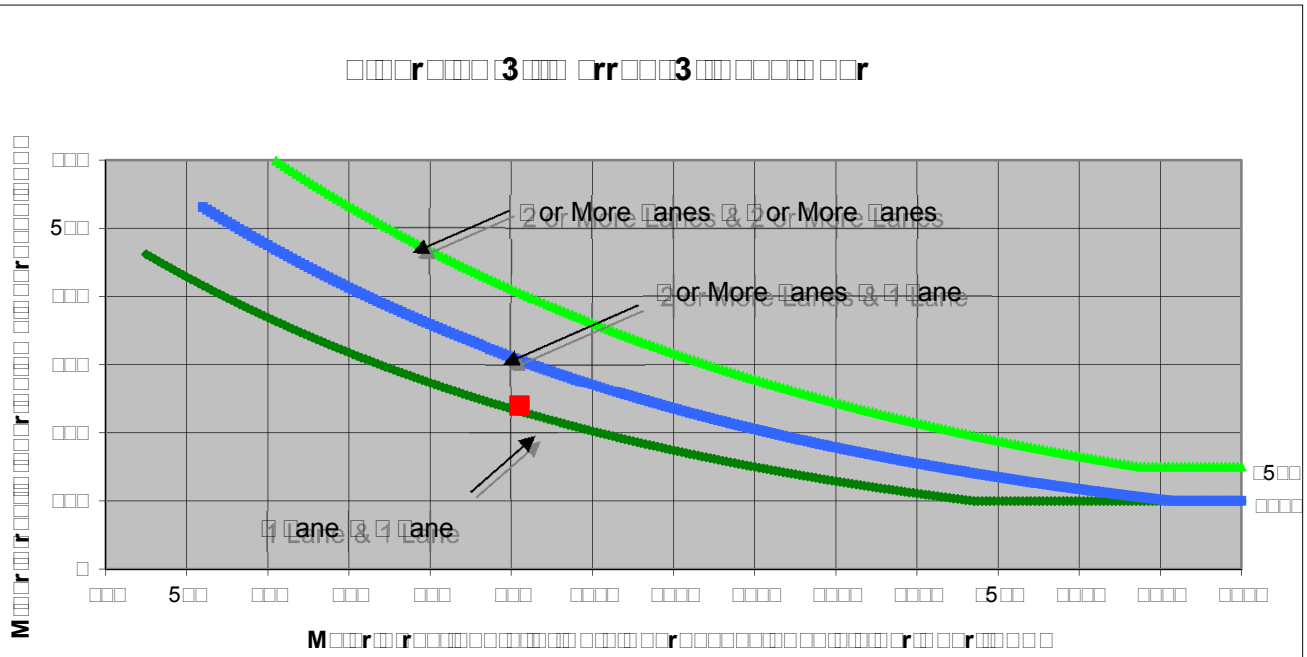

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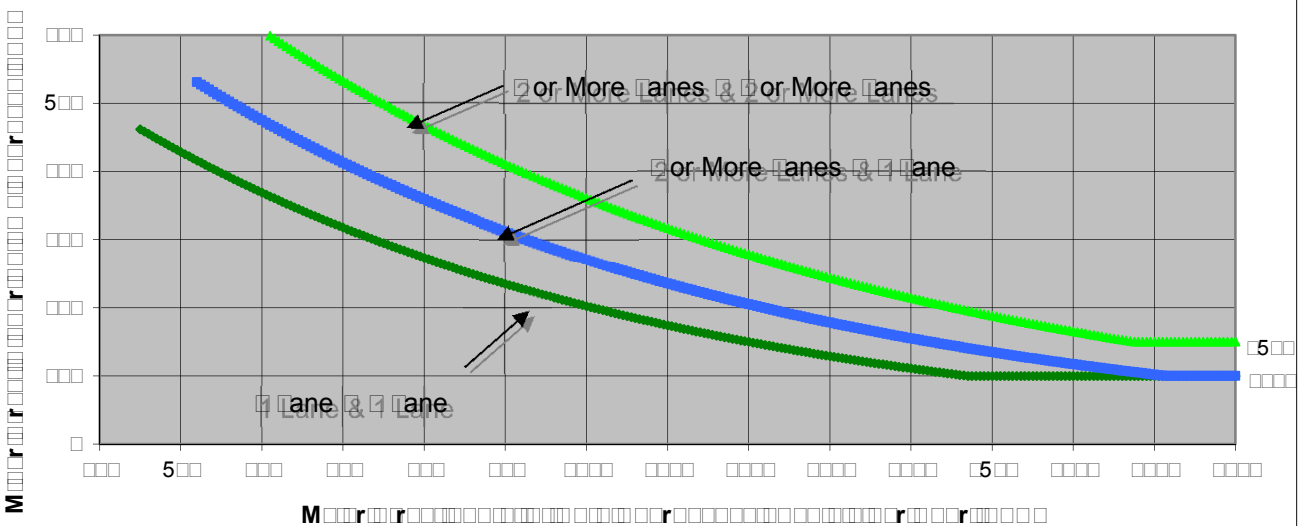

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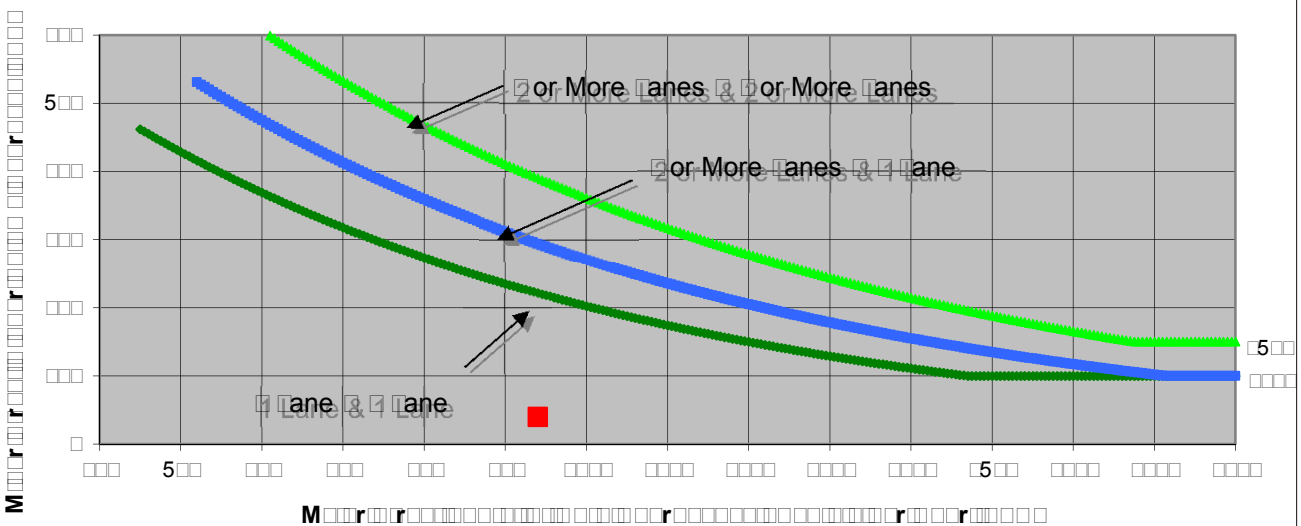

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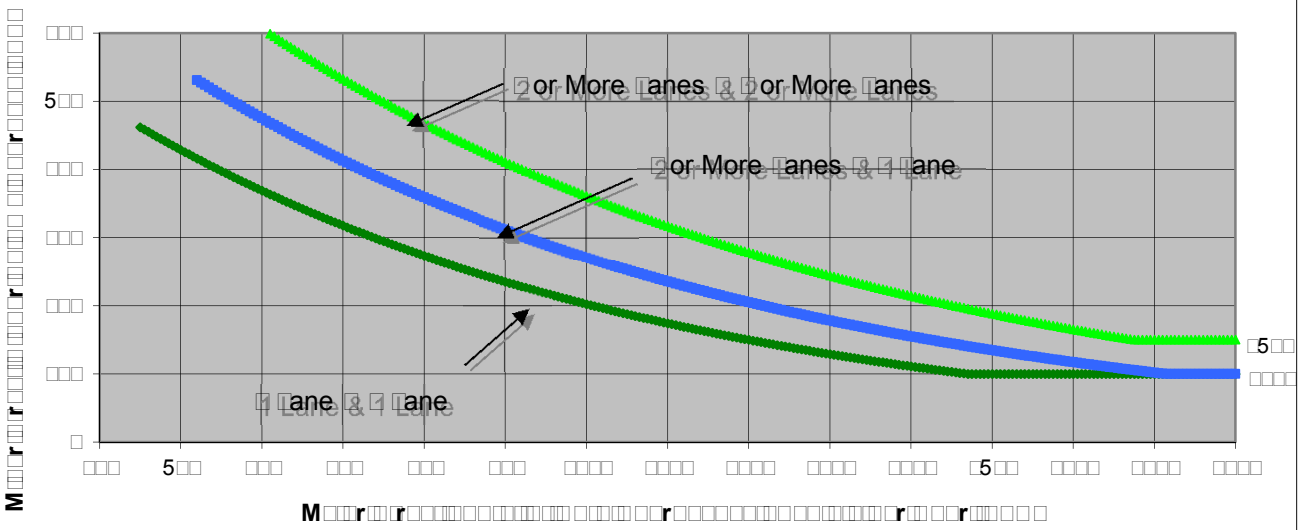
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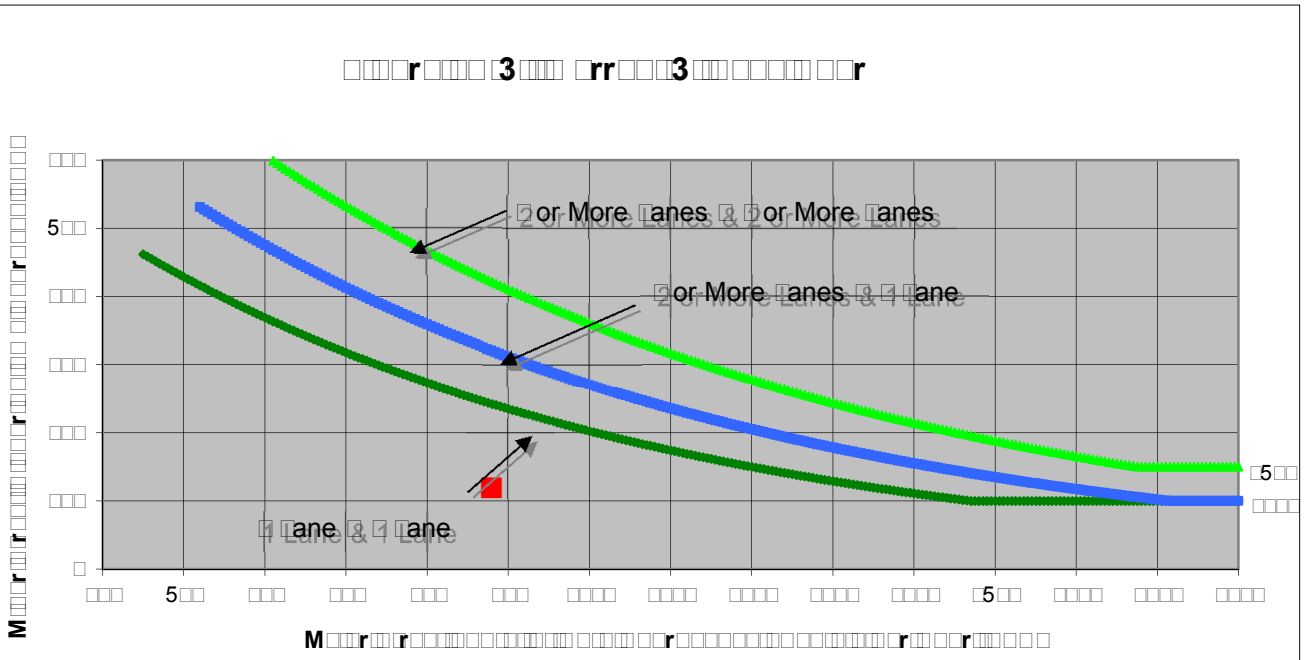
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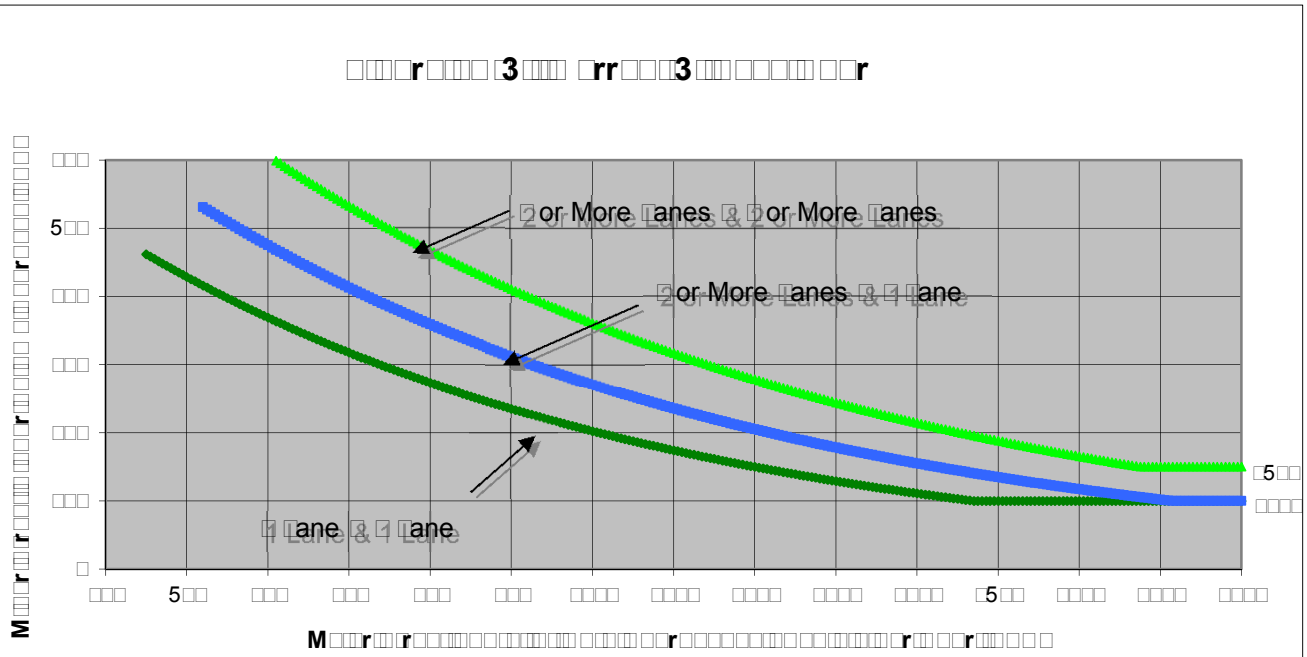
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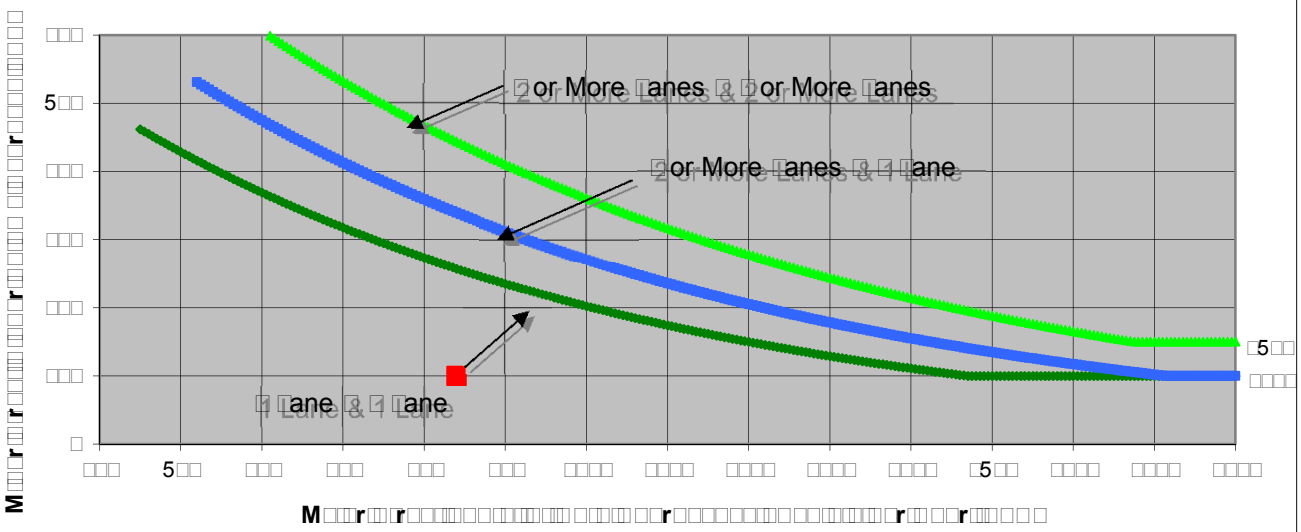

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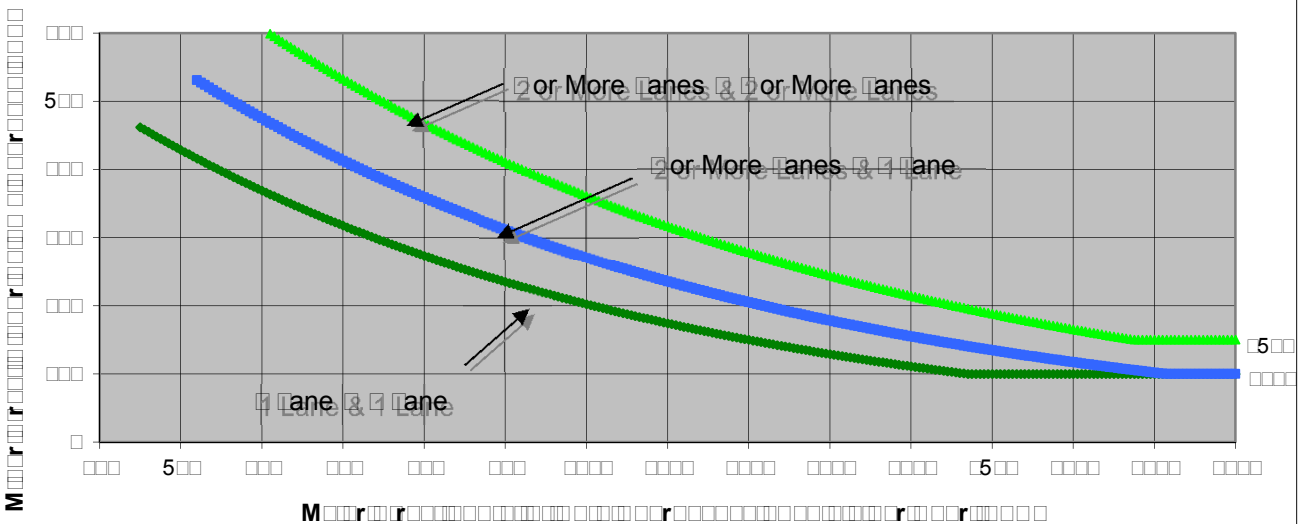

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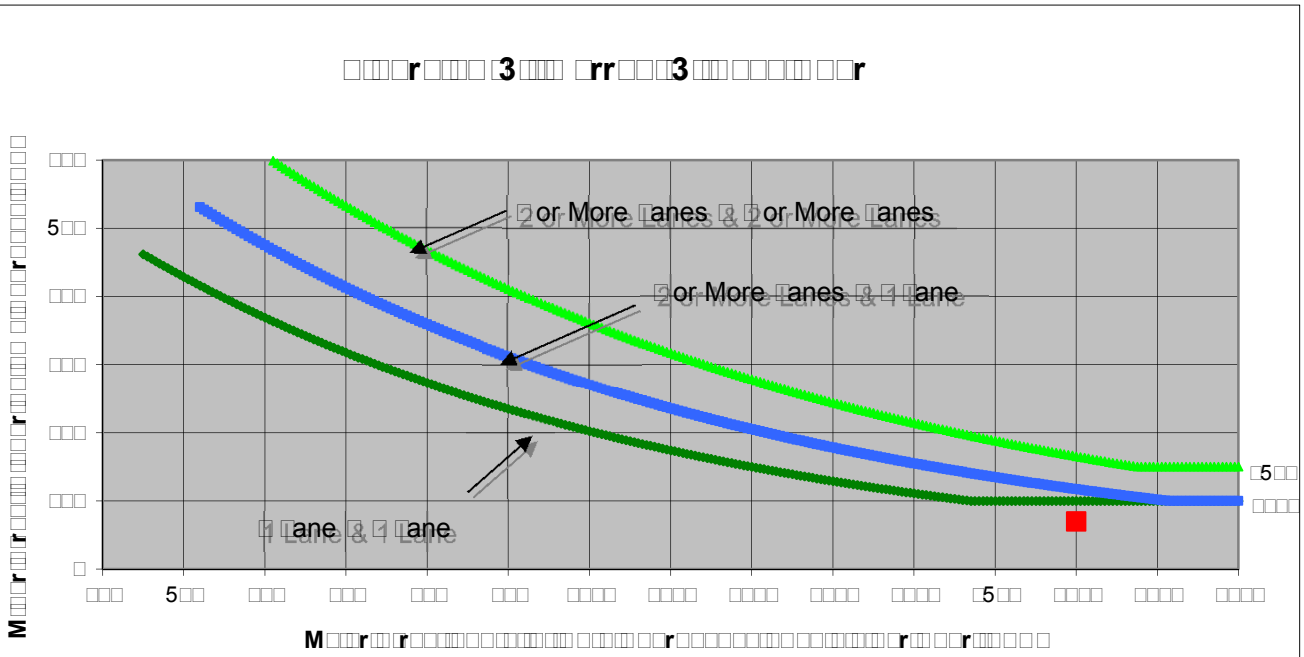
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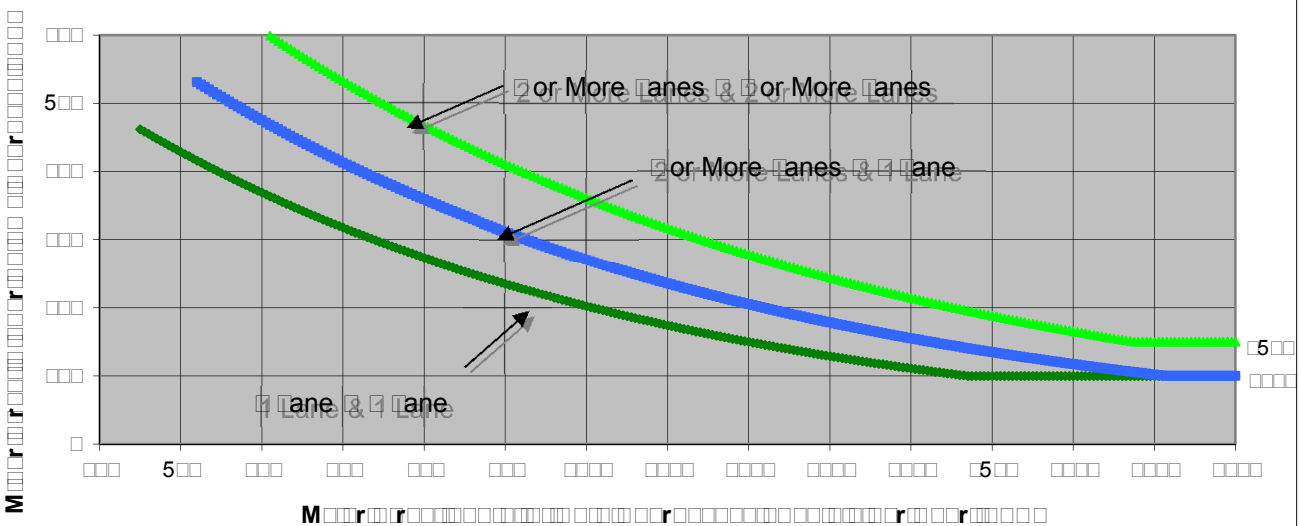
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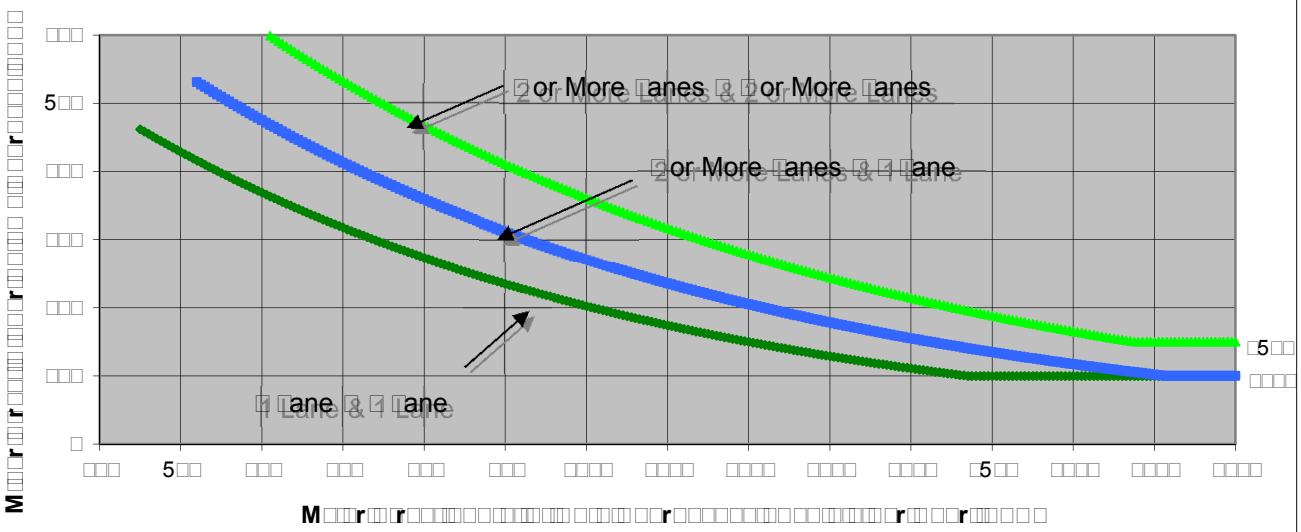

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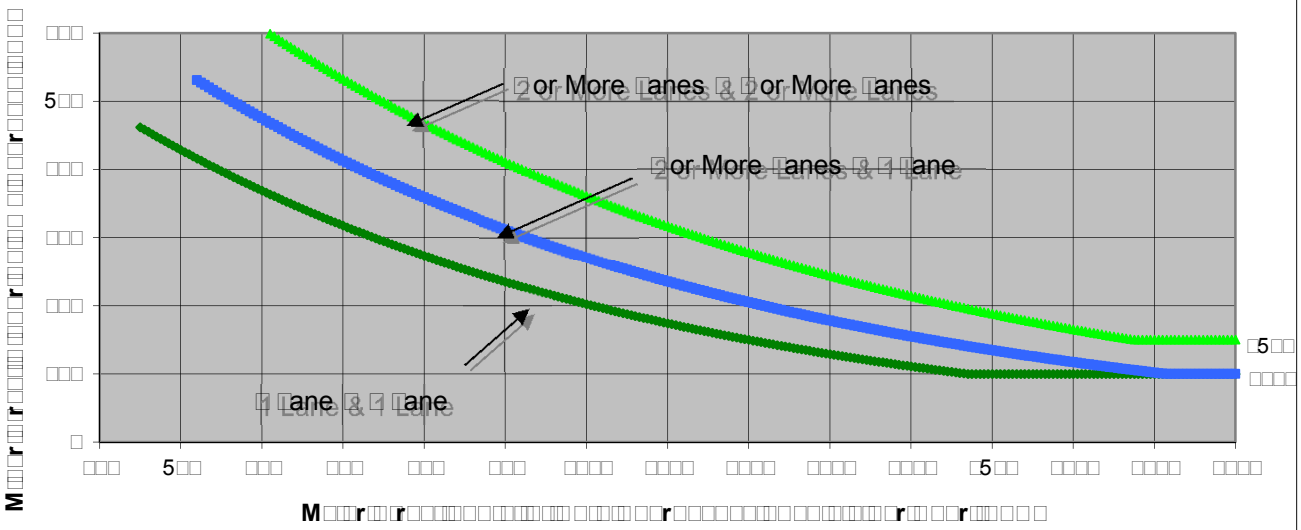
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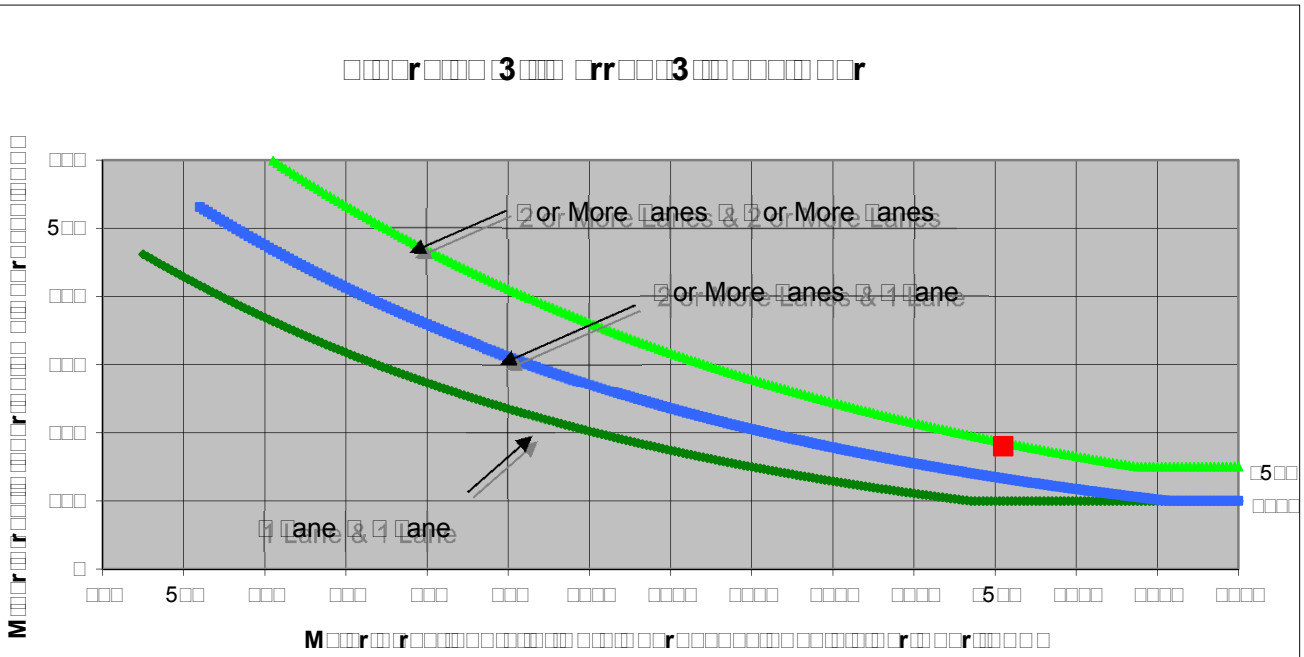
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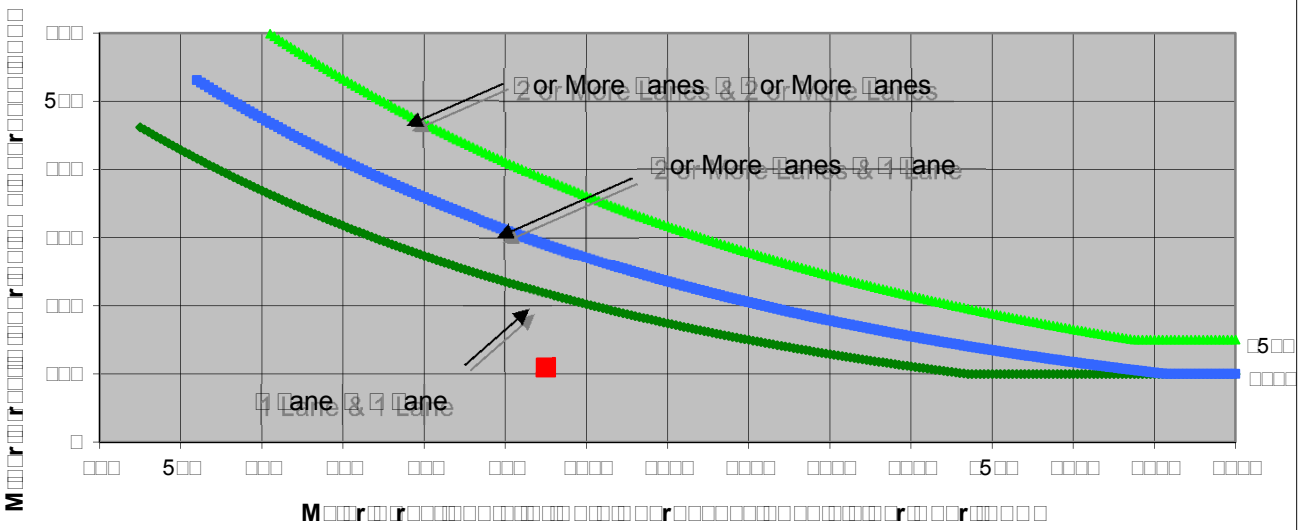

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Freeway Analysis Worksheets

FEHR PEERS

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd Off-ramp
Alternative	Cumulative
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,840	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	830	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,840	830		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,960	208		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,840	830		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,886	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,840	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,010	pcph	9,600	pcph	No
Ramp volume, v_R	830	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,977	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,886	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.88	
Density, D_R	36.1	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.373	
Space mean speed in ramp influence area, S_R	59.6	mph
Space mean speed in outer lanes, S_O	73.0	mph
Space mean speed for all vehicles, S	65.7	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Off-ramp to On-ramp
Alternative	Cumulative
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,010	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,753	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,010	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,753	pcphpl
Average passenger-car speed, S	66.5	mph
Volume-to-capacity ratio, v/c	0.73	
Density, D	26.4	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd On-ramp
Alternative	Cumulative
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,950	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	940	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,950	940		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,988	235		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,950	940		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.100		(Equation 13-3, 13-4, or 13-5)
v_{12} =	703	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,010	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,950	pcph	9,600	pcph	No
Ramp volume, v_R	940	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,153	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,804	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,744	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.81	
Density, D_R	31.7	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.450	
Space mean speed in ramp influence area, S_R	57.4	mph
Space mean speed in outer lanes, S_O	64.2	mph
Space mean speed for all vehicles, S	60.8	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd to Keller Ave
Alternative	Cumulative
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,950	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,988	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,950	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,988	pcphpl
Average passenger-car speed, S	62.8	mph
Volume-to-capacity ratio, v/c	0.83	
Density, D	31.6	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp
Alternative	Cumulative
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,950	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	470	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,950	470		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,988	118		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,950	470		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,731	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,950	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,480	pcph	9,600	pcph	No
Ramp volume, v_R	470	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,109	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,731	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.85	
Density, D_R	34.5	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.340	
Space mean speed in ramp influence area, S_R	60.5	mph
Space mean speed in outer lanes, S_O	72.5	mph
Space mean speed for all vehicles, S	66.3	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp to On-ramp
Alternative	Cumulative
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,480	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,870	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,480	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,870	pcphpl
Average passenger-car speed, S	64.8	mph
Volume-to-capacity ratio, v/c	0.78	
Density, D	28.9	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave On-ramp
Alternative	Cumulative
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,860	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	380	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,860	380		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,965	95		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,860	380		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.170		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,274	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,480	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,860	pcph	9,600	pcph	No
Ramp volume, v_R	380	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,103	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,992	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,372	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.73	
Density, D_R	29.1	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.399	
Space mean speed in ramp influence area, S_R	58.8	mph
Space mean speed in outer lanes, S_O	63.7	mph
Space mean speed for all vehicles, S	61.5	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave to Edwards Ave
Alternative	Cumulative
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,860	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,965	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,860	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,965	pcphpl
Average passenger-car speed, S	63.2	mph
Volume-to-capacity ratio, v/c	0.82	
Density, D	31.1	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Edwards Ave On-ramp
Alternative	Cumulative
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,560	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	700	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,560	700		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,140	175		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,560	700		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.130		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,024	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,860	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,560	pcph	9,600	pcph	No
Ramp volume, v_R	700	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,418	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	3,144	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,844	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.84	
Density, D_R	32.6	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.467	
Space mean speed in ramp influence area, S_R	56.9	mph
Space mean speed in outer lanes, S_O	63.1	mph
Space mean speed for all vehicles, S	60.2	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Semminary Ave Off-ramp
Alternative	Cumulative
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,560	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	430	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,560	430		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,140	108		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,560	430		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,975	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,560	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,130	pcph	9,600	pcph	No
Ramp volume, v_R	430	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,293	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,975	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.90	
Density, D_R	36.6	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.337	
Space mean speed in ramp influence area, S_R	60.6	mph
Space mean speed in outer lanes, S_O	71.7	mph
Space mean speed for all vehicles, S	66.1	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB Off-ramp
Alternative	Cumulative
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,130	vph

Off Ramp Data

Type of diverge	Major	
Number of lanes in ramp	2	
Free-flow speed on ramp	65	mph
Volume on ramp	2,420	vph
Length of deceleration lane(s)	740	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,130	2,420		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,033	605		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,130	2,420		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.260		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,905	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,130	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,710	pcph	9,600	pcph	No
Ramp volume, v_R	2,420	pcph	4,700	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,113	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,905	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.89	
Density, D_R	35.6	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.256	
Space mean speed in ramp influence area, S_R	62.8	mph
Space mean speed in outer lanes, S_O	72.5	mph
Space mean speed for all vehicles, S	67.5	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB to Frontage Rd
Alternative	Cumulative
Time period	PM

Flow Inputs and Adjustments

Volume, V	5,710	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,428	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,710	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,428	pcphpl
Average passenger-car speed, S	69.4	mph
Volume-to-capacity ratio, v/c	0.59	
Density, D	20.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	CA-13 NB: I-580 WB to Calaveras Ave
Alternative	Cumulative
Time period	PM

Flow Inputs and Adjustments

Volume, V	2,420	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	605	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	2,420	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,210	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.50	
Density, D	17.3	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd Off-ramp
Alternative	Cumulative
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,300	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	860	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,300	860		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,075	215		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,300	860		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	4,104	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,300	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,440	pcph	9,600	pcph	No
Ramp volume, v_R	860	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,098	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	4,104	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.93	
Density, D_R	37.9	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.375	
Space mean speed in ramp influence area, S_R	59.5	mph
Space mean speed in outer lanes, S_O	72.5	mph
Space mean speed for all vehicles, S	65.4	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Off-ramp to On-ramp
Alternative	Cumulative
Time period	AM

Flow Inputs and Adjustments

Volume, V	7,440	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,860	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,440	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,860	pcphpl
Average passenger-car speed, S	64.9	mph
Volume-to-capacity ratio, v/c	0.78	
Density, D	28.6	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd On-ramp
Alternative	Cumulative
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,200	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	760	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,200	760		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,050	190		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,200	760		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.123		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	914	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,440	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,200	pcph	9,600	pcph	No
Ramp volume, v_R	760	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,263	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,976	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,736	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.81	
Density, D_R	31.8	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.449	
Space mean speed in ramp influence area, S_R	57.4	mph
Space mean speed in outer lanes, S_O	63.8	mph
Space mean speed for all vehicles, S	60.7	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd to Keller Ave
Alternative	Cumulative
Time period	AM

Flow Inputs and Adjustments

Volume, V	8,200	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	2,050	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	8,200	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,050	pcphpl
Average passenger-car speed, S	61.6	mph
Volume-to-capacity ratio, v/c	0.85	
Density, D	33.3	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp
Alternative	Cumulative
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,200	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	170	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,200	170		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,050	43		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,200	170		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,671	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,200	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,030	pcph	9,600	pcph	No
Ramp volume, v_R	170	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,264	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,671	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.83	
Density, D_R	34.0	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.313	
Space mean speed in ramp influence area, S_R	61.2	mph
Space mean speed in outer lanes, S_O	71.9	mph
Space mean speed for all vehicles, S	66.7	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp to On-ramp
Alternative	Cumulative
Time period	AM

Flow Inputs and Adjustments

Volume, V	8,030	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	2,008	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	8,030	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,008	pcphpl
Average passenger-car speed, S	62.4	mph
Volume-to-capacity ratio, v/c	0.84	
Density, D	32.2	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave On-ramp
Alternative	Cumulative
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,690	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	660	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,690	660		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,173	165		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,690	660		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.135		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,086	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,030	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,690	pcph	9,600	pcph	No
Ramp volume, v_R	660	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,472	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	3,212	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,872	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.84	
Density, D_R	32.9	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.472	
Space mean speed in ramp influence area, S_R	56.8	mph
Space mean speed in outer lanes, S_O	62.8	mph
Space mean speed for all vehicles, S	60.0	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave to Edwards Ave
Alternative	Cumulative
Time period	AM

Flow Inputs and Adjustments

Volume, V	8,690	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	2,173	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	8,690	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,173	pcphpl
Average passenger-car speed, S	59.0	mph
Volume-to-capacity ratio, v/c	0.91	
Density, D	36.8	pcpmpl
Level of service, LOS	E	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Edwards Ave On-ramp
Alternative	Cumulative
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	9,800	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	1,110	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	9,800	1,110		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,450	278		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	9,800	1,110		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.079		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	687	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,690	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	9,800	pcph	9,600	pcph	Yes
Ramp volume, v_R	1,110	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	4,002	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	3,476	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	4,586	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	1.00	
Density, D_R	-	pcpmpl
Level of service for ramp-freeway junction area of influence	F	

Speed Estimation

Intermediate speed variable, M_S or D_S	-	
Space mean speed in ramp influence area, S_R	-	mph
Space mean speed in outer lanes, S_O		mph
Space mean speed for all vehicles, S		mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Semminary Ave Off-ramp
Alternative	Cumulative
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	9,800	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	240	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	9,800	240		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,450	60		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	9,800	240		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	4,408	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	9,800	pcph	9,600	pcph	Yes
Exiting freeway volume, v_{FO}	9,560	pcph	9,600	pcph	No
Ramp volume, v_R	240	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,696	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	4,408	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	1.00	
Density, D_R	-	pcpmpl
Level of service for ramp-freeway junction area of influence	F	

Speed Estimation

Intermediate speed variable, M_S or D_S	-	
Space mean speed in ramp influence area, S_R	-	mph
Space mean speed in outer lanes, S_O		mph
Space mean speed for all vehicles, S		mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB Off-ramp
Alternative	Cumulative
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	9,560	vph

Off Ramp Data

Type of diverge	Major	
Number of lanes in ramp	2	
Free-flow speed on ramp	65	mph
Volume on ramp	2,360	vph
Length of deceleration lane(s)	740	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	9,560	2,360		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,390	590		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	9,560	2,360		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.260		(Equation 13-9, 13-10, or 13-11)
v_{12} =	4,232	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	9,560	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,200	pcph	9,600	pcph	No
Ramp volume, v_R	2,360	pcph	4,700	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,664	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	4,232	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.96	
Density, D_R	41.8	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.250	
Space mean speed in ramp influence area, S_R	63.0	mph
Space mean speed in outer lanes, S_O	70.3	mph
Space mean speed for all vehicles, S	66.9	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB to Frontage Rd
Alternative	Cumulative
Time period	AM

Flow Inputs and Adjustments

Volume, V	7,200	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,800	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,200	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,800	pcphpl
Average passenger-car speed, S	65.8	mph
Volume-to-capacity ratio, v/c	0.75	
Density, D	27.3	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	CA-13 NB: I-580 WB to Calaveras Ave
Alternative	Cumulative
Time period	AM

Flow Inputs and Adjustments

Volume, V	2,360	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	590	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	2,360	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,180	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.49	
Density, D	16.9	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave Off-ramp to CA-13 SB
Alternative	Cumulative No Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	5,360	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,340	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,360	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,340	pcphpl
Average passenger-car speed, S	69.8	mph
Volume-to-capacity ratio, v/c	0.56	
Density, D	19.2	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: CA-13 SB On-ramp
Alternative	Cumulative No Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,690	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	65	mph
Volume on ramp	2,330	vph
Length of acceleration lane(s)	600	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,690	2,330		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,923	583		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,690	2,330		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	-0.073		(Equation 13-3, 13-4, or 13-5)
v_{12} =	-394	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	5,360	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,690	pcph	9,600	pcph	No
Ramp volume, v_R	2,330	pcph	2,200	pcph	Yes
Outer lanes volume, v_3 or v_{av34}	2,877	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,144	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	4,474	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.97	
Density, D_R	-	pcpmpl
Level of service for ramp-freeway junction area of influence	F	

Speed Estimation

Intermediate speed variable, M_S or D_S	-	
Space mean speed in ramp influence area, S_R	-	mph
Space mean speed in outer lanes, S_O		mph
Space mean speed for all vehicles, S		mph

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave On-ramp
Alternative	Cumulative No Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,750	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	1,060	vph
Length of acceleration lane(s)	540	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,750	1,060		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,188	265		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,750	1,060		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.085		(Equation 13-3, 13-4, or 13-5)
v_{12} =	656	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,690	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,750	pcph	9,600	pcph	No
Ramp volume, v_R	1,060	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,517	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	3,076	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?	
v_{R12}	4,136	pcph	4,600	pcph	No	

Level of Service Determination

Volume-to-capacity ratio, v/c	0.90	
Density, D_R	33.9	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.516	
Space mean speed in ramp influence area, S_R	55.5	mph
Space mean speed in outer lanes, S_O	63.4	mph
Space mean speed for all vehicles, S	59.4	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave Off-ramp
Alternative	Cumulative No Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,750	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	550	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,750	550		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,188	138		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,750	550		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	4,125	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,750	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,200	pcph	9,600	pcph	No
Ramp volume, v_R	550	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,312	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	4,125	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.94	
Density, D_R	38.1	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.348	
Space mean speed in ramp influence area, S_R	60.3	mph
Space mean speed in outer lanes, S_O	71.7	mph
Space mean speed for all vehicles, S	65.8	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave To Keller Ave
Alternative	Cumulative No Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	8,200	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	2,050	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	8,200	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,050	pcphpl
Average passenger-car speed, S	61.6	mph
Volume-to-capacity ratio, v/c	0.85	
Density, D	33.3	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp
Alternative	Cumulative No Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,200	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	650	vph
Length of deceleration lane(s)	220	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,200	650		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,050	163		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,200	650		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,942	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,200	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,550	pcph	9,600	pcph	No
Ramp volume, v_R	650	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,129	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,942	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.90	
Density, D_R	36.2	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.357	
Space mean speed in ramp influence area, S_R	60.0	mph
Space mean speed in outer lanes, S_O	72.4	mph
Space mean speed for all vehicles, S	65.9	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp to On-ramp
Alternative	Cumulative No Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,550	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,888	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,550	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,888	pcphpl
Average passenger-car speed, S	64.5	mph
Volume-to-capacity ratio, v/c	0.79	
Density, D	29.3	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave On-ramp
Alternative	Cumulative No Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,120	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	570	vph
Length of acceleration lane(s)	380	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,120	570		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,030	143		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,120	570		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.147		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,106	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,550	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,120	pcph	9,600	pcph	No
Ramp volume, v_R	570	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,222	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	3,020	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,590	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.78	
Density, D_R	30.8	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.428	
Space mean speed in ramp influence area, S_R	58.0	mph
Space mean speed in outer lanes, S_O	63.6	mph
Space mean speed for all vehicles, S	61.0	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave to Golf Links Rd
Alternative	Cumulative No Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	8,120	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	2,030	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	8,120	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,030	pcphpl
Average passenger-car speed, S	62.0	mph
Volume-to-capacity ratio, v/c	0.85	
Density, D	32.7	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp
Alternative	Cumulative No Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,120	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	940	vph
Length of deceleration lane(s)	160	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,120	940		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,030	235		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,120	940		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	4,070	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,120	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,180	pcph	9,600	pcph	No
Ramp volume, v_R	940	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,025	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?	
v_{12A}	4,070	pcph	4,600	pcph	No	

Level of Service Determination

Volume-to-capacity ratio, v/c	0.93	
Density, D_R	37.8	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.383	
Space mean speed in ramp influence area, S_R	59.3	mph
Space mean speed in outer lanes, S_O	72.8	mph
Space mean speed for all vehicles, S	65.3	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp to On-ramp
Alternative	Cumulative No Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,180	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,795	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,180	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,795	pcphpl
Average passenger-car speed, S	65.9	mph
Volume-to-capacity ratio, v/c	0.75	
Density, D	27.2	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd On-ramp
Alternative	Cumulative No Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,900	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,975	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,900	pcph

Speed Inputs and Adjustments

Number of lanes, N	5	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	7,900	pcph	9,600	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	Yes
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,580	pcphpl
Average passenger-car speed, S	68.3	mph
Volume-to-capacity ratio, v/c	0.66	
Density, D	23.1	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	CA-13 SB: Calaveras Ave to Seminary Ave
Alternative	Cumulative No Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	2,600	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	650	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	2,600	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,300	pcphpl
Average passenger-car speed, S	69.9	mph
Volume-to-capacity ratio, v/c	0.54	
Density, D	18.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave Off-ramp to CA-13 SB
Alternative	Cumulative No Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	3,860	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	965	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	3,860	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	965	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.40	
Density, D	13.8	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: CA-13 SB On-ramp
Alternative	Cumulative No Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,820	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	65	mph
Volume on ramp	2,960	vph
Length of acceleration lane(s)	600	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,820	2,960		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,705	740		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,820	2,960		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	-0.049		(Equation 13-3, 13-4, or 13-5)
v_{12} =	-190	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	3,860	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,820	pcph	9,600	pcph	No
Ramp volume, v_R	2,960	pcph	2,200	pcph	Yes
Outer lanes volume, v_3 or v_{av34}	2,025	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	1,544	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	4,504	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.98	
Density, D_R	-	pcpmpl
Level of service for ramp-freeway junction area of influence	F	

Speed Estimation

Intermediate speed variable, M_S or D_S	-	
Space mean speed in ramp influence area, S_R	-	mph
Space mean speed in outer lanes, S_O		mph
Space mean speed for all vehicles, S		mph

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave On-ramp
Alternative	Cumulative No Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,350	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	530	vph
Length of acceleration lane(s)	540	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,350	530		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,838	133		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,350	530		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.152		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,034	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,820	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,350	pcph	9,600	pcph	No
Ramp volume, v_R	530	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,893	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,728	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,258	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.71	
Density, D_R	27.3	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.374	
Space mean speed in ramp influence area, S_R	59.5	mph
Space mean speed in outer lanes, S_O	64.4	mph
Space mean speed for all vehicles, S	62.2	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave Off-ramp
Alternative	Cumulative No Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,350	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	710	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,350	710		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,838	178		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,350	710		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,605	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,350	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,640	pcph	9,600	pcph	No
Ramp volume, v_R	710	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,872	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,605	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.82	
Density, D_R	33.6	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.362	
Space mean speed in ramp influence area, S_R	59.9	mph
Space mean speed in outer lanes, S_O	73.4	mph
Space mean speed for all vehicles, S	66.1	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave To Keller Ave
Alternative	Cumulative No Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,640	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,660	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,640	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,660	pcphpl
Average passenger-car speed, S	67.5	mph
Volume-to-capacity ratio, v/c	0.69	
Density, D	24.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp
Alternative	Cumulative No Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,640	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	440	vph
Length of deceleration lane(s)	220	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,640	440		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,660	110		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,640	440		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,143	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,640	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,200	pcph	9,600	pcph	No
Ramp volume, v_R	440	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,748	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,143	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.71	
Density, D_R	29.3	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.338	
Space mean speed in ramp influence area, S_R	60.5	mph
Space mean speed in outer lanes, S_O	73.9	mph
Space mean speed for all vehicles, S	66.9	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp to On-ramp
Alternative	Cumulative No Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,200	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,550	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,200	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,550	pcphpl
Average passenger-car speed, S	68.6	mph
Volume-to-capacity ratio, v/c	0.65	
Density, D	22.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave On-ramp
Alternative	Cumulative No Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,550	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	350	vph
Length of acceleration lane(s)	380	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,550	350		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,638	88		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,550	350		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.174		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,079	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,200	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,550	pcph	9,600	pcph	No
Ramp volume, v_R	350	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,560	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,480	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	2,830	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.62	
Density, D_R	25.0	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.353	
Space mean speed in ramp influence area, S_R	60.1	mph
Space mean speed in outer lanes, S_O	65.1	mph
Space mean speed for all vehicles, S	62.9	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave to Golf Links Rd
Alternative	Cumulative No Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,550	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,638	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,550	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,638	pcphpl
Average passenger-car speed, S	67.8	mph
Volume-to-capacity ratio, v/c	0.68	
Density, D	24.2	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp
Alternative	Cumulative No Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,550	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	1,010	vph
Length of deceleration lane(s)	160	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,550	1,010		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,638	253		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,550	1,010		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,425	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,550	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,540	pcph	9,600	pcph	No
Ramp volume, v_R	1,010	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,562	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,425	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.78	
Density, D_R	32.3	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.389	
Space mean speed in ramp influence area, S_R	59.1	mph
Space mean speed in outer lanes, S_O	74.6	mph
Space mean speed for all vehicles, S	65.6	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp to On-ramp
Alternative	Cumulative No Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	5,540	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,385	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,540	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,385	pcphpl
Average passenger-car speed, S	69.6	mph
Volume-to-capacity ratio, v/c	0.58	
Density, D	19.9	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd On-ramp
Alternative	Cumulative No Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,460	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,615	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,460	pcph

Speed Inputs and Adjustments

Number of lanes, N	5	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	6,460	pcph	9,600	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	Yes
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,292	pcphpl
Average passenger-car speed, S	69.9	mph
Volume-to-capacity ratio, v/c	0.54	
Density, D	18.5	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	CA-13 SB: Calaveras Ave to Seminary Ave
Alternative	Cumulative No Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	3,280	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	820	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	3,280	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,640	pcphpl
Average passenger-car speed, S	67.8	mph
Volume-to-capacity ratio, v/c	0.68	
Density, D	24.2	pcpmpl
Level of service, LOS	C	

APPENDIX V-E

TRIP INTERNALIZATION WORKSHEETS



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APPENDIX V-F

EXISTING PLUS PROJECT CONDITIONS ANALYSIS WORKSHEETS



Intersection Analysis Worksheets

FEHR PEERS

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	875	2	3	192	0	6	0	15	38	28	412
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	875	2	3	192	0	6	0	15	38	28	412

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	192	0	0	877	0	0	1088	1074	440	636	1075	193
Stage 1	-	-	-	-	-	-	876	876	-	198	198	-
Stage 2	-	-	-	-	-	-	212	198	-	438	877	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.218	-	-	2.22	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1381	-	-	766	-	-	181	219	566	376	219	848
Stage 1	-	-	-	-	-	-	311	366	-	803	737	-
Stage 2	-	-	-	-	-	-	789	737	-	568	365	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1380	-	-	765	-	-	83	218	566	365	218	847
Mov Cap-2 Maneuver	-	-	-	-	-	-	83	218	-	365	218	-
Stage 1	-	-	-	-	-	-	311	366	-	803	734	-
Stage 2	-	-	-	-	-	-	388	734	-	552	365	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	23.7	14.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	213	1380	-	-	765	-	-	284	847
HCM Lane V/C Ratio	0.099	-	-	-	0.004	-	-	0.232	0.486
HCM Control Delay (s)	23.7	0	-	-	9.7	-	-	21.5	13.2
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.9	2.7

Intersection	
Intersection Delay, s/veh	36.9
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	545	349	33	0	0	0	0	0	53	187	35
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	545	349	33	0	0	0	0	0	53	187	35
Number of Lanes	0	1	1	0	0	0	0	0	0	0	1	0

Approach	EB	NB
Opposing Approach		SB
Opposing Lanes	0	3
Conflicting Approach Left	SB	EB
Conflicting Lanes Left	3	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	47.9	20.8
HCM LOS	E	C

Lane	NBLn1	EBLn1	EBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	19%	100%	0%	100%	0%	0%
Vol Thru, %	68%	0%	91%	0%	100%	0%
Vol Right, %	13%	0%	9%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	275	545	382	76	22	134
LT Vol	53	545	0	76	0	0
Through Vol	187	0	349	0	22	0
RT Vol	35	0	33	0	0	134
Lane Flow Rate	275	545	382	76	22	134
Geometry Grp	8	8	8	7	7	7
Degree of Util (X)	0.587	1	0.683	0.167	0.045	0.25
Departure Headway (Hd)	7.682	7.005	6.439	7.913	7.414	6.715
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	470	518	562	455	485	536
Service Time	5.412	4.734	4.169	5.633	5.134	4.435
HCM Lane V/C Ratio	0.585	1.052	0.68	0.167	0.045	0.25
HCM Control Delay	20.8	66	22	12.2	10.5	11.7
HCM Lane LOS	C	F	C	B	B	B
HCM 95th-tile Q	3.7	13.9	5.2	0.6	0.1	1

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	76	22	134
Peak Hour Factor	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	76	22	134
Number of Lanes	0	1	1	1

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	
Conflicting Lanes Left	0
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	11.8
HCM LOS	B

Lane

Intersection	
Int Delay, s/veh	144.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	81	145	35	2	731	1	0	0	6	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	300	125	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	81	145	35	2	731	1	0	0	6	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1489	1472	9	1512	1474	1	11	0	0	1	0	0
Stage 1	9	9	-	1463	1463	-	-	-	-	-	-	-
Stage 2	1480	1463	-	49	11	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.218	-	-	2.22	-	-
Pot Cap-1 Maneuver	94	126	1072	~ 90	126	1083	1608	-	-	1620	-	-
Stage 1	1012	888	-	~ 135	192	-	-	-	-	-	-	-
Stage 2	132	192	-	964	886	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	38	69	1072	~ 54	69	1083	1608	-	-	1620	-	-
Mov Cap-2 Maneuver	38	69	-	~ 54	69	-	-	-	-	-	-	-
Stage 1	552	888	-	~ 74	105	-	-	-	-	-	-	-
Stage 2	48	105	-	891	886	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	$ 756.2	9.1	0
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1608	-	-	1072	54	73	1620	-	-
HCM Lane V/C Ratio	0.455	-	-	0.076	2.685	0.507	-	-	-
HCM Control Delay (s)	9.1	-	-	8.6	$ 924.5	96.8	0	-	-
HCM Lane LOS	A	-	-	A	F	F	A	-	-
HCM 95th %tile Q(veh)	2.4	-	-	0.2	15	2.1	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	170	439	107	13	486	53	241	389	28	52	137	111
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	170	439	47	13	486	50	241	389	25	52	137	0
Adj No. of Lanes	1	1	1	1	1	0	0	2	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	929	770	21	661	68	267	463	30	198	208	0
Arrive On Green	0.11	0.50	0.50	0.01	0.40	0.40	0.22	0.21	0.21	0.11	0.11	0.00
Sat Flow, veh/h	1774	1863	1543	1774	1658	171	1274	2211	146	1774	1863	0
Grp Volume(v), veh/h	170	439	47	13	0	536	340	0	315	52	137	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1543	1774	0	1829	1799	0	1832	1774	1863	0
Q Serve(g_s), s	10.9	17.9	1.8	0.8	0.0	28.9	21.4	0.0	19.0	3.1	8.2	0.0
Cycle Q Clear(g_c), s	10.9	17.9	1.8	0.8	0.0	28.9	21.4	0.0	19.0	3.1	8.2	0.0
Prop In Lane	1.00		1.00	1.00		0.09	0.71		0.08	1.00		0.00
Lane Grp Cap(c), veh/h	199	929	770	21	0	729	377	0	384	198	208	0
V/C Ratio(X)	0.85	0.47	0.06	0.62	0.00	0.74	0.90	0.00	0.82	0.26	0.66	0.00
Avail Cap(c_a), veh/h	275	929	770	275	0	729	458	0	466	291	305	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.88	0.00	0.88	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.6	19.1	15.0	57.1	0.0	29.7	44.3	0.0	43.8	47.1	49.4	0.0
Incr Delay (d2), s/veh	13.1	1.7	0.2	9.5	0.0	5.8	16.9	0.0	7.9	0.3	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	9.6	0.8	0.5	0.0	15.8	12.3	0.0	10.5	1.5	4.3	0.0
LnGrp Delay(d),s/veh	63.7	20.8	15.2	66.5	0.0	35.5	61.3	0.0	51.6	47.4	50.7	0.0
LnGrp LOS	E	C	B	E		D	E		D	D	D	
Approach Vol, veh/h		656			549			655			189	
Approach Delay, s/veh		31.5			36.2			56.7			49.8	
Approach LOS		C			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.4	63.4		18.0	17.0	51.7		29.3
Change Period (Y+Rc), s	4.0	5.5		5.0	4.0	5.5		5.0
Max Green Setting (Gmax), s	18.0	30.0		19.0	18.0	30.0		29.5
Max Q Clear Time (g_c+I1), s	2.8	19.9		10.2	12.9	30.9		23.4
Green Ext Time (p_c), s	0.0	2.1		0.2	0.1	0.0		0.9

Intersection Summary		
HCM 2010 Ctrl Delay		42.5
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	498	9	22	537	5	8	17	82	11	4	15
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	0.98		0.99	0.98		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	2	498	8	22	537	5	8	17	13	11	4	2
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	202	895	14	224	871	8	274	67	52	419	32	16
Arrive On Green	0.55	0.49	0.49	0.55	0.49	0.49	0.15	0.09	0.09	0.15	0.09	0.09
Sat Flow, veh/h	3	1822	29	33	1773	16	347	737	563	976	355	177
Grp Volume(v), veh/h	508	0	0	564	0	0	38	0	0	17	0	0
Grp Sat Flow(s),veh/h/ln	1854	0	0	1823	0	0	1647	0	0	1508	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.0	3.8	0.0	0.0	0.4	0.0	0.0	0.2	0.0	0.0
Prop In Lane	0.00		0.02	0.04		0.01	0.21		0.34	0.65		0.12
Lane Grp Cap(c), veh/h	1215	0	0	1205	0	0	485	0	0	552	0	0
V/C Ratio(X)	0.42	0.00	0.00	0.47	0.00	0.00	0.08	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	5963	0	0	5786	0	0	2155	0	0	2048	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.2	0.0	0.0	3.3	0.0	0.0	7.5	0.0	0.0	7.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	1.7	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0
LnGrp Delay(d),s/veh	3.3	0.0	0.0	3.4	0.0	0.0	7.5	0.0	0.0	7.2	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h		508			564			38			17	
Approach Delay, s/veh		3.3			3.4			7.5			7.2	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		13.3		4.6		13.3		4.6
Change Period (Y+Rc), s		4.5		3.0		4.5		3.0
Max Green Setting (Gmax), s		55.0		20.0		55.0		20.0
Max Q Clear Time (g_c+I1), s		5.3		2.2		5.8		2.4
Green Ext Time (p_c), s		3.0		0.1		3.0		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		3.5
HCM 2010 LOS		A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	625	37	21	680	53	69
Number	6	16	5	2	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1900
Adj Flow Rate, veh/h	625	35	21	680	53	20
Adj No. of Lanes	1	0	1	1	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	851	48	445	1207	102	38
Arrive On Green	0.49	0.49	0.03	0.65	0.08	0.08
Sat Flow, veh/h	1748	98	1774	1863	1227	463
Grp Volume(v), veh/h	0	660	21	680	74	0
Grp Sat Flow(s),veh/h/ln	0	1845	1774	1863	1713	0
Q Serve(g_s), s	0.0	8.5	0.1	6.0	1.2	0.0
Cycle Q Clear(g_c), s	0.0	8.5	0.1	6.0	1.2	0.0
Prop In Lane		0.05	1.00		0.72	0.27
Lane Grp Cap(c), veh/h	0	899	445	1207	142	0
V/C Ratio(X)	0.00	0.73	0.05	0.56	0.52	0.00
Avail Cap(c_a), veh/h	0	4094	755	4758	921	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.1	4.5	2.9	13.1	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.2	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.3	0.1	2.9	0.6	0.0
LnGrp Delay(d),s/veh	0.0	6.5	4.6	3.1	14.2	0.0
LnGrp LOS		A	A	A	B	
Approach Vol, veh/h	660			701	74	
Approach Delay, s/veh	6.5			3.1	14.2	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		23.3		6.5	4.8	18.5		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		76.0		16.0	6.0	66.0		
Max Q Clear Time (g_c+I1), s		8.0		3.2	2.1	10.5		
Green Ext Time (p_c), s		4.0		0.1	0.0	4.0		

Intersection Summary	
HCM 2010 Ctrl Delay	5.3
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	738	0	0	268	0	1	0	1	37	1	494
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	0	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	0	738	0	0	268	0	1	0	0	37	1	116
Adj No. of Lanes	1	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	5	1038	0	0	1038	0	5	0	0	301	8	141
Arrive On Green	0.00	0.56	0.00	0.00	0.56	0.00	0.00	0.00	0.00	0.15	0.17	0.17
Sat Flow, veh/h	1774	1863	0	0	1863	0	1774	0	0	1730	47	1579
Grp Volume(v), veh/h	0	738	0	0	268	0	1	0	0	38	0	116
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1863	0	1774	0	0	1776	0	1579
Q Serve(g_s), s	0.0	10.3	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.7	0.0	5.6
Cycle Q Clear(g_c), s	0.0	10.3	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.7	0.0	5.6
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00	0.97		1.00
Lane Grp Cap(c), veh/h	5	1038	0	0	1038	0	5	0	0	309	0	141
V/C Ratio(X)	0.00	0.71	0.00	0.00	0.26	0.00	0.20	0.00	0.00	0.12	0.00	0.82
Avail Cap(c_a), veh/h	698	1728	0	0	1833	0	598	0	0	949	0	710
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.8	0.0	0.0	4.1	0.0	17.7	0.0	0.0	12.8	0.0	54.8
Incr Delay (d2), s/veh	0.0	1.3	0.0	0.0	0.2	0.0	7.1	0.0	0.0	0.1	0.0	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.5	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.3	0.0	3.6
LnGrp Delay(d),s/veh	0.0	7.1	0.0	0.0	4.3	0.0	24.8	0.0	0.0	12.9	0.0	59.3
LnGrp LOS		A			A		C			B		E
Approach Vol, veh/h		738			268			1			154	
Approach Delay, s/veh		7.1			4.3			24.8			47.8	
Approach LOS		A			A			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		23.3		9.2	0.0	23.3		3.1
Change Period (Y+Rc), s		3.5		3.0	3.0	3.5		3.0
Max Green Setting (Gmax), s		33.0		19.0	14.0	35.0		12.0
Max Q Clear Time (g_c+I1), s		12.3		7.6	0.0	4.6		2.0
Green Ext Time (p_c), s		7.5		0.3	0.0	8.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.9
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	620	30	126	38	20	80	248	393	14	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863			
Adj Flow Rate, veh/h	620	30	77	38	20	11	248	393	4			
Adj No. of Lanes	1	1	0	0	1	1	1	1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Cap, veh/h	724	273	701	220	92	216	454	476	405			
Arrive On Green	0.41	0.60	0.60	0.15	0.14	0.14	0.26	0.26	0.26			
Sat Flow, veh/h	1774	455	1169	815	667	1567	1774	1863	1583			
Grp Volume(v), veh/h	620	0	107	58	0	11	248	393	4			
Grp Sat Flow(s),veh/h/ln	1774	0	1624	1482	0	1567	1774	1863	1583			
Q Serve(g_s), s	17.6	0.0	1.6	0.6	0.0	0.3	6.7	11.0	0.1			
Cycle Q Clear(g_c), s	17.6	0.0	1.6	1.7	0.0	0.3	6.7	11.0	0.1			
Prop In Lane	1.00		0.72	0.66		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	724	0	974	325	0	216	454	476	405			
V/C Ratio(X)	0.86	0.00	0.11	0.18	0.00	0.05	0.55	0.82	0.01			
Avail Cap(c_a), veh/h	1250	0	974	593	0	509	737	774	658			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	14.9	0.0	4.7	21.1	0.0	20.7	17.8	19.4	15.4			
Incr Delay (d2), s/veh	3.1	0.0	0.1	0.1	0.0	0.0	0.4	1.7	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	9.1	0.0	0.7	0.8	0.0	0.1	3.3	5.9	0.1			
LnGrp Delay(d),s/veh	18.0	0.0	4.8	21.2	0.0	20.8	18.2	21.1	15.4			
LnGrp LOS	B		A	C		C	B	C	B			
Approach Vol, veh/h		727			69			645				
Approach Delay, s/veh		16.0			21.1			19.9				
Approach LOS		B			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		37.7		17.7	25.6	12.1		
Change Period (Y+Rc), s		* 4.5		3.5	3.0	4.5		
Max Green Setting (Gmax), s		* 23		23.0	39.0	18.0		
Max Q Clear Time (g_c+I1), s		3.6		13.0	19.6	3.7		
Green Ext Time (p_c), s		0.7		1.1	3.0	0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	2	14	648	3	3	161
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	14	648	3	3	161

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	818	651	0	0	652	0
Stage 1	651	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	346	469	-	-	935	-
Stage 1	519	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	344	469	-	-	935	-
Mov Cap-2 Maneuver	344	-	-	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	860	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	449	935	-
HCM Lane V/C Ratio	-	-	0.036	0.003	-
HCM Control Delay (s)	-	-	13.3	8.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	2	2	4	770	646	3	0	160	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	2	2	4	770	646	3	0	160	1

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	2349	2349	648	161	0	0	649	0	0
Stage 1	2188	2188	-	-	-	-	-	-	-
Stage 2	161	161	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	40	36	470	1418	-	-	937	-	-
Stage 1	92	84	-	-	-	-	-	-	-
Stage 2	868	765	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	18	0	470	1418	-	-	937	-	-
Mov Cap-2 Maneuver	18	0	-	-	-	-	-	-	-
Stage 1	42	0	-	-	-	-	-	-	-
Stage 2	868	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	90.3	5.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1418	-	-	50	937	-	-
HCM Lane V/C Ratio	0.543	-	-	0.16	-	-	-
HCM Control Delay (s)	10.5	-	-	90.3	0	-	-
HCM Lane LOS	B	-	-	F	A	-	-
HCM 95th %tile Q(veh)	3.4	-	-	0.5	0	-	-

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	17	64	0	12	43	0	120	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	17	64	0	12	43	0	120	2
Number of Lanes	0	1	0	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.3	7	8.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	21%	98%
Vol Thru, %	22%	0%	2%
Vol Right, %	78%	79%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	55	81	122
LT Vol	0	17	120
Through Vol	12	0	2
RT Vol	43	64	0
Lane Flow Rate	55	81	122
Geometry Grp	1	1	1
Degree of Util (X)	0.057	0.086	0.146
Departure Headway (Hd)	3.699	3.804	4.315
Convergence, Y/N	Yes	Yes	Yes
Cap	958	927	830
Service Time	1.76	1.891	2.35
HCM Lane V/C Ratio	0.057	0.087	0.147
HCM Control Delay	7	7.3	8.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.5

Intersection	
Intersection Delay, s/veh	18
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	0	132	117	0	368	50	0	0	0	0	0	0	193	205	37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	132	117	0	368	50	0	0	0	0	0	0	193	205	37
Number of Lanes	0	0	1	0	0	1	1	0	0	0	0	0	0	0	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	14.3	22.4	16
HCM LOS	B	C	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	65%	0%
Vol Thru, %	53%	0%	100%	35%	73%
Vol Right, %	47%	0%	0%	0%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	249	368	50	296	140
LT Vol	0	368	0	193	0
Through Vol	132	0	50	103	103
RT Vol	117	0	0	0	37
Lane Flow Rate	249	368	50	296	140
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.439	0.699	0.088	0.566	0.247
Departure Headway (Hd)	6.34	6.838	6.33	6.895	6.375
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	565	526	565	523	562
Service Time	4.401	4.595	4.087	4.653	4.132
HCM Lane V/C Ratio	0.441	0.7	0.088	0.566	0.249
HCM Control Delay	14.3	24.1	9.7	18.3	11.2
HCM Lane LOS	B	C	A	C	B
HCM 95th-tile Q	2.2	5.5	0.3	3.5	1

Intersection	
Intersection Delay, s/veh	58.5
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	117	107	101	0	29	243	368	0	68	934	165	0	28	27	107
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	117	107	101	0	29	243	368	0	68	934	165	0	28	27	107
Number of Lanes	0	0	1	0	0	0	2	0	0	0	2	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	34.9	57.1	71.4	18.6
HCM LOS	D	F	F	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	13%	0%	36%	19%	0%	17%
Vol Thru, %	87%	74%	33%	81%	25%	17%
Vol Right, %	0%	26%	31%	0%	75%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	535	632	325	151	490	162
LT Vol	68	0	117	29	0	28
Through Vol	467	467	107	122	122	27
RT Vol	0	165	101	0	368	107
Lane Flow Rate	535	632	325	150	490	162
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	1	1	0.769	0.35	1	0.413
Departure Headway (Hd)	8.278	8.031	8.523	8.371	7.748	9.17
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	444	455	423	429	465	390
Service Time	5.978	5.731	6.588	6.152	5.53	7.267
HCM Lane V/C Ratio	1.205	1.389	0.768	0.35	1.054	0.415
HCM Control Delay	72	70.8	34.9	15.6	69.9	18.6
HCM Lane LOS	F	F	D	C	F	C
HCM 95th-tile Q	12.8	13	6.5	1.5	13.1	2

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	22	213	33	3	7	376	3	0	126	0	11	0	3	0	59
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	22	213	33	3	7	376	3	0	126	0	11	0	3	0	59
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	9.6	10.9	11.5	9.1
HCM LOS	A	B	B	A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	92%	100%	0%	0%	100%	0%	0%	5%
Vol Thru, %	0%	0%	100%	68%	0%	100%	98%	0%
Vol Right, %	8%	0%	0%	32%	0%	0%	2%	95%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	137	22	142	104	10	251	128	62
LT Vol	126	22	0	0	10	0	0	3
Through Vol	0	0	142	71	0	251	125	0
RT Vol	11	0	0	33	0	0	3	59
Lane Flow Rate	137	22	142	104	10	251	128	62
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.251	0.038	0.224	0.157	0.017	0.379	0.193	0.099
Departure Headway (Hd)	6.601	6.176	5.67	5.445	6.056	5.551	5.534	5.734
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	547	582	635	660	595	652	652	627
Service Time	4.316	3.892	3.386	3.161	3.756	3.251	3.234	3.45
HCM Lane V/C Ratio	0.25	0.038	0.224	0.158	0.017	0.385	0.196	0.099
HCM Control Delay	11.5	9.1	10	9.2	8.9	11.6	9.6	9.1
HCM Lane LOS	B	A	A	A	A	B	A	A
HCM 95th-tile Q	1	0.1	0.9	0.6	0.1	1.8	0.7	0.3

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	98	133	0	1	292	18	2	0	1	7	1	92
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	98	133	0	1	292	18	2	0	1	7	1	92

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	310	0	0	133	0	0	478	641	69	566	632	157
Stage 1	-	-	-	-	-	-	329	329	-	303	303	-
Stage 2	-	-	-	-	-	-	149	312	-	263	329	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1247	-	-	1449	-	-	470	391	980	407	396	861
Stage 1	-	-	-	-	-	-	658	645	-	681	662	-
Stage 2	-	-	-	-	-	-	838	656	-	719	645	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1245	-	-	1447	-	-	393	360	978	381	364	860
Mov Cap-2 Maneuver	-	-	-	-	-	-	393	360	-	381	364	-
Stage 1	-	-	-	-	-	-	606	594	-	627	661	-
Stage 2	-	-	-	-	-	-	745	655	-	661	594	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.5	0	12.4	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	491	1245	-	-	1447	-	-	781
HCM Lane V/C Ratio	0.006	0.079	-	-	0.001	-	-	0.128
HCM Control Delay (s)	12.4	8.1	-	-	7.5	0	-	10.3
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0.3	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	13.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	154	0	22	1	0	11	0	1002	0	0	157	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	12	12	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	154	0	22	1	0	11	0	1002	0	0	157	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1165	1159	169	1159	1159	1014	157	0	0	1002	0	0
Stage 1	157	157	-	1002	1002	-	-	-	-	-	-	-
Stage 2	1008	1002	-	157	157	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	171	196	875	173	196	290	1423	-	-	691	-	-
Stage 1	845	768	-	292	320	-	-	-	-	-	-	-
Stage 2	290	320	-	845	768	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	163	196	866	167	196	287	1409	-	-	684	-	-
Mov Cap-2 Maneuver	163	196	-	167	196	-	-	-	-	-	-	-
Stage 1	845	768	-	292	320	-	-	-	-	-	-	-
Stage 2	276	320	-	815	768	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	99.5	18.9	0	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1409	-	-	163	866	271	684	-	-
HCM Lane V/C Ratio	-	-	-	0.945	0.025	0.044	-	-	-
HCM Control Delay (s)	0	-	-	112.4	9.3	18.9	0	-	-
HCM Lane LOS	A	-	-	F	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	7.1	0.1	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	158	26	86	213	122	47	576	71	79	366	46
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.97		0.95	1.00		0.95	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	63	158	19	86	213	98	47	576	65	79	366	41
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	153	340	37	147	286	122	76	690	78	101	715	80
Arrive On Green	0.33	0.30	0.30	0.33	0.30	0.30	0.04	0.42	0.42	0.06	0.44	0.44
Sat Flow, veh/h	294	1137	123	283	955	406	1774	1635	185	1774	1638	184
Grp Volume(v), veh/h	240	0	0	397	0	0	47	0	641	79	0	407
Grp Sat Flow(s),veh/h/ln	1553	0	0	1644	0	0	1774	0	1820	1774	0	1822
Q Serve(g_s), s	0.0	0.0	0.0	6.8	0.0	0.0	1.8	0.0	22.0	3.1	0.0	11.4
Cycle Q Clear(g_c), s	7.9	0.0	0.0	14.6	0.0	0.0	1.8	0.0	22.0	3.1	0.0	11.4
Prop In Lane	0.26		0.08	0.22		0.25	1.00		0.10	1.00		0.10
Lane Grp Cap(c), veh/h	575	0	0	602	0	0	76	0	768	101	0	795
V/C Ratio(X)	0.42	0.00	0.00	0.66	0.00	0.00	0.62	0.00	0.83	0.78	0.00	0.51
Avail Cap(c_a), veh/h	760	0	0	793	0	0	177	0	768	177	0	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.69	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.6	0.0	0.0	21.9	0.0	0.0	32.9	0.0	18.1	32.6	0.0	14.3
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.0	0.0	3.0	0.0	10.4	4.8	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0	6.5	0.0	0.0	1.0	0.0	13.1	1.6	0.0	6.2
LnGrp Delay(d),s/veh	19.7	0.0	0.0	22.2	0.0	0.0	36.0	0.0	28.5	37.4	0.0	16.7
LnGrp LOS	B			C			D		C	D		B
Approach Vol, veh/h		240			397			688			486	
Approach Delay, s/veh		19.7			22.2			29.0			20.0	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	7.0	37.0		26.0	8.0	36.0
Change Period (Y+Rc), s		5.0	4.0	6.5		5.0	4.0	6.5
Max Green Setting (Gmax), s		29.5	7.0	18.0		29.5	7.0	18.0
Max Q Clear Time (g_c+I1), s		9.9	3.8	13.4		16.6	5.1	24.0
Green Ext Time (p_c), s		1.7	0.0	1.4		1.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	87	187	58	53	239	158	53	399	58	80	184	63
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.99	0.99		0.94	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1937	1900	1900	1937	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	87	187	47	53	239	131	53	399	41	80	184	29
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	252	389	86	169	364	184	197	838	84	293	570	95
Arrive On Green	0.37	0.34	0.34	0.37	0.34	0.34	0.32	0.29	0.29	0.32	0.29	0.29
Sat Flow, veh/h	330	1147	253	135	1073	542	219	2846	287	420	1938	321
Grp Volume(v), veh/h	321	0	0	423	0	0	261	0	232	146	0	147
Grp Sat Flow(s),veh/h/ln	1731	0	0	1749	0	0	1727	0	1624	1054	0	1625
Q Serve(g_s), s	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	3.9	0.8	0.0	2.3
Cycle Q Clear(g_c), s	4.3	0.0	0.0	6.5	0.0	0.0	3.7	0.0	3.9	4.6	0.0	2.3
Prop In Lane	0.27		0.15	0.13		0.31	0.20		0.18	0.55		0.20
Lane Grp Cap(c), veh/h	780	0	0	771	0	0	693	0	478	512	0	478
V/C Ratio(X)	0.41	0.00	0.00	0.55	0.00	0.00	0.38	0.00	0.49	0.29	0.00	0.31
Avail Cap(c_a), veh/h	1667	0	0	1752	0	0	1923	0	1686	1408	0	1687
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.5	0.0	0.0	9.2	0.0	0.0	9.4	0.0	9.5	9.0	0.0	9.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.3	0.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	3.0	0.0	0.0	1.8	0.0	1.7	1.0	0.0	1.0
LnGrp Delay(d),s/veh	8.6	0.0	0.0	9.4	0.0	0.0	9.5	0.0	9.8	9.1	0.0	9.1
LnGrp LOS	A			A			A		A	A		A
Approach Vol, veh/h		321			423			493			293	
Approach Delay, s/veh		8.6			9.4			9.6			9.1	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		15.6		17.1		15.6		17.1
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		30.0		34.0		30.0
Max Q Clear Time (g_c+I1), s		5.9		8.5		6.6		6.3
Green Ext Time (p_c), s		1.9		2.1		1.9		2.1

Intersection Summary		
HCM 2010 Ctrl Delay		9.3
HCM 2010 LOS		A

Intersection	
Int Delay, s/veh	10.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	41	284	24	52	395	24
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	284	24	52	395	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	41	0	141	46
Stage 1	-	-	-	-	41	-
Stage 2	-	-	-	-	100	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1568	-	852	1023
Stage 1	-	0	-	-	981	-
Stage 2	-	0	-	-	924	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1561	-	838	1019
Mov Cap-2 Maneuver	-	-	-	-	838	-
Stage 1	-	-	-	-	981	-
Stage 2	-	-	-	-	909	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	847	-	1561	-
HCM Lane V/C Ratio	0.495	-	0.015	-
HCM Control Delay (s)	13.3	-	7.3	0
HCM Lane LOS	B	-	A	A
HCM 95th %tile Q(veh)	2.8	-	0	-

Intersection	
Intersection Delay, s/veh	11.5
Intersection LOS	B

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	57	212	0	213	33	0	199	149
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	57	212	0	213	33	0	199	149
Number of Lanes	0	1	1	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10.4	10.7	12.9
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	57%
Vol Thru, %	87%	0%	0%	43%
Vol Right, %	13%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	246	57	212	348
LT Vol	0	57	0	199
Through Vol	213	0	0	149
RT Vol	33	0	212	0
Lane Flow Rate	246	57	212	348
Geometry Grp	2	7	7	2
Degree of Util (X)	0.341	0.104	0.314	0.488
Departure Headway (Hd)	5.095	6.554	5.339	5.047
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	711	550	678	706
Service Time	3.095	4.254	3.039	3.144
HCM Lane V/C Ratio	0.346	0.104	0.313	0.493
HCM Control Delay	10.7	10	10.5	12.9
HCM Lane LOS	B	A	B	B
HCM 95th-tile Q	1.5	0.3	1.3	2.7

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	237	2	68	263	4	23
Conflicting Peds, #/hr	0	7	7	0	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	237	2	68	263	4	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	245	0	512	133
Stage 1	-	-	-	-	244	-
Stage 2	-	-	-	-	268	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1318	-	491	892
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	753	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1310	-	460	882
Mov Cap-2 Maneuver	-	-	-	-	460	-
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	710	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	776	-	-	1310	-
HCM Lane V/C Ratio	0.035	-	-	0.052	-
HCM Control Delay (s)	9.8	-	-	7.9	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	13	19	41	13	20	27	63	143	54	215	26
Conflicting Peds, #/hr	0	0	56	56	0	0	78	0	0	0	0	78
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	13	19	41	13	20	27	63	143	54	215	26

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	582	565	255	451	578	197	297	0	0	119	0	0
Stage 1	392	392	-	173	173	-	-	-	-	-	-	-
Stage 2	190	173	-	278	405	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.14	-	-	4.12	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.22	-	-	2.218	-	-
Pot Cap-1 Maneuver	410	433	745	505	426	843	1261	-	-	1469	-	-
Stage 1	605	606	-	828	755	-	-	-	-	-	-	-
Stage 2	811	755	-	706	598	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	329	368	664	405	362	751	1179	-	-	1374	-	-
Mov Cap-2 Maneuver	329	368	-	405	362	-	-	-	-	-	-	-
Stage 1	562	555	-	769	701	-	-	-	-	-	-	-
Stage 2	706	701	-	602	548	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.2	14.5	0.9	1.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1179	-	-	473	452	1374	-	-
HCM Lane V/C Ratio	0.023	-	-	0.076	0.164	0.039	-	-
HCM Control Delay (s)	8.1	0	-	13.2	14.5	7.7	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	28	182	844	65	9	163
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	182	844	65	9	163

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1058	878	0	0	909	0
Stage 1	877	-	-	-	-	-
Stage 2	181	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	249	347	-	-	749	-
Stage 1	407	-	-	-	-	-
Stage 2	850	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	246	347	-	-	748	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	407	-	-	-	-	-
Stage 2	838	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.7	0	0.5
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	246	347	748	-
HCM Lane V/C Ratio	-	-	0.114	0.524	0.012	-
HCM Control Delay (s)	-	-	21.5	26.3	9.9	0
HCM Lane LOS	-	-	C	D	A	A
HCM 95th %tile Q(veh)	-	-	0.4	2.9	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	1	66	840	53	8	181
Conflicting Peds, #/hr	0	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	66	840	53	8	181

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1065	869	0	0	894	0
Stage 1	868	-	-	-	-	-
Stage 2	197	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	246	351	-	-	759	-
Stage 1	411	-	-	-	-	-
Stage 2	836	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	243	350	-	-	758	-
Mov Cap-2 Maneuver	243	-	-	-	-	-
Stage 1	411	-	-	-	-	-
Stage 2	825	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.7	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	350	758	-
HCM Lane V/C Ratio	-	-	0.189	0.011	-
HCM Control Delay (s)	-	-	17.7	9.8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	34	78	718	32	30	195
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	78	718	32	30	195

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	989	736	0	0	750	0
Stage 1	734	-	-	-	-	-
Stage 2	255	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	274	419	-	-	859	-
Stage 1	475	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	263	418	-	-	858	-
Mov Cap-2 Maneuver	263	-	-	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	756	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.7	0	1.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	355	858	-
HCM Lane V/C Ratio	-	-	0.315	0.035	-
HCM Control Delay (s)	-	-	19.7	9.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.1	-

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	12	59	688	4	21	214
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	59	688	4	21	214

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	946	690	0	0	692	0
Stage 1	690	-	-	-	-	-
Stage 2	256	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	290	445	-	-	903	-
Stage 1	498	-	-	-	-	-
Stage 2	787	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	282	445	-	-	903	-
Mov Cap-2 Maneuver	282	-	-	-	-	-
Stage 1	498	-	-	-	-	-
Stage 2	767	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	0.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	405	903	-
HCM Lane V/C Ratio	-	-	0.175	0.023	-
HCM Control Delay (s)	-	-	15.8	9.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	106	415	64	129	637	185	155	428	149	154	372	144
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.99	1.00		0.96	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	106	415	52	129	637	100	155	428	39	154	372	107
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	139	1033	128	165	1214	535	196	917	392	194	694	196
Arrive On Green	0.08	0.33	0.33	0.09	0.34	0.34	0.11	0.26	0.26	0.11	0.26	0.26
Sat Flow, veh/h	1774	3150	392	1774	3539	1560	1774	3539	1513	1774	2687	760
Grp Volume(v), veh/h	106	232	235	129	637	100	155	428	39	154	243	236
Grp Sat Flow(s),veh/h/ln	1774	1770	1772	1774	1770	1560	1774	1770	1513	1774	1770	1678
Q Serve(g_s), s	4.5	7.7	7.8	5.4	11.0	3.4	6.5	7.7	1.5	6.4	9.0	9.2
Cycle Q Clear(g_c), s	4.5	7.7	7.8	5.4	11.0	3.4	6.5	7.7	1.5	6.4	9.0	9.2
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	139	580	581	165	1214	535	196	917	392	194	457	433
V/C Ratio(X)	0.77	0.40	0.40	0.78	0.52	0.19	0.79	0.47	0.10	0.79	0.53	0.55
Avail Cap(c_a), veh/h	467	769	769	350	1537	677	397	1165	498	350	582	552
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	19.7	19.8	33.7	20.0	17.5	32.9	23.7	21.4	33.0	24.2	24.3
Incr Delay (d2), s/veh	8.5	0.4	0.5	7.8	0.4	0.2	7.0	0.4	0.1	7.2	1.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	3.8	3.9	3.0	5.4	1.5	3.5	3.8	0.6	3.6	4.5	4.4
LnGrp Delay(d),s/veh	42.8	20.2	20.2	41.5	20.4	17.7	40.0	24.1	21.5	40.2	25.2	25.4
LnGrp LOS	D	C	C	D	C	B	D	C	C	D	C	C
Approach Vol, veh/h		573			866			622			633	
Approach Delay, s/veh		24.4			23.2			27.9			28.9	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	24.1	9.4	30.6	11.8	24.2	10.6	29.4
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	17.0	25.0	20.0	33.0	15.0	25.0	15.0	33.0
Max Q Clear Time (g_c+I1), s	8.5	11.2	6.5	13.0	8.4	9.7	7.4	9.8
Green Ext Time (p_c), s	0.2	5.1	0.2	7.8	0.2	5.4	0.2	8.2

Intersection Summary	
HCM 2010 Ctrl Delay	25.9
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	699	11	8	900	15	29	14	19	12	23	26
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	0.99		0.97	0.94		0.93	0.94		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	13	699	10	8	900	14	29	14	2	12	23	2
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	2784	40	41	2838	44	131	55	6	74	116	8
Arrive On Green	0.82	0.82	0.82	0.82	0.82	0.82	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	31	3403	48	9	3470	54	845	600	67	337	1267	92
Grp Volume(v), veh/h	373	0	349	483	0	439	45	0	0	37	0	0
Grp Sat Flow(s),veh/h/ln	1799	0	1684	1849	0	1684	1513	0	0	1696	0	0
Q Serve(g_s), s	0.0	0.0	5.2	0.0	0.0	7.1	0.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.0	0.0	5.2	7.0	0.0	7.1	2.7	0.0	0.0	2.1	0.0	0.0
Prop In Lane	0.03		0.03	0.02		0.03	0.64		0.04	0.32		0.05
Lane Grp Cap(c), veh/h	1505	0	1377	1545	0	1377	192	0	0	198	0	0
V/C Ratio(X)	0.25	0.00	0.25	0.31	0.00	0.32	0.23	0.00	0.00	0.19	0.00	0.00
Avail Cap(c_a), veh/h	1505	0	1377	1545	0	1377	322	0	0	345	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.00	0.88	0.94	0.00	0.94	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.3	0.0	2.3	2.5	0.0	2.5	46.6	0.0	0.0	46.4	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.4	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	2.6	3.5	0.0	3.2	1.3	0.0	0.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	2.6	0.0	2.7	2.5	0.0	2.5	46.8	0.0	0.0	46.5	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		722			922			45			37	
Approach Delay, s/veh		2.7			2.5			46.8			46.5	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		95.0		15.0		95.0		15.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		7.2		4.1		9.1		4.7
Green Ext Time (p_c), s		9.2		0.2		9.2		0.2

Intersection Summary		
HCM 2010 Ctrl Delay		4.7
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	689	47	23	838	12	77	33	28	17	45	22
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	0.99		0.94	0.90		0.88	0.92		0.88
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	8	689	43	23	838	11	77	33	19	17	45	9
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	43	2521	156	76	2594	34	159	64	30	75	171	30
Arrive On Green	0.77	0.77	0.77	0.77	0.77	0.77	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	13	3267	202	54	3363	44	776	467	215	253	1243	217
Grp Volume(v), veh/h	391	0	349	448	0	424	129	0	0	71	0	0
Grp Sat Flow(s),veh/h/ln	1839	0	1643	1776	0	1684	1458	0	0	1713	0	0
Q Serve(g_s), s	0.0	0.0	6.8	0.0	0.0	8.5	4.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.7	0.0	6.8	8.0	0.0	8.5	8.8	0.0	0.0	3.9	0.0	0.0
Prop In Lane	0.02		0.12	0.05		0.03	0.60		0.15	0.24		0.13
Lane Grp Cap(c), veh/h	1452	0	1268	1405	0	1299	253	0	0	276	0	0
V/C Ratio(X)	0.27	0.00	0.28	0.32	0.00	0.33	0.51	0.00	0.00	0.26	0.00	0.00
Avail Cap(c_a), veh/h	1452	0	1268	1405	0	1299	350	0	0	391	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.00	0.98	0.95	0.00	0.95	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.6	0.0	3.6	3.8	0.0	3.8	44.4	0.0	0.0	42.6	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.5	0.0	0.0	0.1	0.6	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	3.2	4.0	0.0	3.9	3.7	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	4.1	0.0	4.2	3.8	0.0	3.9	45.0	0.0	0.0	42.8	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		740			872			129			71	
Approach Delay, s/veh		4.1			3.9			45.0			42.8	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.9		20.1		89.9		20.1
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		77.0		23.0		77.0		23.0
Max Q Clear Time (g_c+I1), s		8.8		5.9		10.5		10.8
Green Ext Time (p_c), s		9.0		0.7		9.0		0.6

Intersection Summary		
HCM 2010 Ctrl Delay		8.4
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	668	76	37	757	11	70	38	42	19	66	24
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.94	0.98		0.94	0.80		0.73	0.84		0.72
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	6	668	70	37	757	10	70	38	28	19	66	14
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	2393	249	123	2449	32	136	70	41	65	179	34
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	7	3129	325	115	3203	42	601	482	281	180	1238	234
Grp Volume(v), veh/h	397	0	347	402	0	402	136	0	0	99	0	0
Grp Sat Flow(s),veh/h/ln	1850	0	1611	1675	0	1684	1364	0	0	1652	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0	0.0	5.8	0.0	0.0
Prop In Lane	0.02		0.20	0.09		0.02	0.51		0.21	0.19		0.14
Lane Grp Cap(c), veh/h	1448	0	1232	1317	0	1288	246	0	0	277	0	0
V/C Ratio(X)	0.27	0.00	0.28	0.31	0.00	0.31	0.55	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	1448	0	1232	1317	0	1288	326	0	0	376	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.00	0.96	0.79	0.00	0.79	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	44.1	0.0	0.0	42.7	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.5	0.0	0.0	0.0	0.7	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.0	0.0	0.0	3.9	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	0.5	0.0	0.5	0.0	0.0	0.0	44.8	0.0	0.0	43.0	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		744			804			136			99	
Approach Delay, s/veh		0.5			0.0			44.8			43.0	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.1		20.9		89.1		20.9
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		77.0		23.0		77.0		23.0
Max Q Clear Time (g_c+I1), s		2.0		7.8		2.0		11.7
Green Ext Time (p_c), s		8.6		0.9		8.6		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		6.0
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	133	513	112	85	660	116	95	313	52	134	305	98
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	1.00		0.96	1.00		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1937	1900	1863	1937	1900
Adj Flow Rate, veh/h	133	513	97	85	660	104	95	313	47	134	305	87
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	1198	225	108	1152	181	120	394	59	162	375	107
Arrive On Green	0.12	0.54	0.54	0.06	0.38	0.38	0.07	0.24	0.24	0.09	0.26	0.26
Sat Flow, veh/h	1774	2944	553	1774	3050	480	1774	1636	246	1774	1418	404
Grp Volume(v), veh/h	133	307	303	85	383	381	95	0	360	134	0	392
Grp Sat Flow(s),veh/h/ln	1774	1770	1728	1774	1770	1760	1774	0	1882	1774	0	1823
Q Serve(g_s), s	8.1	11.4	11.5	5.2	18.9	18.9	5.8	0.0	19.8	8.2	0.0	22.2
Cycle Q Clear(g_c), s	8.1	11.4	11.5	5.2	18.9	18.9	5.8	0.0	19.8	8.2	0.0	22.2
Prop In Lane	1.00		0.32	1.00		0.27	1.00		0.13	1.00		0.22
Lane Grp Cap(c), veh/h	160	720	703	108	668	665	120	0	453	162	0	482
V/C Ratio(X)	0.83	0.43	0.43	0.79	0.57	0.57	0.79	0.00	0.79	0.83	0.00	0.81
Avail Cap(c_a), veh/h	177	720	703	161	668	665	194	0	496	194	0	482
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.88	0.88	0.88	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.6	17.6	17.6	51.0	27.2	27.2	50.5	0.0	39.2	49.1	0.0	37.9
Incr Delay (d2), s/veh	22.3	1.8	1.9	6.6	3.1	3.1	4.4	0.0	7.1	18.7	0.0	9.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	5.9	5.8	2.7	9.8	9.8	3.0	0.0	11.2	4.9	0.0	12.4
LnGrp Delay(d),s/veh	69.9	19.3	19.5	57.6	30.3	30.3	55.0	0.0	46.2	67.8	0.0	47.4
LnGrp LOS	E	B	B	E	C	C	D		D	E		D
Approach Vol, veh/h		743			849			455			526	
Approach Delay, s/veh		28.4			33.0			48.1			52.6	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	51.8	15.0	31.5	14.9	48.6	12.4	34.1
Change Period (Y+Rc), s	5.0	7.0	5.0	5.0	5.0	7.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	37.0	12.0	29.0	11.0	36.0	12.0	29.0
Max Q Clear Time (g_c+I1), s	7.2	13.5	10.2	21.8	10.1	20.9	7.8	24.2
Green Ext Time (p_c), s	0.0	3.4	0.0	1.1	0.0	3.2	0.1	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	38.4
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	62	670	40	20	577	88	106	281	43	129	122	94
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	62	670	37	20	577	78	106	281	37	129	122	67
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	1633	90	52	1011	136	133	328	43	157	245	135
Arrive On Green	0.37	0.96	0.96	0.01	0.11	0.11	0.07	0.20	0.20	0.09	0.22	0.22
Sat Flow, veh/h	1774	3410	188	1774	3132	422	1774	1610	212	1774	1127	619
Grp Volume(v), veh/h	62	347	360	20	325	330	106	0	318	129	0	189
Grp Sat Flow(s),veh/h/ln	1774	1770	1829	1774	1770	1784	1774	0	1822	1774	0	1745
Q Serve(g_s), s	2.6	1.5	1.5	1.2	19.2	19.3	6.5	0.0	18.5	7.9	0.0	10.5
Cycle Q Clear(g_c), s	2.6	1.5	1.5	1.2	19.2	19.3	6.5	0.0	18.5	7.9	0.0	10.5
Prop In Lane	1.00		0.10	1.00		0.24	1.00		0.12	1.00		0.35
Lane Grp Cap(c), veh/h	328	847	876	52	571	576	133	0	371	157	0	380
V/C Ratio(X)	0.19	0.41	0.41	0.39	0.57	0.57	0.80	0.00	0.86	0.82	0.00	0.50
Avail Cap(c_a), veh/h	328	847	876	153	571	576	234	0	472	234	0	452
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.0	1.3	1.3	53.5	41.9	41.9	50.1	0.0	42.3	49.3	0.0	37.8
Incr Delay (d2), s/veh	0.1	1.3	1.2	1.8	4.1	4.1	4.2	0.0	10.1	8.3	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.9	0.9	0.6	10.1	10.2	3.3	0.0	10.4	4.2	0.0	5.1
LnGrp Delay(d),s/veh	29.1	2.5	2.5	55.3	46.0	46.0	54.2	0.0	52.4	57.5	0.0	38.1
LnGrp LOS	C	A	A	E	D	D	D		D	E		D
Approach Vol, veh/h		769			675			424			318	
Approach Delay, s/veh		4.7			46.3			52.8			46.0	
Approach LOS		A			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.9	41.0	15.3	27.9	8.7	58.2	13.7	29.4
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	35.5	14.5	28.5	9.5	35.5	14.5	28.5
Max Q Clear Time (g_c+I1), s	14.6	21.3	9.9	20.5	3.2	3.5	8.5	12.5
Green Ext Time (p_c), s	0.1	1.4	0.1	0.8	0.0	1.8	0.1	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	32.9
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	836	1	1	655	0	1	0	14	18	0	25
Conflicting Peds, #/hr	4	0	4	4	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	836	1	1	655	0	1	0	14	18	0	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	655	0	0	837	0	0	1167	1494	423	1075	1494	332
Stage 1	-	-	-	-	-	-	837	837	-	657	657	-
Stage 2	-	-	-	-	-	-	330	657	-	418	837	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	928	-	-	793	-	-	149	122	579	174	122	664
Stage 1	-	-	-	-	-	-	327	380	-	420	460	-
Stage 2	-	-	-	-	-	-	657	460	-	583	380	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	925	-	-	790	-	-	143	122	577	169	122	662
Mov Cap-2 Maneuver	-	-	-	-	-	-	143	122	-	169	122	-
Stage 1	-	-	-	-	-	-	327	380	-	420	459	-
Stage 2	-	-	-	-	-	-	629	459	-	567	380	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	12.7	19.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	480	925	-	-	790	-	-	298
HCM Lane V/C Ratio	0.031	-	-	-	0.001	-	-	0.144
HCM Control Delay (s)	12.7	0	-	-	9.6	-	-	19.1
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	851	1	2	631	9	4	2	23	251	1	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	10	851	1	2	631	8	4	2	5	251	1	17
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	623	2572	3	397	2537	32	159	89	169	341	1	19
Arrive On Green	0.23	0.23	0.23	1.00	1.00	1.00	0.20	0.21	0.21	0.20	0.21	0.21
Sat Flow, veh/h	786	3627	4	645	3579	45	549	423	810	1328	5	90
Grp Volume(v), veh/h	10	415	437	2	312	327	11	0	0	269	0	0
Grp Sat Flow(s),veh/h/ln	786	1770	1862	645	1770	1855	1782	0	0	1424	0	0
Q Serve(g_s), s	1.1	21.4	21.4	0.1	0.0	0.0	0.0	0.0	0.0	19.9	0.0	0.0
Cycle Q Clear(g_c), s	1.1	21.4	21.4	21.5	0.0	0.0	0.6	0.0	0.0	20.5	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.02	0.36		0.45	0.93		0.06
Lane Grp Cap(c), veh/h	623	1255	1320	397	1255	1315	401	0	0	348	0	0
V/C Ratio(X)	0.02	0.33	0.33	0.01	0.25	0.25	0.03	0.00	0.00	0.77	0.00	0.00
Avail Cap(c_a), veh/h	623	1255	1320	397	1255	1315	570	0	0	509	0	0
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.78	0.78	0.78	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.7	20.5	20.5	3.0	0.0	0.0	34.8	0.0	0.0	42.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.7	0.0	0.4	0.4	0.0	0.0	0.0	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	10.8	11.3	0.0	0.1	0.1	0.3	0.0	0.0	8.4	0.0	0.0
LnGrp Delay(d),s/veh	12.7	21.2	21.1	3.0	0.4	0.4	34.8	0.0	0.0	45.2	0.0	0.0
LnGrp LOS	B	C	C	A	A	A	C			D		
Approach Vol, veh/h		862			641			11			269	
Approach Delay, s/veh		21.1			0.4			34.8			45.2	
Approach LOS		C			A			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		83.0		27.0		83.0		27.0
Change Period (Y+Rc), s		5.0		4.0		5.0		* 4
Max Green Setting (Gmax), s		66.0		35.0		43.0		* 36
Max Q Clear Time (g_c+I1), s		23.4		2.6		23.5		22.5
Green Ext Time (p_c), s		3.8		0.6		3.6		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	74	1082	0	3	693	403	2	98	16	74	0	15
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	0.94		0.95	0.94		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	74	1082	0	3	693	347	2	98	11	74	0	0
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	2	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	2769	0	8	1657	829	34	169	19	356	193	0
Arrive On Green	0.11	1.00	0.00	0.00	0.73	0.73	0.09	0.10	0.10	0.10	0.00	0.00
Sat Flow, veh/h	1774	3632	0	1774	2259	1130	8	1628	180	2414	1863	0
Grp Volume(v), veh/h	74	1082	0	3	543	497	111	0	0	74	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	0	1774	1770	1620	1815	0	0	1207	1863	0
Q Serve(g_s), s	4.5	0.0	0.0	0.2	13.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.5	0.0	0.0	0.2	13.0	13.0	6.4	0.0	0.0	3.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.70	0.02		0.10	1.00		0.00
Lane Grp Cap(c), veh/h	95	2769	0	8	1298	1188	205	0	0	356	193	0
V/C Ratio(X)	0.78	0.39	0.00	0.35	0.42	0.42	0.54	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	202	2769	0	202	1298	1188	207	0	0	709	466	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	48.5	0.0	0.0	54.6	5.6	5.6	47.1	0.0	0.0	45.9	0.0	0.0
Incr Delay (d2), s/veh	12.3	0.4	0.0	23.3	1.0	1.1	2.8	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.2	0.0	0.1	6.5	6.0	3.4	0.0	0.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	60.8	0.4	0.0	77.8	6.6	6.7	49.9	0.0	0.0	46.2	0.0	0.0
LnGrp LOS	E	A		E	A	A	D			D		
Approach Vol, veh/h		1156			1043			111			74	
Approach Delay, s/veh		4.3			6.9			49.9			46.2	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.0	91.1		14.9	9.4	85.7		14.9
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5
Max Green Setting (Gmax), s	12.5	43.0		27.5	12.5	43.0		11.5
Max Q Clear Time (g_c+I1), s	2.2	2.0		5.8	6.5	15.0		8.4
Green Ext Time (p_c), s	0.0	15.9		0.7	0.1	13.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	28.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	44	207	1159	11	129	1050
Conflicting Peds, #/hr	1	1	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	207	1159	11	129	1050

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1949	588	0	0	1171	0
Stage 1	1166	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	56	452	-	-	592	-
Stage 1	259	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	44	451	-	-	591	-
Mov Cap-2 Maneuver	44	-	-	-	-	-
Stage 1	259	-	-	-	-	-
Stage 2	321	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	285.6	0	1.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	172	591	-
HCM Lane V/C Ratio	-	-	1.459	0.218	-
HCM Control Delay (s)	-	-	285.6	12.8	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	15.8	0.8	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	0	0	0	0	1035	448	322	1078	97
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	1035	448	322	1078	97

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	2289	2806	588	1175	0	-	1035	0	0
Stage 1	1771	1771	-	-	-	-	-	-	-
Stage 2	518	1035	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	33	18	452	590	-	0	667	-	-
Stage 1	122	135	-	-	-	0	-	-	-
Stage 2	563	307	-	-	-	0	-	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	17	0	452	590	-	-	665	-	-
Mov Cap-2 Maneuver	50	0	-	-	-	-	-	-	-
Stage 1	63	0	-	-	-	-	-	-	-
Stage 2	563	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	3.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	590	-	-	665	-	-
HCM Lane V/C Ratio	-	-	-	0.484	-	-
HCM Control Delay (s)	0	-	0	15.4	-	-
HCM Lane LOS	A	-	A	C	-	-
HCM 95th %tile Q(veh)	0	-	-	2.7	-	-

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 38 **I-580 EB Off-Ramp-98th Avenue/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Std. Dev.	Maximum	LOS
NB	U Turn	1	0	30.0%	0.7	0	2	0.9	0.0	0.0	0.0	29.3	A
	Second Left												
	Left Turn	49	53	108.4%	6.8	38	61	0.6	48.0	7.3	34.2	56.0	D
	Through												
	Right Turn	968	982	101.4%	16.0	950	1,005	0.4	3.3	0.7	2.6	4.8	A
	Second Right												
	Subtotal	1,018	1,035	101.7%	17.3	1,006	1,052	0.5	5.7	1.4	4.1	6.8	A
SB	U Turn												
	Second Left												
	Left Turn	142	138	96.8%	10.0	120	153	0.4	34.1	6.1	22.3	42.5	C
	Through	724	726	100.3%	39.8	637	767	0.1	34.6	6.1	27.1	38.3	C
	Right Turn	19	19	100.5%	3.7	13	25	0.0	21.0	8.6	5.9	43.2	C
	Second Right												
	Subtotal	885	883	99.7%	39.3	801	923	0.1	34.2	5.9	27.0	38.6	C
EB	U Turn												
	Second Left												
	Left Turn												
	Through	61	63	103.6%	9.9	48	74	0.3	45.4	6.3	37.3	62.6	D
	Right Turn	185	182	98.6%	13.4	160	201	0.2	13.1	1.8	9.6	16.4	B
	Second Right												
	Subtotal	246	246	99.8%	19.8	215	266	0.0	20.5	3.1	16.6	29.7	C
WB	U Turn												
	Second Left												
	Left Turn	587	486	82.8%	10.5	463	496	4.4	47.1	2.8	41.8	50.8	D
	Through	142	121	85.5%	7.8	112	133	1.8	26.8	4.2	20.7	34.3	C
	Right Turn												
	Second Right												
	Subtotal	729	607	83.3%	12.3	592	628	4.7	43.2	2.5	38.4	47.0	D
Total		2,878	2,771	96.3%	44.3	2,691	2,819	2.0	24.3	2.7	19.6	26.3	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 39 **I-580 Ramps/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	310	314	101.4%	13.1	293	339	0.2	27.1	2.9	21.6	31.7	C
	Through	2	2	95.0%	1.3	0	4	0.1	18.8	32.6	0.0	82.9	B
	Right Turn	376	368	97.8%	11.3	352	387	0.4	21.2	4.1	14.8	28.4	C
	Second Right												
	Subtotal	688	684	99.4%	19.6	646	712	0.1	24.2	2.4	19.5	28.4	C
SB	U Turn												
	Second Left												
	Left Turn												
	Through												
	Right Turn												
	Second Right												
	Subtotal												
EB	U Turn												
	Second Left												
	Left Turn	537	540	100.5%	12.2	519	556	0.1	47.2	5.1	41.2	56.9	D
	Through	634	632	99.6%	21.5	598	669	0.1	21.8	2.0	18.0	25.1	C
	Right Turn												
	Second Right												
	Subtotal	1,171	1,171	100.0%	17.4	1,142	1,192	0.0	33.6	2.6	29.5	38.6	C
WB	U Turn												
	Second Left												
	Left Turn												
	Through	419	302	72.1%	11.2	281	316	6.2	40.3	3.7	34.4	47.2	D
	Right Turn	113	88	78.1%	6.6	75	100	2.5	9.5	2.4	6.5	14.5	A
	Second Right												
	Subtotal	532	390	73.4%	10.0	371	408	6.6	33.6	3.1	26.9	37.2	C
Total		2,391	2,246	93.9%	26.4	2,201	2,283	3.0	30.7	2.0	28.0	33.8	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 40 **Mountain Boulevard-Oakland Zoo Driveway/Golf Links Road** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	6	6	103.3%	2.7	2	11	0.1	52.7	57.9	5.2	128.9	F
	Through	2	2	110.0%	1.5	0	5	0.1	12.5	12.0	0.0	31.5	B
	Right Turn												
	Second Right												
	Subtotal	8	8	105.0%	2.8	5	13	0.1	28.1	24.6	0.0	89.9	D
SB	U Turn												
	Second Left												
	Left Turn	12	12	95.8%	2.2	7	15	0.1	101.9	70.3	29.4	174.9	F
	Through	4	3	65.0%	1.7	0	5	0.8	104.8	126.6	0.0	130.0	F
	Right Turn	227	229	100.9%	10.4	212	246	0.1	110.8	71.8	27.2	144.8	F
	Second Right												
	Subtotal	243	243	100.0%	11.5	223	262	0.0	111.2	71.8	27.3	146.7	F
EB	U Turn	28	26	91.1%	4.1	19	32	0.5	0.9	0.4	0.4	1.7	A
	Second Left												
	Left Turn	630	626	99.4%	23.1	592	666	0.2	1.6	0.2	1.2	2.4	A
	Through	300	294	97.9%	10.9	277	317	0.4	1.8	0.2	1.4	2.1	A
	Right Turn	52	53	101.0%	9.8	37	72	0.1	0.8	0.2	0.5	1.0	A
	Second Right												
	Subtotal	1,010	998	98.8%	22.2	974	1,037	0.4	1.6	0.2	1.2	2.2	A
WB	U Turn												
	Second Left												
	Left Turn	1	0	20.0%	0.6	0	2	1.0	39.8	125.7	0.0	487.1	E
	Through	271	131	48.4%	5.5	121	137	9.9	296.9	44.2	248.0	338.2	F
	Right Turn	36	18	50.6%	6.2	11	30	3.4	303.6	58.9	233.6	399.8	F
	Second Right												
	Subtotal	308	150	48.6%	9.2	135	164	10.5	299.0	42.7	249.3	344.3	F
Total		1,569	1,399	89.1%	25.8	1,367	1,442	4.4	54.4	13.4	39.7	61.7	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	449	94	41	684	134	154	429	60	76	206	149
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	142	449	33	41	684	119	154	429	51	76	206	48
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	169	1165	520	56	798	139	181	935	111	316	1336	587
Arrive On Green	0.10	0.33	0.33	0.03	0.27	0.27	0.10	0.29	0.29	0.18	0.38	0.38
Sat Flow, veh/h	1774	3539	1580	1774	3004	522	1774	3189	377	1774	3539	1556
Grp Volume(v), veh/h	142	449	33	41	403	400	154	237	243	76	206	48
Grp Sat Flow(s),veh/h/ln	1774	1770	1580	1774	1770	1756	1774	1770	1796	1774	1770	1556
Q Serve(g_s), s	9.1	11.3	1.7	2.7	25.1	25.2	9.9	12.7	12.8	4.3	4.5	2.3
Cycle Q Clear(g_c), s	9.1	11.3	1.7	2.7	25.1	25.2	9.9	12.7	12.8	4.3	4.5	2.3
Prop In Lane	1.00		1.00	1.00		0.30	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	169	1165	520	56	470	466	181	519	526	316	1336	587
V/C Ratio(X)	0.84	0.39	0.06	0.73	0.86	0.86	0.85	0.46	0.46	0.24	0.15	0.08
Avail Cap(c_a), veh/h	184	1165	520	321	572	568	199	519	526	316	1336	587
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.6	29.9	26.7	55.7	40.5	40.5	51.2	33.5	33.5	40.9	23.9	23.2
Incr Delay (d2), s/veh	26.5	0.2	0.1	16.6	10.6	10.8	26.1	2.9	2.9	0.4	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	5.6	0.7	1.6	13.7	13.6	6.2	6.6	6.8	2.1	2.2	1.0
LnGrp Delay(d),s/veh	78.1	30.1	26.7	72.3	51.1	51.3	77.3	36.4	36.4	41.3	24.1	23.5
LnGrp LOS	E	C	C	E	D	D	E	D	D	D	C	C
Approach Vol, veh/h		624			844			634			330	
Approach Delay, s/veh		40.8			52.2			46.3			28.0	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.7	39.0	7.7	43.7	15.9	48.8	15.0	36.3
Change Period (Y+Rc), s	5.0	* 5	4.0	5.5	4.0	5.0	4.0	5.5
Max Green Setting (Gmax), s	14.8	* 34	21.0	28.5	13.0	35.0	12.0	37.5
Max Q Clear Time (g_c+I1), s	16.3	14.8	4.7	13.3	11.9	6.5	11.1	27.2
Green Ext Time (p_c), s	1.0	2.8	0.1	7.3	0.0	1.7	0.0	3.7

Intersection Summary	
HCM 2010 Ctrl Delay	44.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	126	106	787	3	87	95
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	126	72	787	3	87	95
Adj No. of Lanes	1	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	193	173	980	4	111	1288
Arrive On Green	0.11	0.11	0.53	0.53	0.06	0.69
Sat Flow, veh/h	1774	1583	1854	7	1774	1863
Grp Volume(v), veh/h	126	72	0	790	87	95
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1861	1774	1863
Q Serve(g_s), s	3.4	2.1	0.0	17.4	2.4	0.8
Cycle Q Clear(g_c), s	3.4	2.1	0.0	17.4	2.4	0.8
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	193	173	0	984	111	1288
V/C Ratio(X)	0.65	0.42	0.00	0.80	0.78	0.07
Avail Cap(c_a), veh/h	603	538	0	1860	284	2345
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	20.8	0.0	9.7	23.1	2.5
Incr Delay (d2), s/veh	3.7	1.6	0.0	1.6	11.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.0	0.0	9.2	1.5	0.4
LnGrp Delay(d),s/veh	25.1	22.4	0.0	11.2	34.4	2.5
LnGrp LOS	C	C		B	C	A
Approach Vol, veh/h	198		790			182
Approach Delay, s/veh	24.1		11.2			17.8
Approach LOS	C		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.1	31.5				39.6		10.5
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	3.1	50.0				63.0		17.0
Max Q Clear Time (g_c+I1), s	4.4	19.4				2.8		5.4
Green Ext Time (p_c), s	0.0	7.1				7.7		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	4	786	12	0	221
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	786	12	0	221

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1013	792	0	0	798	0
Stage 1	792	-	-	-	-	-
Stage 2	221	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	265	389	-	-	824	-
Stage 1	446	-	-	-	-	-
Stage 2	816	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	265	389	-	-	824	-
Mov Cap-2 Maneuver	265	-	-	-	-	-
Stage 1	446	-	-	-	-	-
Stage 2	816	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	389	824	-
HCM Lane V/C Ratio	-	-	0.01	-	-
HCM Control Delay (s)	-	-	14.4	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	138	3	0	311	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	138	3	0	311	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	141	0	296	71
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	156	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1440	-	671	977
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	856	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1440	-	671	977
Mov Cap-2 Maneuver	-	-	-	-	671	-
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	856	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	977	-	-	1440	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	8.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	18.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	676	8	7	347	0	3	0	6	169	105	430
Conflicting Peds, #/hr	0	0	2	2	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	676	8	7	347	0	3	0	6	169	105	430

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	348	0	0	685	0	0	1096	1043	345	701	1047	350
Stage 1	-	-	-	-	-	-	681	681	-	362	362	-
Stage 2	-	-	-	-	-	-	415	362	-	339	685	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.218	-	-	2.22	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1211	-	-	904	-	-	179	229	652	339	227	693
Stage 1	-	-	-	-	-	-	407	449	-	656	624	-
Stage 2	-	-	-	-	-	-	614	624	-	650	447	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1209	-	-	902	-	-	43	227	650	333	225	691
Mov Cap-2 Maneuver	-	-	-	-	-	-	43	227	-	333	225	-
Stage 1	-	-	-	-	-	-	407	449	-	655	619	-
Stage 2	-	-	-	-	-	-	191	619	-	643	447	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	39.3	45.3
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	114	1209	-	-	902	-	-	281	691
HCM Lane V/C Ratio	0.079	-	-	-	0.008	-	-	0.975	0.622
HCM Control Delay (s)	39.3	0	-	-	9	-	-	87.4	18.4
HCM Lane LOS	E	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	9.7	4.4

Intersection	
Intersection Delay, s/veh	44.7
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	390	390	54	0	0	0	0	0	13	59	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	390	390	54	0	0	0	0	0	13	59	25
Number of Lanes	0	1	1	0	0	0	0	0	0	0	1	0

Approach	EB	NB
Opposing Approach		SB
Opposing Lanes	0	3
Conflicting Approach Left	SB	EB
Conflicting Lanes Left	3	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	47.1	15.3
HCM LOS	E	C

Lane	NBLn1	EBLn1	EBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	13%	100%	0%	100%	0%	0%
Vol Thru, %	61%	0%	88%	0%	100%	0%
Vol Right, %	26%	0%	12%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	97	390	444	533	122	341
LT Vol	13	390	0	533	0	0
Through Vol	59	0	390	0	122	0
RT Vol	25	0	54	0	0	341
Lane Flow Rate	97	390	444	533	122	341
Geometry Grp	8	8	8	7	7	7
Degree of Util (X)	0.252	0.866	0.915	1	0.246	0.621
Departure Headway (Hd)	9.359	7.997	7.416	7.774	7.265	6.551
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	382	452	488	469	494	552
Service Time	7.158	5.738	5.156	5.516	5.006	4.293
HCM Lane V/C Ratio	0.254	0.863	0.91	1.136	0.247	0.618
HCM Control Delay	15.3	44.2	49.6	69.8	12.4	19.5
HCM Lane LOS	C	E	E	F	B	C
HCM 95th-tile Q	1	8.9	10.6	13.1	1	4.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	533	122	341
Peak Hour Factor	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	533	122	341
Number of Lanes	0	1	1	1

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	
Conflicting Lanes Left	0
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	45.5
HCM LOS	E

Lane

Intersection	
Int Delay, s/veh	648.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	0	694	296	48	10	447	2	0	0	6	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	300	125	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	694	296	48	10	447	2	0	0	6	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	929	906	10	1253	910	1	14	0	0	2	0	0
Stage 1	10	10	-	896	896	-	-	-	-	-	-	-
Stage 2	919	896	-	357	14	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.218	-	-	2.22	-	-
Pot Cap-1 Maneuver	235	275	1071	~ 138	274	1083	1604	-	-	1619	-	-
Stage 1	1011	887	-	302	358	-	-	-	-	-	-	-
Stage 2	293	358	-	660	884	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	150	198	1071	~ 38	198	1083	1604	-	-	1619	-	-
Mov Cap-2 Maneuver	150	198	-	~ 38	198	-	-	-	-	-	-	-
Stage 1	729	887	-	~ 218	258	-	-	-	-	-	-	-
Stage 2	170	258	-	~ 232	884	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.6	$ 2730.2	8.1	0
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1604	-	-	1062	38	230	1619	-	-
HCM Lane V/C Ratio	0.279	-	-	0.654	7.789	0.252	-	-	-
HCM Control Delay (s)	8.1	-	-	14.$	$ 3260.1	25.9	0	-	-
HCM Lane LOS	A	-	-	B	F	D	A	-	-
HCM 95th %tile Q(veh)	1.2	-	-	5.1	35.4	1	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	182	603	185	53	403	73	259	102	63	145	276	144
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.98	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	182	603	116	53	403	69	259	102	50	145	276	0
Adj No. of Lanes	1	1	1	1	1	0	0	2	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	916	741	69	637	109	291	190	93	268	281	0
Arrive On Green	0.12	0.49	0.49	0.04	0.41	0.41	0.17	0.16	0.16	0.15	0.15	0.00
Sat Flow, veh/h	1774	1863	1508	1774	1545	265	1774	1158	568	1774	1863	0
Grp Volume(v), veh/h	182	603	116	53	0	472	259	0	152	145	276	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1508	1774	0	1810	1774	0	1726	1774	1863	0
Q Serve(g_s), s	12.7	30.7	5.3	3.7	0.0	26.1	18.0	0.0	10.2	9.5	18.6	0.0
Cycle Q Clear(g_c), s	12.7	30.7	5.3	3.7	0.0	26.1	18.0	0.0	10.2	9.5	18.6	0.0
Prop In Lane	1.00		1.00	1.00		0.15	1.00		0.33	1.00		0.00
Lane Grp Cap(c), veh/h	210	916	741	69	0	745	291	0	283	268	281	0
V/C Ratio(X)	0.87	0.66	0.16	0.77	0.00	0.63	0.89	0.00	0.54	0.54	0.98	0.00
Avail Cap(c_a), veh/h	338	916	741	338	0	745	415	0	404	268	281	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.00	0.92	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.6	24.1	17.6	60.0	0.0	29.5	51.1	0.0	48.3	49.5	53.3	0.0
Incr Delay (d2), s/veh	7.5	3.7	0.4	6.1	0.0	3.8	12.3	0.0	0.6	1.2	48.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	16.7	2.3	1.9	0.0	13.8	9.8	0.0	4.9	4.8	13.4	0.0
LnGrp Delay(d),s/veh	62.0	27.8	18.1	66.1	0.0	33.2	63.4	0.0	48.9	50.7	101.9	0.0
LnGrp LOS	E	C	B	E		C	E		D	D	F	
Approach Vol, veh/h		901			525			411			421	
Approach Delay, s/veh		33.5			36.5			58.0			84.3	
Approach LOS		C			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	67.4		24.0	18.9	57.4		25.7
Change Period (Y+Rc), s	4.0	5.5		5.0	4.0	5.5		5.0
Max Green Setting (Gmax), s	24.0	34.0		19.0	24.0	34.0		29.5
Max Q Clear Time (g_c+I1), s	5.7	32.7		20.6	14.7	28.1		20.0
Green Ext Time (p_c), s	0.1	0.6		0.0	0.3	1.9		0.7

Intersection Summary		
HCM 2010 Ctrl Delay		48.1
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	9	787	15	47	476	18	3	9	30	16	17	24
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.98		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	9	787	14	47	476	17	3	9	3	16	17	2
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	166	1068	19	217	943	32	219	78	26	290	59	7
Arrive On Green	0.63	0.59	0.59	0.63	0.59	0.59	0.12	0.08	0.08	0.12	0.08	0.08
Sat Flow, veh/h	7	1811	32	72	1600	54	341	1022	341	731	777	91
Grp Volume(v), veh/h	810	0	0	540	0	0	15	0	0	35	0	0
Grp Sat Flow(s),veh/h/ln	1850	0	0	1726	0	0	1704	0	0	1600	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	6.8	0.0	0.0	3.7	0.0	0.0	0.2	0.0	0.0	0.4	0.0	0.0
Prop In Lane	0.01		0.02	0.09		0.03	0.20		0.20	0.46		0.06
Lane Grp Cap(c), veh/h	1335	0	0	1269	0	0	398	0	0	427	0	0
V/C Ratio(X)	0.61	0.00	0.00	0.43	0.00	0.00	0.04	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	4755	0	0	4265	0	0	1767	0	0	1721	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.3	0.0	0.0	2.6	0.0	0.0	9.6	0.0	0.0	9.5	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	0.0	1.6	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	3.4	0.0	0.0	2.7	0.0	0.0	9.6	0.0	0.0	9.6	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h		810			540			15			35	
Approach Delay, s/veh		3.4			2.7			9.6			9.6	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		17.7		4.7		17.7		4.7
Change Period (Y+Rc), s		4.5		3.0		4.5		3.0
Max Green Setting (Gmax), s		55.0		20.0		55.0		20.0
Max Q Clear Time (g_c+I1), s		8.8		2.4		5.7		2.2
Green Ext Time (p_c), s		4.5		0.1		4.5		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		3.4
HCM 2010 LOS		A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	798	54	58	497	26	35
Number	6	16	5	2	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1900
Adj Flow Rate, veh/h	798	52	58	497	26	2
Adj No. of Lanes	1	0	1	1	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	961	63	427	1362	66	5
Arrive On Green	0.56	0.56	0.06	0.73	0.04	0.04
Sat Flow, veh/h	1727	113	1774	1863	1578	121
Grp Volume(v), veh/h	0	850	58	497	29	0
Grp Sat Flow(s),veh/h/ln	0	1840	1774	1863	1760	0
Q Serve(g_s), s	0.0	13.4	0.4	3.4	0.6	0.0
Cycle Q Clear(g_c), s	0.0	13.4	0.4	3.4	0.6	0.0
Prop In Lane		0.06	1.00		0.90	0.07
Lane Grp Cap(c), veh/h	0	1024	427	1362	73	0
V/C Ratio(X)	0.00	0.83	0.14	0.36	0.40	0.00
Avail Cap(c_a), veh/h	0	3445	620	4016	799	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.4	5.6	1.7	16.5	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.1	0.1	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.8	0.3	1.7	0.3	0.0
LnGrp Delay(d),s/veh	0.0	7.1	5.7	1.8	17.7	0.0
LnGrp LOS		A	A	A	B	
Approach Vol, veh/h	850			555	29	
Approach Delay, s/veh	7.1			2.2	17.7	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		29.8		5.5	6.2	23.6		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		76.0		16.0	6.0	66.0		
Max Q Clear Time (g_c+I1), s		5.4		2.6	2.4	15.4		
Green Ext Time (p_c), s		4.2		0.0	0.0	4.2		

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	890	8	3	191	0	12	0	15	102	10	350
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	0	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	0	890	8	3	191	0	12	0	0	102	10	92
Adj No. of Lanes	1	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	4	1092	10	87	1095	0	39	0	0	271	27	154
Arrive On Green	0.00	0.59	0.59	0.59	0.59	0.00	0.02	0.00	0.00	0.14	0.17	0.17
Sat Flow, veh/h	1774	1843	17	5	1848	0	1774	0	0	1623	159	1579
Grp Volume(v), veh/h	0	0	898	194	0	0	12	0	0	112	0	92
Grp Sat Flow(s),veh/h/ln	1774	0	1859	1853	0	0	1774	0	0	1782	0	1579
Q Serve(g_s), s	0.0	0.0	16.5	0.0	0.0	0.0	0.3	0.0	0.0	2.5	0.0	5.4
Cycle Q Clear(g_c), s	0.0	0.0	16.5	2.1	0.0	0.0	0.3	0.0	0.0	2.5	0.0	5.4
Prop In Lane	1.00		0.01	0.02		0.00	1.00		0.00	0.91		1.00
Lane Grp Cap(c), veh/h	4	0	1102	1182	0	0	39	0	0	298	0	154
V/C Ratio(X)	0.00	0.00	0.82	0.16	0.00	0.00	0.31	0.00	0.00	0.38	0.00	0.60
Avail Cap(c_a), veh/h	572	0	1412	1567	0	0	490	0	0	779	0	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	7.0	4.0	0.0	0.0	20.9	0.0	0.0	16.5	0.0	67.0
Incr Delay (d2), s/veh	0.0	0.0	3.4	0.1	0.0	0.0	1.7	0.0	0.0	0.3	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	9.3	1.1	0.0	0.0	0.2	0.0	0.0	1.2	0.0	0.1
LnGrp Delay(d),s/veh	0.0	0.0	10.4	4.1	0.0	0.0	22.6	0.0	0.0	16.8	0.0	68.4
LnGrp LOS			B	A			C			B		E
Approach Vol, veh/h		898			194			12			204	
Approach Delay, s/veh		10.4			4.1			22.6			40.1	
Approach LOS		B			A			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		29.2		10.3	0.0	29.2		3.9
Change Period (Y+Rc), s		3.5		3.0	3.0	3.5		3.0
Max Green Setting (Gmax), s		33.0		19.0	14.0	35.0		12.0
Max Q Clear Time (g_c+I1), s		18.5		7.4	0.0	4.1		2.3
Green Ext Time (p_c), s		7.2		0.4	0.0	10.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	622	72	313	23	11	27	183	35	34	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.99	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863			
Adj Flow Rate, veh/h	622	72	209	23	11	4	183	35	7			
Adj No. of Lanes	1	1	0	0	1	1	1	1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Cap, veh/h	758	267	775	248	90	234	304	320	265			
Arrive On Green	0.43	0.64	0.64	0.16	0.15	0.15	0.17	0.17	0.17			
Sat Flow, veh/h	1774	414	1203	735	602	1570	1774	1863	1545			
Grp Volume(v), veh/h	622	0	281	34	0	4	183	35	7			
Grp Sat Flow(s),veh/h/ln	1774	0	1617	1338	0	1570	1774	1863	1545			
Q Serve(g_s), s	13.5	0.0	3.3	0.0	0.0	0.1	4.1	0.7	0.2			
Cycle Q Clear(g_c), s	13.5	0.0	3.3	0.7	0.0	0.1	4.1	0.7	0.2			
Prop In Lane	1.00		0.74	0.68		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	758	0	1043	353	0	234	304	320	265			
V/C Ratio(X)	0.82	0.00	0.27	0.10	0.00	0.02	0.60	0.11	0.03			
Avail Cap(c_a), veh/h	1589	0	1043	685	0	649	937	984	816			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	11.0	0.0	3.3	15.9	0.0	15.8	16.7	15.2	15.0			
Incr Delay (d2), s/veh	2.3	0.0	0.2	0.0	0.0	0.0	0.7	0.1	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.9	0.0	1.5	0.4	0.0	0.0	2.1	0.4	0.2			
LnGrp Delay(d),s/veh	13.3	0.0	3.5	16.0	0.0	15.8	17.4	15.3	15.0			
LnGrp LOS	B		A	B		B	B	B	B			
Approach Vol, veh/h		903			38			225				
Approach Delay, s/veh		10.3			16.0			17.0				
Approach LOS		B			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		32.6		11.0	21.6	11.0		
Change Period (Y+Rc), s		* 4.5		3.5	3.0	4.5		
Max Green Setting (Gmax), s		* 23		23.0	39.0	18.0		
Max Q Clear Time (g_c+I1), s		5.3		6.1	15.5	2.7		
Green Ext Time (p_c), s		1.8		0.4	3.1	0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	9	246	5	9	327
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	246	5	9	327

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	594	252	0	0	251	0
Stage 1	249	-	-	-	-	-
Stage 2	345	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	468	787	-	-	1314	-
Stage 1	792	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	463	785	-	-	1311	-
Mov Cap-2 Maneuver	463	-	-	-	-	-
Stage 1	792	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	785	1311	-
HCM Lane V/C Ratio	-	-	0.011	0.007	-
HCM Control Delay (s)	-	-	9.6	7.8	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	0	1	1	447	248	3	0	321	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	1	447	248	3	0	321	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1465	1465	253	321	0	0	251	0	0
Stage 1	1144	1144	-	-	-	-	-	-	-
Stage 2	321	321	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	141	128	786	1239	-	-	1314	-	-
Stage 1	304	275	-	-	-	-	-	-	-
Stage 2	735	652	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	90	0	784	1236	-	-	1311	-	-
Mov Cap-2 Maneuver	90	0	-	-	-	-	-	-	-
Stage 1	194	0	-	-	-	-	-	-	-
Stage 2	733	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	6.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1236	-	-	784	1311	-	-
HCM Lane V/C Ratio	0.362	-	-	0.003	-	-	-
HCM Control Delay (s)	9.6	-	-	9.6	0	-	-
HCM Lane LOS	A	-	-	A	A	-	-
HCM 95th %tile Q(veh)	1.7	-	-	0	0	-	-

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	52	99	0	3	17	0	102	8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	52	99	0	3	17	0	102	8
Number of Lanes	0	1	0	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.7	6.9	8.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	34%	93%
Vol Thru, %	15%	0%	7%
Vol Right, %	85%	66%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	20	151	110
LT Vol	0	52	102
Through Vol	3	0	8
RT Vol	17	99	0
Lane Flow Rate	20	151	110
Geometry Grp	1	1	1
Degree of Util (X)	0.021	0.161	0.134
Departure Headway (Hd)	3.774	3.834	4.4
Convergence, Y/N	Yes	Yes	Yes
Cap	933	923	810
Service Time	1.86	1.91	2.457
HCM Lane V/C Ratio	0.021	0.164	0.136
HCM Control Delay	6.9	7.7	8.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.6	0.5

Intersection	
Intersection Delay, s/veh	29.5
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	0	85	93	0	325	123	0	0	0	0	0	0	400	160	59
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	85	93	0	325	123	0	0	0	0	0	0	400	160	59
Number of Lanes	0	0	1	0	0	1	1	0	0	0	0	0	0	0	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	13.6	20.4	40.6
HCM LOS	B	C	E

Lane	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	83%	0%
Vol Thru, %	48%	0%	100%	17%	58%
Vol Right, %	52%	0%	0%	0%	42%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	325	123	480	139
LT Vol	0	325	0	400	0
Through Vol	85	0	123	80	80
RT Vol	93	0	0	0	59
Lane Flow Rate	178	325	123	480	139
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.343	0.665	0.234	0.924	0.24
Departure Headway (Hd)	6.928	7.369	6.859	6.928	6.204
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	516	488	520	523	577
Service Time	5.012	5.149	4.639	4.691	3.967
HCM Lane V/C Ratio	0.345	0.666	0.237	0.918	0.241
HCM Control Delay	13.6	23.7	11.7	49.2	10.9
HCM Lane LOS	B	C	B	E	B
HCM 95th-tile Q	1.5	4.8	0.9	11.1	0.9

Intersection	
Intersection Delay, s/veh	56.4
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	66	218	201	0	32	171	186	0	128	446	237	0	88	84	149
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	66	218	201	0	32	171	186	0	128	446	237	0	88	84	149
Number of Lanes	0	0	1	0	0	0	2	0	0	0	2	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	75.9	24.6	64.2	45.7
HCM LOS	F	C	F	E

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	36%	0%	14%	27%	0%	27%
Vol Thru, %	64%	48%	45%	73%	31%	26%
Vol Right, %	0%	52%	41%	0%	69%	46%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	351	460	485	118	272	321
LT Vol	128	0	66	32	0	88
Through Vol	223	223	218	86	86	84
RT Vol	0	237	201	0	186	149
Lane Flow Rate	351	460	485	118	272	321
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	0.888	1	1	0.311	0.672	0.837
Departure Headway (Hd)	9.104	8.561	8.968	9.53	8.915	9.391
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	400	428	407	378	407	388
Service Time	6.838	6.295	7.05	7.252	6.636	7.409
HCM Lane V/C Ratio	0.877	1.075	1.192	0.312	0.668	0.827
HCM Control Delay	52.1	73.5	75.9	16.5	28.1	45.7
HCM Lane LOS	F	F	F	C	D	E
HCM 95th-tile Q	9	12.5	12.2	1.3	4.8	7.7

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	37	291	120	6	18	265	8	0	63	0	13	0	4	0	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	37	291	120	6	18	265	8	0	63	0	13	0	4	0	20
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	9.5	9.4	10.2	8.7
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	83%	100%	0%	0%	100%	0%	0%	17%
Vol Thru, %	0%	0%	100%	45%	0%	100%	92%	0%
Vol Right, %	17%	0%	0%	55%	0%	0%	8%	83%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	76	37	194	217	24	177	96	24
LT Vol	63	37	0	0	24	0	0	4
Through Vol	0	0	194	97	0	177	88	0
RT Vol	13	0	0	120	0	0	8	20
Lane Flow Rate	76	37	194	217	24	177	96	24
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.135	0.058	0.276	0.285	0.038	0.258	0.139	0.038
Departure Headway (Hd)	6.401	5.628	5.125	4.736	5.757	5.254	5.196	5.712
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	557	635	698	755	620	680	687	621
Service Time	4.178	3.375	2.872	2.482	3.511	3.008	2.949	3.501
HCM Lane V/C Ratio	0.136	0.058	0.278	0.287	0.039	0.26	0.14	0.039
HCM Control Delay	10.2	8.7	9.8	9.4	8.7	9.8	8.8	8.7
HCM Lane LOS	B	A	A	A	A	A	A	A
HCM 95th-tile Q	0.5	0.2	1.1	1.2	0.1	1	0.5	0.1

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	107	198	5	8	152	10	9	4	4	23	6	117
Conflicting Peds, #/hr	3	0	0	0	0	3	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	107	198	5	8	152	10	9	4	4	23	6	117

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	164	0	0	205	0	0	514	597	107	492	594	86
Stage 1	-	-	-	-	-	-	417	417	-	175	175	-
Stage 2	-	-	-	-	-	-	97	180	-	317	419	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1412	-	-	1364	-	-	443	415	926	460	416	956
Stage 1	-	-	-	-	-	-	584	590	-	810	753	-
Stage 2	-	-	-	-	-	-	899	749	-	669	588	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1408	-	-	1361	-	-	359	380	922	424	381	952
Mov Cap-2 Maneuver	-	-	-	-	-	-	359	380	-	424	381	-
Stage 1	-	-	-	-	-	-	539	544	-	747	747	-
Stage 2	-	-	-	-	-	-	776	743	-	609	542	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.7	0.4	13.8	10.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	426	1408	-	-	1361	-	-	757
HCM Lane V/C Ratio	0.04	0.076	-	-	0.006	-	-	0.193
HCM Control Delay (s)	13.8	7.8	-	-	7.7	0	-	10.9
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	55.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	412	0	75	3	0	23	0	376	0	3	311	0
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	7	7	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	412	0	75	3	0	23	0	376	0	3	311	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	707	695	319	695	695	384	312	0	0	377	0	0
Stage 1	318	318	-	377	377	-	-	-	-	-	-	-
Stage 2	389	377	-	318	318	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 350	366	722	357	366	664	1248	-	-	1181	-	-
Stage 1	693	654	-	644	616	-	-	-	-	-	-	-
Stage 2	635	616	-	693	654	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 335	364	717	317	364	660	1241	-	-	1174	-	-
Mov Cap-2 Maneuver	~ 335	364	-	317	364	-	-	-	-	-	-	-
Stage 1	692	651	-	643	615	-	-	-	-	-	-	-
Stage 2	609	615	-	615	651	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	137.2	11.4	0	0.1
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1241	-	-	335	717	587	1174	-	-
HCM Lane V/C Ratio	-	-	-	1.23	0.105	0.044	0.003	-	-
HCM Control Delay (s)	0	-	-	160.3	10.6	11.4	8.1	0	-
HCM Lane LOS	A	-	-	F	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	18.1	0.3	0.1	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	65	134	39	77	174	59	40	486	78	68	634	83
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.93	0.97		0.95	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	65	134	27	77	174	44	40	486	72	68	634	78
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	151	264	47	149	263	61	69	757	112	93	798	98
Arrive On Green	0.27	0.25	0.25	0.27	0.25	0.25	0.04	0.48	0.48	0.05	0.49	0.49
Sat Flow, veh/h	346	1073	193	344	1070	248	1774	1578	234	1774	1616	199
Grp Volume(v), veh/h	226	0	0	295	0	0	40	0	558	68	0	712
Grp Sat Flow(s),veh/h/ln	1611	0	0	1661	0	0	1774	0	1812	1774	0	1815
Q Serve(g_s), s	0.0	0.0	0.0	2.7	0.0	0.0	1.6	0.0	16.2	2.6	0.0	22.9
Cycle Q Clear(g_c), s	7.9	0.0	0.0	10.5	0.0	0.0	1.6	0.0	16.2	2.6	0.0	22.9
Prop In Lane	0.29		0.12	0.26		0.15	1.00		0.13	1.00		0.11
Lane Grp Cap(c), veh/h	509	0	0	521	0	0	69	0	870	93	0	896
V/C Ratio(X)	0.44	0.00	0.00	0.57	0.00	0.00	0.58	0.00	0.64	0.73	0.00	0.79
Avail Cap(c_a), veh/h	777	0	0	796	0	0	177	0	870	177	0	896
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.78	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	0.0	0.0	23.5	0.0	0.0	33.1	0.0	13.7	32.7	0.0	14.8
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.0	0.0	2.9	0.0	3.6	4.1	0.0	7.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0	4.9	0.0	0.0	0.8	0.0	8.9	1.4	0.0	13.1
LnGrp Delay(d),s/veh	22.7	0.0	0.0	23.8	0.0	0.0	36.0	0.0	17.3	36.8	0.0	22.0
LnGrp LOS	C			C			D		B	D		C
Approach Vol, veh/h		226			295			598			780	
Approach Delay, s/veh		22.7			23.8			18.6			23.3	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		22.2	6.7	41.1		22.2	7.7	40.1
Change Period (Y+Rc), s		5.0	4.0	6.5		5.0	4.0	6.5
Max Green Setting (Gmax), s		29.5	7.0	18.0		29.5	7.0	18.0
Max Q Clear Time (g_c+I1), s		9.9	3.6	24.9		12.5	4.6	18.2
Green Ext Time (p_c), s		1.3	0.0	0.0		1.3	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	168	42	49	209	98	32	246	42	119	282	93
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.99	0.98		0.91	0.96		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1937	1900	1900	1937	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	51	168	32	49	209	78	32	246	22	119	282	61
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	388	66	181	351	121	195	923	80	346	652	140
Arrive On Green	0.33	0.29	0.29	0.33	0.29	0.29	0.35	0.32	0.32	0.35	0.32	0.32
Sat Flow, veh/h	228	1314	225	162	1191	409	175	2909	253	543	2056	441
Grp Volume(v), veh/h	251	0	0	336	0	0	159	0	141	243	0	219
Grp Sat Flow(s),veh/h/ln	1767	0	0	1762	0	0	1716	0	1621	1453	0	1587
Q Serve(g_s), s	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	2.0	1.5	0.0	3.4
Cycle Q Clear(g_c), s	3.3	0.0	0.0	4.8	0.0	0.0	1.9	0.0	2.0	3.5	0.0	3.4
Prop In Lane	0.20		0.13	0.15		0.23	0.20		0.16	0.49		0.28
Lane Grp Cap(c), veh/h	718	0	0	710	0	0	740	0	514	681	0	504
V/C Ratio(X)	0.35	0.00	0.00	0.47	0.00	0.00	0.21	0.00	0.27	0.36	0.00	0.44
Avail Cap(c_a), veh/h	1832	0	0	1865	0	0	1985	0	1781	1745	0	1744
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.8	0.0	0.0	9.3	0.0	0.0	7.8	0.0	7.9	8.1	0.0	8.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	2.3	0.0	0.0	0.9	0.0	0.9	1.5	0.0	1.5
LnGrp Delay(d),s/veh	8.9	0.0	0.0	9.5	0.0	0.0	7.8	0.0	8.0	8.2	0.0	8.6
LnGrp LOS	A			A			A		A	A		A
Approach Vol, veh/h		251			336			300			462	
Approach Delay, s/veh		8.9			9.5			7.9			8.4	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		15.8		15.1		15.8		15.1
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		30.0		34.0		30.0
Max Q Clear Time (g_c+I1), s		4.0		6.8		5.5		5.3
Green Ext Time (p_c), s		1.8		1.5		1.8		1.5

Intersection Summary		
HCM 2010 Ctrl Delay		8.7
HCM 2010 LOS		A

Intersection	
Int Delay, s/veh	9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	65	255	21	52	304	32
Conflicting Peds, #/hr	0	3	3	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	255	21	52	304	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	67	0	161	70
Stage 1	-	-	-	-	67	-
Stage 2	-	-	-	-	94	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1535	-	830	993
Stage 1	-	0	-	-	956	-
Stage 2	-	0	-	-	930	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1531	-	817	989
Mov Cap-2 Maneuver	-	-	-	-	817	-
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	917	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	831	-	1531	-
HCM Lane V/C Ratio	0.404	-	0.014	-
HCM Control Delay (s)	12.2	-	7.4	0
HCM Lane LOS	B	-	A	A
HCM 95th %tile Q(veh)	2	-	0	-

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	19	171	0	172	12	0	101	186
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	19	171	0	172	12	0	101	186
Number of Lanes	0	1	1	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	9.2	9.3	10.5
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	35%
Vol Thru, %	93%	0%	0%	65%
Vol Right, %	7%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	184	19	171	287
LT Vol	0	19	0	101
Through Vol	172	0	0	186
RT Vol	12	0	171	0
Lane Flow Rate	184	19	171	287
Geometry Grp	2	7	7	2
Degree of Util (X)	0.241	0.032	0.234	0.374
Departure Headway (Hd)	4.707	6.13	4.919	4.695
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	760	582	727	763
Service Time	2.753	3.884	2.673	2.737
HCM Lane V/C Ratio	0.242	0.033	0.235	0.376
HCM Control Delay	9.3	9.1	9.2	10.5
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	0.9	0.1	0.9	1.7

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	107	7	34	182	4	9
Conflicting Peds, #/hr	0	3	3	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	7	34	182	4	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	115	0	271	61
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	159	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1472	-	696	991
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	853	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1468	-	678	988
Mov Cap-2 Maneuver	-	-	-	-	678	-
Stage 1	-	-	-	-	899	-
Stage 2	-	-	-	-	831	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	866	-	-	1468	-
HCM Lane V/C Ratio	0.015	-	-	0.023	-
HCM Control Delay (s)	9.2	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	30	5	45	7	4	1	17	95	15	157	35
Conflicting Peds, #/hr	1	0	0	0	0	1	13	0	2	2	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	30	5	45	7	4	1	17	95	15	157	35

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	232	226	110	145	243	31	193	0	0	18	0	0
Stage 1	206	206	-	20	20	-	-	-	-	-	-	-
Stage 2	26	20	-	125	223	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.14	-	-	4.12	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.22	-	-	2.218	-	-
Pot Cap-1 Maneuver	713	673	923	817	658	1043	1378	-	-	1599	-	-
Stage 1	777	731	-	998	878	-	-	-	-	-	-	-
Stage 2	991	878	-	866	718	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	691	665	912	769	650	1031	1363	-	-	1582	-	-
Mov Cap-2 Maneuver	691	665	-	769	650	-	-	-	-	-	-	-
Stage 1	776	723	-	996	876	-	-	-	-	-	-	-
Stage 2	968	876	-	809	711	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	10.1	0.1	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1363	-	-	692	765	1582	-	-
HCM Lane V/C Ratio	0.001	-	-	0.056	0.073	0.009	-	-
HCM Control Delay (s)	7.6	0	-	10.5	10.1	7.3	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	41	99	270	33	23	349
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	99	270	33	23	349

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	682	287	0	0	303	0
Stage 1	287	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	415	752	-	-	1258	-
Stage 1	762	-	-	-	-	-
Stage 2	681	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	405	752	-	-	1258	-
Mov Cap-2 Maneuver	405	-	-	-	-	-
Stage 1	762	-	-	-	-	-
Stage 2	665	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	405	752	1258	-
HCM Lane V/C Ratio	-	-	0.101	0.132	0.018	-
HCM Control Delay (s)	-	-	14.9	10.5	7.9	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.5	0.1	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	154	155	97	0	381
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	154	155	97	0	381

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	585	204	0	0	252	0
Stage 1	204	-	-	-	-	-
Stage 2	381	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	473	837	-	-	1313	-
Stage 1	830	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	473	837	-	-	1313	-
Mov Cap-2 Maneuver	473	-	-	-	-	-
Stage 1	830	-	-	-	-	-
Stage 2	691	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	837	1313	-
HCM Lane V/C Ratio	-	-	0.184	-	-
HCM Control Delay (s)	-	-	10.3	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	22	63	211	57	62	209
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	63	211	57	62	209

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	573	240	0	0	268	0
Stage 1	240	-	-	-	-	-
Stage 2	333	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	481	799	-	-	1296	-
Stage 1	800	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	455	799	-	-	1296	-
Mov Cap-2 Maneuver	455	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	687	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	1.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	668	1296	-
HCM Lane V/C Ratio	-	-	0.127	0.048	-
HCM Control Delay (s)	-	-	11.2	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.2	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	13	260	3	22	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	260	3	22	210

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	516	262	0	0	263	0
Stage 1	262	-	-	-	-	-
Stage 2	254	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	519	777	-	-	1301	-
Stage 1	782	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	509	777	-	-	1301	-
Mov Cap-2 Maneuver	509	-	-	-	-	-
Stage 1	782	-	-	-	-	-
Stage 2	773	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	777	1301	-
HCM Lane V/C Ratio	-	-	0.017	0.017	-
HCM Control Delay (s)	-	-	9.7	7.8	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	171	620	165	176	434	134	135	567	158	164	584	135
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.92	1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	171	620	142	176	434	41	135	567	69	164	584	118
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	951	217	213	1196	518	170	888	365	200	777	156
Arrive On Green	0.12	0.34	0.34	0.12	0.34	0.34	0.10	0.25	0.25	0.11	0.27	0.27
Sat Flow, veh/h	1774	2826	646	1774	3539	1532	1774	3539	1456	1774	2897	583
Grp Volume(v), veh/h	171	388	374	176	434	41	135	567	69	164	356	346
Grp Sat Flow(s),veh/h/ln	1774	1770	1702	1774	1770	1532	1774	1770	1456	1774	1770	1710
Q Serve(g_s), s	8.4	16.6	16.7	8.6	8.2	1.6	6.6	12.7	3.3	8.0	16.4	16.5
Cycle Q Clear(g_c), s	8.4	16.6	16.7	8.6	8.2	1.6	6.6	12.7	3.3	8.0	16.4	16.5
Prop In Lane	1.00		0.38	1.00		1.00	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	210	595	573	213	1196	518	170	888	365	200	475	459
V/C Ratio(X)	0.82	0.65	0.65	0.83	0.36	0.08	0.80	0.64	0.19	0.82	0.75	0.75
Avail Cap(c_a), veh/h	399	656	631	299	1312	568	339	994	409	309	497	481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.3	25.1	25.1	38.3	22.2	20.0	39.4	29.7	26.2	38.6	29.8	29.9
Incr Delay (d2), s/veh	7.5	2.0	2.1	12.5	0.2	0.1	8.2	1.2	0.2	9.6	6.0	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	8.4	8.1	4.9	4.1	0.7	3.6	6.4	1.4	4.5	8.8	8.6
LnGrp Delay(d),s/veh	45.8	27.1	27.2	50.7	22.4	20.1	47.6	30.9	26.5	48.1	35.8	36.3
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	D	D
Approach Vol, veh/h		933			651			771			866	
Approach Delay, s/veh		30.6			29.9			33.4			38.3	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	28.4	14.0	34.6	13.6	26.8	14.2	34.4
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	17.0	25.0	20.0	33.0	15.5	25.0	15.0	33.0
Max Q Clear Time (g_c+I1), s	8.6	18.5	10.4	10.2	10.0	14.7	10.6	18.7
Green Ext Time (p_c), s	0.2	4.1	0.3	8.7	0.2	5.9	0.2	6.8

Intersection Summary	
HCM 2010 Ctrl Delay	33.2
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	863	24	9	707	15	10	6	5	24	18	23
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	1.00		0.95	0.96		1.00	0.96		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	36	863	23	9	707	14	10	6	0	24	18	3
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	2701	71	48	2885	57	108	53	0	92	57	7
Arrive On Green	0.84	0.84	0.84	0.84	0.84	0.84	0.07	0.07	0.00	0.07	0.07	0.07
Sat Flow, veh/h	96	3206	85	17	3424	67	823	790	0	635	853	106
Grp Volume(v), veh/h	466	0	456	381	0	349	16	0	0	45	0	0
Grp Sat Flow(s),veh/h/ln	1712	0	1675	1829	0	1679	1613	0	0	1594	0	0
Q Serve(g_s), s	0.0	0.0	6.5	0.0	0.0	4.5	0.0	0.0	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	5.8	0.0	6.5	4.5	0.0	4.5	0.9	0.0	0.0	2.8	0.0	0.0
Prop In Lane	0.08		0.05	0.02		0.04	0.62		0.00	0.53		0.07
Lane Grp Cap(c), veh/h	1477	0	1411	1574	0	1415	161	0	0	156	0	0
V/C Ratio(X)	0.32	0.00	0.32	0.24	0.00	0.25	0.10	0.00	0.00	0.29	0.00	0.00
Avail Cap(c_a), veh/h	1477	0	1411	1574	0	1415	333	0	0	332	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.68	0.00	0.68	0.97	0.00	0.97	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.8	0.0	1.9	1.7	0.0	1.7	48.3	0.0	0.0	49.2	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	3.1	2.2	0.0	2.0	0.5	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	2.2	0.0	2.3	1.7	0.0	1.8	48.4	0.0	0.0	49.5	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		922			730			16			45	
Approach Delay, s/veh		2.2			1.7			48.4			49.5	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		97.7		12.3		97.7		12.3
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		8.5		4.8		6.5		2.9
Green Ext Time (p_c), s		9.5		0.1		9.5		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		3.7
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	822	29	15	663	18	46	21	34	18	20	33
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.94	0.99		0.94	0.88		0.85	0.89		0.85
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	16	822	27	15	663	17	46	21	17	18	20	5
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	2590	84	65	2584	66	141	62	39	117	118	25
Arrive On Green	1.00	1.00	1.00	0.77	0.77	0.77	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	31	3344	109	39	3337	85	669	459	286	524	873	184
Grp Volume(v), veh/h	451	0	414	359	0	336	84	0	0	43	0	0
Grp Sat Flow(s),veh/h/ln	1817	0	1668	1787	0	1674	1414	0	0	1581	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	6.2	3.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.9	0.0	6.2	5.6	0.0	0.0	2.4	0.0	0.0
Prop In Lane	0.04		0.07	0.04		0.05	0.55		0.20	0.42		0.12
Lane Grp Cap(c), veh/h	1441	0	1292	1418	0	1296	241	0	0	259	0	0
V/C Ratio(X)	0.31	0.00	0.32	0.25	0.00	0.26	0.35	0.00	0.00	0.17	0.00	0.00
Avail Cap(c_a), veh/h	1441	0	1292	1418	0	1296	305	0	0	329	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	0.98	0.00	0.98	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.5	0.0	3.5	43.5	0.0	0.0	42.2	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.6	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	3.0	0.0	2.8	2.4	0.0	0.0	1.2	0.0	0.0
LnGrp Delay(d),s/veh	0.5	0.0	0.6	3.5	0.0	3.5	43.8	0.0	0.0	42.3	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		865			695			84			43	
Approach Delay, s/veh		0.6			3.5			43.8			42.3	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		90.2		19.8		90.2		19.8
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		2.0		4.4		8.2		7.6
Green Ext Time (p_c), s		8.5		0.4		8.5		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	5.0
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	808	34	19	626	12	43	20	35	8	17	21
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	0.96		0.94	0.97		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	13	808	32	19	626	11	43	20	15	8	17	2
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	53	2719	107	85	2691	47	116	51	28	72	124	12
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	24	3341	131	63	3307	58	684	538	291	306	1297	128
Grp Volume(v), veh/h	447	0	406	335	0	321	78	0	0	27	0	0
Grp Sat Flow(s),veh/h/ln	1830	0	1665	1745	0	1682	1513	0	0	1732	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0	1.5	0.0	0.0
Prop In Lane	0.03		0.08	0.06		0.03	0.55		0.19	0.30		0.07
Lane Grp Cap(c), veh/h	1523	0	1355	1455	0	1369	195	0	0	207	0	0
V/C Ratio(X)	0.29	0.00	0.30	0.23	0.00	0.23	0.40	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	1523	0	1355	1455	0	1369	322	0	0	349	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	0.87	0.00	0.87	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	47.3	0.0	0.0	45.7	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.0	0.0	0.0	2.3	0.0	0.0	0.8	0.0	0.0
LnGrp Delay(d),s/veh	0.5	0.0	0.5	0.0	0.0	0.0	47.8	0.0	0.0	45.8	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		853			656			78			27	
Approach Delay, s/veh		0.5			0.0			47.8			45.8	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		94.5		15.5		94.5		15.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		2.0		3.5		2.0		7.2
Green Ext Time (p_c), s		8.1		0.3		8.1		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		3.3
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	131	613	83	66	475	157	61	318	56	137	357	120
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1937	1900	1863	1937	1900
Adj Flow Rate, veh/h	131	613	75	66	475	129	61	318	50	137	357	109
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	1064	130	233	1084	292	79	359	56	165	383	117
Arrive On Green	0.03	0.11	0.11	0.26	0.79	0.79	0.04	0.22	0.22	0.09	0.27	0.27
Sat Flow, veh/h	1774	3163	386	1774	2738	738	1774	1625	255	1774	1420	434
Grp Volume(v), veh/h	131	342	346	66	306	298	61	0	368	137	0	466
Grp Sat Flow(s),veh/h/ln	1774	1770	1780	1774	1770	1706	1774	0	1880	1774	0	1854
Q Serve(g_s), s	8.1	20.2	20.3	3.3	6.0	6.2	3.7	0.0	20.9	8.3	0.0	27.0
Cycle Q Clear(g_c), s	8.1	20.2	20.3	3.3	6.0	6.2	3.7	0.0	20.9	8.3	0.0	27.0
Prop In Lane	1.00		0.22	1.00		0.43	1.00		0.14	1.00		0.23
Lane Grp Cap(c), veh/h	160	595	599	233	701	675	79	0	415	165	0	500
V/C Ratio(X)	0.82	0.58	0.58	0.28	0.44	0.44	0.77	0.00	0.89	0.83	0.00	0.93
Avail Cap(c_a), veh/h	177	595	599	233	701	675	194	0	479	210	0	500
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.91	0.91	0.91	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.5	41.4	41.5	36.4	7.5	7.6	52.0	0.0	41.5	49.0	0.0	39.2
Incr Delay (d2), s/veh	20.3	3.8	3.9	0.2	1.8	1.9	6.0	0.0	15.0	15.8	0.0	24.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	10.6	10.7	1.6	3.2	3.2	2.0	0.0	12.6	4.8	0.0	17.2
LnGrp Delay(d),s/veh	72.7	45.3	45.3	36.6	9.3	9.5	58.0	0.0	56.6	64.9	0.0	63.5
LnGrp LOS	E	D	D	D	A	A	E		E	E		E
Approach Vol, veh/h		819			670			429			603	
Approach Delay, s/veh		49.7			12.1			56.8			63.8	
Approach LOS		D			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.5	44.0	15.2	29.3	14.9	50.6	9.9	34.6
Change Period (Y+Rc), s	7.0	* 7	5.0	5.0	5.0	7.0	5.0	5.0
Max Green Setting (Gmax), s	10.5	* 37	13.0	28.0	11.0	36.0	12.0	29.0
Max Q Clear Time (g_c+I1), s	15.3	22.3	10.3	22.9	10.1	8.2	5.7	29.0
Green Ext Time (p_c), s	0.9	1.5	0.1	0.5	0.0	1.6	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	656	79	33	544	103	82	210	37	123	227	65
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	47	656	73	33	544	91	82	210	30	123	227	55
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	388	1609	179	72	979	163	105	276	39	151	288	70
Arrive On Green	0.44	1.00	1.00	0.01	0.11	0.11	0.06	0.17	0.17	0.09	0.20	0.20
Sat Flow, veh/h	1774	3210	357	1774	3034	506	1774	1594	228	1774	1442	349
Grp Volume(v), veh/h	47	361	368	33	317	318	82	0	240	123	0	282
Grp Sat Flow(s),veh/h/ln	1774	1770	1798	1774	1770	1770	1774	0	1821	1774	0	1792
Q Serve(g_s), s	1.7	0.0	0.0	2.0	18.7	18.8	5.0	0.0	13.8	7.5	0.0	16.5
Cycle Q Clear(g_c), s	1.7	0.0	0.0	2.0	18.7	18.8	5.0	0.0	13.8	7.5	0.0	16.5
Prop In Lane	1.00		0.20	1.00		0.29	1.00		0.13	1.00		0.20
Lane Grp Cap(c), veh/h	388	887	901	72	571	571	105	0	315	151	0	357
V/C Ratio(X)	0.12	0.41	0.41	0.46	0.55	0.56	0.78	0.00	0.76	0.81	0.00	0.79
Avail Cap(c_a), veh/h	388	887	901	153	571	571	185	0	439	266	0	513
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.6	0.0	0.0	53.1	41.6	41.7	51.1	0.0	43.3	49.4	0.0	41.8
Incr Delay (d2), s/veh	0.0	1.2	1.1	1.7	3.8	3.9	4.8	0.0	3.0	3.9	0.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.3	0.3	1.0	9.8	9.9	2.6	0.0	7.2	3.9	0.0	8.5
LnGrp Delay(d),s/veh	24.7	1.2	1.1	54.8	45.5	45.6	55.8	0.0	46.3	53.4	0.0	45.0
LnGrp LOS	C	A	A	D	D	D	E		D	D		D
Approach Vol, veh/h		776			668			322			405	
Approach Delay, s/veh		2.6			46.0			48.7			47.5	
Approach LOS		A			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	41.0	14.9	24.5	9.9	60.6	12.0	27.4
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	35.5	16.5	26.5	9.5	35.5	11.5	31.5
Max Q Clear Time (g_c+I1), s	13.7	20.8	9.5	15.8	4.0	2.0	7.0	18.5
Green Ext Time (p_c), s	0.3	1.3	0.1	1.0	0.0	1.8	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	31.2
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	810	4	4	680	0	0	0	5	8	0	7
Conflicting Peds, #/hr	2	0	1	1	0	2	1	0	2	2	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	810	4	4	680	0	0	0	5	8	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	682	0	0	816	0	0	1164	1504	411	1097	1506	344
Stage 1	-	-	-	-	-	-	814	814	-	690	690	-
Stage 2	-	-	-	-	-	-	350	690	-	407	816	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	907	-	-	807	-	-	150	120	590	168	120	652
Stage 1	-	-	-	-	-	-	338	390	-	401	444	-
Stage 2	-	-	-	-	-	-	639	444	-	592	389	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	905	-	-	806	-	-	147	119	588	165	119	650
Mov Cap-2 Maneuver	-	-	-	-	-	-	147	119	-	165	119	-
Stage 1	-	-	-	-	-	-	337	389	-	400	441	-
Stage 2	-	-	-	-	-	-	628	441	-	586	388	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	11.2	20.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	588	905	-	-	806	-	-	253
HCM Lane V/C Ratio	0.009	-	-	-	0.005	-	-	0.059
HCM Control Delay (s)	11.2	0	-	-	9.5	-	-	20.1
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	805	6	6	671	9	5	0	6	87	2	5
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	14	805	6	6	671	9	5	0	0	87	2	3
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	697	3005	22	624	2984	40	208	0	0	177	3	4
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.07	0.00	0.00	0.07	0.08	0.08
Sat Flow, veh/h	757	3601	27	670	3576	48	1710	0	0	1353	31	47
Grp Volume(v), veh/h	14	396	415	6	332	348	5	0	0	92	0	0
Grp Sat Flow(s),veh/h/ln	757	1770	1858	670	1770	1854	1710	0	0	1431	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	7.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.03	1.00		0.00	0.95		0.03
Lane Grp Cap(c), veh/h	697	1477	1551	624	1477	1547	193	0	0	170	0	0
V/C Ratio(X)	0.02	0.27	0.27	0.01	0.22	0.22	0.03	0.00	0.00	0.54	0.00	0.00
Avail Cap(c_a), veh/h	697	1477	1551	624	1477	1547	445	0	0	426	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	46.8	0.0	0.0	49.8	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.4	0.4	0.0	0.3	0.3	0.0	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	0.0	0.1	0.1	0.1	0.0	0.0	2.8	0.0	0.0
LnGrp Delay(d),s/veh	0.1	0.4	0.4	0.0	0.3	0.3	46.8	0.0	0.0	50.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D			D		
Approach Vol, veh/h		825			686			5			92	
Approach Delay, s/veh		0.4			0.3			46.8			50.8	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		96.8		13.2		96.8		13.2
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0
Max Green Setting (Gmax), s		72.0		29.0		72.0		29.0
Max Q Clear Time (g_c+I1), s		2.0		2.3		2.0		9.0
Green Ext Time (p_c), s		3.9		0.2		3.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	3.4
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	881	2	10	743	117	0	1	11	92	0	11
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	0.95		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	881	2	10	743	112	0	1	0	92	0	0
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	2	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	47	2915	7	25	2444	368	0	134	0	323	134	0
Arrive On Green	0.05	1.00	1.00	0.01	0.79	0.79	0.00	0.07	0.00	0.07	0.00	0.00
Sat Flow, veh/h	1774	3623	8	1774	3085	465	0	1863	0	2684	1863	0
Grp Volume(v), veh/h	22	430	453	10	426	429	0	1	0	92	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1861	1774	1770	1780	0	1863	0	1342	1863	0
Q Serve(g_s), s	1.3	0.0	0.0	0.6	7.2	7.3	0.0	0.1	0.0	3.6	0.0	0.0
Cycle Q Clear(g_c), s	1.3	0.0	0.0	0.6	7.2	7.3	0.0	0.1	0.0	3.7	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.26	0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	47	1424	1498	25	1402	1410	0	134	0	323	134	0
V/C Ratio(X)	0.46	0.30	0.30	0.39	0.30	0.30	0.00	0.01	0.00	0.29	0.00	0.00
Avail Cap(c_a), veh/h	202	1424	1498	202	1402	1410	0	195	0	801	466	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	51.3	0.0	0.0	53.7	3.1	3.1	0.0	47.4	0.0	49.1	0.0	0.0
Incr Delay (d2), s/veh	6.7	0.5	0.5	9.5	0.6	0.6	0.0	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.2	0.2	0.4	3.7	3.7	0.0	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	58.0	0.5	0.5	63.3	3.7	3.7	0.0	47.4	0.0	49.6	0.0	0.0
LnGrp LOS	E	A	A	E	A	A		D		D		
Approach Vol, veh/h		905			865			1			92	
Approach Delay, s/veh		1.9			4.4			47.4			49.6	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	93.5		11.4	6.4	92.2		11.4
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5
Max Green Setting (Gmax), s	12.5	43.0		27.5	12.5	43.0		11.5
Max Q Clear Time (g_c+I1), s	2.6	2.0		5.7	3.3	9.3		2.1
Green Ext Time (p_c), s	0.0	10.1		0.3	0.0	9.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	11	55	961	20	39	849
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	55	961	20	39	849

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1475	492	0	0	982	0
Stage 1	972	-	-	-	-	-
Stage 2	503	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	117	522	-	-	699	-
Stage 1	327	-	-	-	-	-
Stage 2	573	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	110	522	-	-	699	-
Mov Cap-2 Maneuver	110	-	-	-	-	-
Stage 1	327	-	-	-	-	-
Stage 2	541	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.1	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	321	699	-
HCM Lane V/C Ratio	-	-	0.206	0.056	-
HCM Control Delay (s)	-	-	19.1	10.5	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.8	0.2	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	0	0	0	0	660	350	358	900	0
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	660	350	358	900	0

Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	1947	2277	452				901	0	-	660	0	0
Stage 1	1617	1617	-				-	-	-	-	-	-
Stage 2	330	660	-				-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94				4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-				-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32				2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	57	39	555				750	-	0	924	-	-
Stage 1	148	161	-				-	-	0	-	-	-
Stage 2	701	458	-				-	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	35	0	554				749	-	-	923	-	-
Mov Cap-2 Maneuver	75	0	-				-	-	-	-	-	-
Stage 1	91	0	-				-	-	-	-	-	-
Stage 2	700	0	-				-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	3.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	749	-	-	923	-	-
HCM Lane V/C Ratio	-	-	-	0.388	-	-
HCM Control Delay (s)	0	-	0	11.3	-	-
HCM Lane LOS	A	-	A	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.9	-	-

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **PM Peak Hour**

Intersection 38 **I-580 EB Off-Ramp-98th Avenue/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn	6	5	86.7%	1.5	3	8	0.3	44.9	32.8	0.0	79.1	D
	Second Left												
	Left Turn	41	39	94.9%	5.5	30	48	0.3	45.7	15.3	12.9	62.8	D
	Through												
	Right Turn	619	612	98.9%	27.7	568	659	0.3	1.6	0.3	1.2	2.0	A
	Second Right												
	Subtotal	666	656	98.5%	26.9	612	700	0.4	4.6	1.5	1.5	6.9	A
SB	U Turn												
	Second Left												
	Left Turn	148	148	99.7%	11.8	129	164	0.0	45.9	9.4	32.6	65.4	D
	Through	490	495	101.0%	30.5	441	540	0.2	45.7	8.6	37.8	64.1	D
	Right Turn	32	33	102.8%	5.6	25	41	0.2	27.9	19.4	9.2	76.6	C
	Second Right												
	Subtotal	670	675	100.8%	34.3	618	737	0.2	45.0	8.9	36.1	64.7	D
EB	U Turn												
	Second Left												
	Left Turn												
	Through	64	64	100.2%	9.1	52	81	0.0	43.9	7.0	33.2	58.6	D
	Right Turn	163	161	98.7%	8.7	151	172	0.2	11.1	2.0	8.2	14.5	B
	Second Right												
	Subtotal	227	225	99.1%	14.4	206	253	0.1	20.0	2.1	16.7	23.5	C
WB	U Turn												
	Second Left												
	Left Turn	596	534	89.5%	14.0	520	558	2.6	28.7	2.4	23.8	31.8	C
	Through	180	170	94.2%	9.8	150	186	0.8	15.2	2.5	10.5	18.6	B
	Right Turn												
	Second Right												
	Subtotal	776	703	90.6%	19.7	677	734	2.7	25.6	2.0	21.4	28.2	C
Total		2,339	2,260	96.6%	46.0	2,206	2,334	1.7	24.6	3.5	21.6	33.0	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **PM Peak Hour**

Intersection 39 **I-580 Ramps/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	409	404	98.7%	22.0	368	442	0.3	27.0	3.0	20.7	29.2	C
	Through	2	2	90.0%	1.2	0	3	0.1	4.7	9.8	0.0	30.6	A
	Right Turn	236	244	103.5%	13.2	222	263	0.5	9.0	1.4	7.1	11.4	A
	Second Right												
	Subtotal	647	650	100.4%	31.1	590	686	0.1	20.2	2.2	15.3	22.2	C
SB	U Turn												
	Second Left												
	Left Turn												
	Through												
	Right Turn												
	Second Right												
	Subtotal												
EB	U Turn												
	Second Left												
	Left Turn	463	441	95.3%	13.7	421	463	1.0	36.2	2.9	31.9	39.5	D
	Through	368	369	100.2%	19.2	347	402	0.0	18.8	1.1	17.5	21.7	B
	Right Turn												
	Second Right												
	Subtotal	831	810	97.5%	28.4	778	865	0.7	28.3	2.2	25.1	31.9	C
WB	U Turn												
	Second Left												
	Left Turn												
	Through	367	312	85.0%	9.4	298	323	3.0	42.3	2.6	38.5	46.5	D
	Right Turn	149	132	88.4%	15.4	107	157	1.5	7.3	1.5	5.0	9.4	A
	Second Right												
	Subtotal	516	444	85.9%	19.4	406	464	3.3	32.5	1.8	30.4	36.1	C
Total		1,994	1,904	95.5%	38.9	1,867	1,969	2.1	26.6	1.6	23.8	29.0	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **PM Peak Hour**

Intersection 40 **Mountain Boulevard-Oakland Zoo Driveway/Golf Links Road** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	29	26	90.0%	5.3	18	33	0.6	30.4	12.2	12.9	49.6	D
	Through	2	2	95.0%	1.4	0	4	0.1	3.8	5.0	0.0	10.1	A
	Right Turn	2	3	135.0%	1.1	1	5	0.5	1.0	1.7	0.0	5.2	A
	Second Right												
	Subtotal	33	31	93.0%	5.4	21	39	0.4	27.4	11.0	12.3	44.9	D
SB	U Turn												
	Second Left												
	Left Turn	22	21	94.1%	3.6	14	26	0.3	159.6	78.9	23.5	259.4	F
	Through	1	1	100.0%	0.9	0	2	0.0	40.4	109.8	0.0	349.1	E
	Right Turn	199	195	97.9%	7.2	180	202	0.3	169.0	88.9	32.5	308.4	F
	Second Right												
	Subtotal	222	217	97.6%	7.6	201	227	0.4	168.0	87.5	31.9	300.8	F
EB	U Turn	26	27	104.2%	4.7	19	32	0.2	1.1	0.9	0.4	3.2	A
	Second Left												
	Left Turn	256	259	101.3%	16.5	223	283	0.2	1.3	0.5	0.9	2.7	A
	Through	320	324	101.2%	13.9	305	348	0.2	1.3	0.1	1.2	1.4	A
	Right Turn	2	3	165.0%	1.7	0	5	0.8	0.5	0.7	0.0	1.5	A
	Second Right												
	Subtotal	604	613	101.5%	22.7	585	656	0.4	1.3	0.3	1.1	2.1	A
WB	U Turn												
	Second Left												
	Left Turn	2	1	70.0%	1.2	0	4	0.5	101.3	142.9	0.0	312.9	F
	Through	262	195	74.3%	18.2	173	230	4.5	239.0	28.2	190.0	284.8	F
	Right Turn	18	14	77.8%	3.7	9	19	1.0	234.1	56.1	127.9	332.7	F
	Second Right												
	Subtotal	282	210	74.5%	18.1	185	241	4.6	239.1	28.2	186.5	284.8	F
Total		1,141	1,071	93.8%	28.0	1,045	1,127	2.1	84.1	20.1	56.4	112.4	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	722	202	85	686	93	143	199	79	171	596	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	110	722	106	85	686	84	143	199	45	171	596	40
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	892	391	108	749	92	170	1032	229	295	1546	692
Arrive On Green	0.08	0.25	0.25	0.06	0.24	0.24	0.10	0.36	0.36	0.17	0.44	0.44
Sat Flow, veh/h	1774	3539	1549	1774	3175	388	1774	2881	638	1774	3539	1583
Grp Volume(v), veh/h	110	722	106	85	382	388	143	121	123	171	596	40
Grp Sat Flow(s),veh/h/ln	1774	1770	1549	1774	1770	1794	1774	1770	1750	1774	1770	1583
Q Serve(g_s), s	7.3	23.0	6.6	5.7	25.2	25.3	9.5	5.6	5.8	10.7	13.7	1.8
Cycle Q Clear(g_c), s	7.3	23.0	6.6	5.7	25.2	25.3	9.5	5.6	5.8	10.7	13.7	1.8
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.36	1.00		1.00
Lane Grp Cap(c), veh/h	137	892	391	108	418	423	170	634	627	295	1546	692
V/C Ratio(X)	0.81	0.81	0.27	0.79	0.91	0.92	0.84	0.19	0.20	0.58	0.39	0.06
Avail Cap(c_a), veh/h	281	959	420	222	420	426	222	634	627	295	1546	692
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	42.2	36.0	55.6	44.7	44.7	53.3	26.5	26.6	46.2	22.9	19.5
Incr Delay (d2), s/veh	10.5	5.0	0.4	11.8	24.3	24.3	19.3	0.7	0.7	2.8	0.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	11.8	2.9	3.1	15.1	15.4	5.6	2.9	2.9	5.5	6.9	0.8
LnGrp Delay(d),s/veh	65.0	47.1	36.4	67.4	69.0	69.0	72.7	27.2	27.3	49.0	23.6	19.7
LnGrp LOS	E	D	D	E	E	E	E	C	C	D	C	B
Approach Vol, veh/h		938			855			387			807	
Approach Delay, s/veh		48.0			68.8			44.0			28.8	
Approach LOS		D			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	48.0	11.3	35.8	15.5	57.4	13.2	33.8
Change Period (Y+Rc), s	5.0	* 5	4.0	5.5	4.0	5.0	4.0	5.5
Max Green Setting (Gmax), s	11.9	* 43	15.0	32.5	15.0	39.0	19.0	28.5
Max Q Clear Time (g_c+I1), s	12.7	7.8	7.7	25.0	11.5	15.7	9.3	27.3
Green Ext Time (p_c), s	0.0	1.5	0.1	5.3	0.1	4.9	0.2	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	48.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	144	30	222	14	268	123
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	144	22	222	12	268	123
Adj No. of Lanes	1	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	208	186	399	22	364	1086
Arrive On Green	0.12	0.12	0.23	0.23	0.21	0.58
Sat Flow, veh/h	1774	1583	1751	95	1774	1863
Grp Volume(v), veh/h	144	22	0	234	268	123
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1846	1774	1863
Q Serve(g_s), s	2.6	0.4	0.0	3.7	4.7	1.0
Cycle Q Clear(g_c), s	2.6	0.4	0.0	3.7	4.7	1.0
Prop In Lane	1.00	1.00		0.05	1.00	
Lane Grp Cap(c), veh/h	208	186	0	421	364	1086
V/C Ratio(X)	0.69	0.12	0.00	0.56	0.74	0.11
Avail Cap(c_a), veh/h	1064	949	0	1383	1595	3350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.1	13.2	0.0	11.4	12.4	3.1
Incr Delay (d2), s/veh	4.1	0.3	0.0	1.2	2.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.2	0.0	2.0	2.6	0.5
LnGrp Delay(d),s/veh	18.2	13.5	0.0	12.5	15.3	3.2
LnGrp LOS	B	B		B	B	A
Approach Vol, veh/h	166		234			391
Approach Delay, s/veh	17.6		12.5			11.5
Approach LOS	B		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.8	12.6				24.4		8.9
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	30.0	25.0				60.0		20.0
Max Q Clear Time (g_c+I1), s	16.7	5.7				3.0		4.6
Green Ext Time (p_c), s	0.8	1.9				2.2		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	2	234	43	0	267
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	234	43	0	267

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	523	256	0	0	277	0
Stage 1	256	-	-	-	-	-
Stage 2	267	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	514	783	-	-	1286	-
Stage 1	787	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	514	783	-	-	1286	-
Mov Cap-2 Maneuver	514	-	-	-	-	-
Stage 1	787	-	-	-	-	-
Stage 2	778	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	783	1286	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Control Delay (s)	-	-	9.6	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	219	6	0	170	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	219	6	0	170	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	225	0	307	113
Stage 1	-	-	-	-	222	-
Stage 2	-	-	-	-	85	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1341	-	661	918
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	929	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1341	-	661	918
Mov Cap-2 Maneuver	-	-	-	-	661	-
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	929	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	918	-	-	1341	-
HCM Lane V/C Ratio	0.008	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	545	349	33	0	0	0	53	187	35	76	22	134
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900				1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	545	349	29				53	187	0	76	22	22
Adj No. of Lanes	1	1	0				0	1	0	1	1	1
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2				2	2	2	2	2	2
Cap, veh/h	1094	1046	87				62	220	0	113	118	101
Arrive On Green	0.62	0.62	0.62				0.15	0.15	0.00	0.06	0.06	0.06
Sat Flow, veh/h	1774	1697	141				407	1436	0	1774	1863	1583
Grp Volume(v), veh/h	545	0	378				240	0	0	76	22	22
Grp Sat Flow(s),veh/h/ln	1774	0	1838				1842	0	0	1774	1863	1583
Q Serve(g_s), s	15.3	0.0	8.9				11.4	0.0	0.0	3.8	1.0	1.2
Cycle Q Clear(g_c), s	15.3	0.0	8.9				11.4	0.0	0.0	3.8	1.0	1.2
Prop In Lane	1.00		0.08				0.22		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	1094	0	1133				282	0	0	113	118	101
V/C Ratio(X)	0.50	0.00	0.33				0.85	0.00	0.00	0.67	0.19	0.22
Avail Cap(c_a), veh/h	1094	0	1133				389	0	0	315	331	281
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	0.00	0.00	0.81	0.81	0.81
Uniform Delay (d), s/veh	9.5	0.0	8.3				37.1	0.0	0.0	41.2	39.9	40.0
Incr Delay (d2), s/veh	1.6	0.0	0.8				12.2	0.0	0.0	5.6	0.6	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	0.0	4.8				6.8	0.0	0.0	2.0	0.5	0.5
LnGrp Delay(d),s/veh	11.2	0.0	9.1				49.4	0.0	0.0	46.8	40.5	40.9
LnGrp LOS	B		A				D			D	D	D
Approach Vol, veh/h		923						240			120	
Approach Delay, s/veh		10.3						49.4			44.6	
Approach LOS		B						D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		18.8		60.5		10.7		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		19.0		40.0		16.0		
Max Q Clear Time (g_c+I1), s		13.4		17.3		5.8		
Green Ext Time (p_c), s		0.4		4.1		0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	20.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	81	145	35	2	731	1	0	0	6	5
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	0	0	6	145	35	0	731	1	0	0	6	3
Adj No. of Lanes	0	1	0	1	1	0	1	2	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	10	185	194	0	1090	2558	0	0	848	424
Arrive On Green	0.00	0.00	0.01	0.10	0.10	0.00	0.72	0.72	0.00	0.00	0.72	0.72
Sat Flow, veh/h	0	0	1583	1774	1863	0	1400	3632	0	0	1173	586
Grp Volume(v), veh/h	0	0	6	145	35	0	731	1	0	0	0	9
Grp Sat Flow(s),veh/h/ln	0	0	1583	1774	1863	0	1400	1770	0	0	0	1759
Q Serve(g_s), s	0.0	0.0	0.3	7.2	1.5	0.0	27.4	0.0	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	0.0	0.3	7.2	1.5	0.0	27.5	0.0	0.0	0.0	0.0	0.1
Prop In Lane	0.00		1.00	1.00		0.00	1.00		0.00	0.00		0.33
Lane Grp Cap(c), veh/h	0	0	10	185	194	0	1090	2558	0	0	0	1272
V/C Ratio(X)	0.00	0.00	0.61	0.78	0.18	0.00	0.67	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	0	0	281	315	331	0	1090	2558	0	0	0	1272
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	0.72	0.72	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	44.6	39.3	36.8	0.0	7.3	3.5	0.0	0.0	0.0	3.5
Incr Delay (d2), s/veh	0.0	0.0	48.9	7.1	0.4	0.0	2.4	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.3	3.9	0.8	0.0	11.1	0.0	0.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh	0.0	0.0	93.5	46.4	37.2	0.0	9.7	3.5	0.0	0.0	0.0	3.5
LnGrp LOS			F	D	D		A	A				A
Approach Vol, veh/h		6			180			732			9	
Approach Delay, s/veh		93.5			44.6			9.7			3.5	
Approach LOS		F			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		14.4		70.1		5.6		70.1
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		16.0		43.0		16.0		43.0
Max Q Clear Time (g_c+I1), s		9.2		29.5		2.3		2.1
Green Ext Time (p_c), s		0.3		3.1		0.0		3.9

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	132	117	368	50	0	0	0	0	193	205	37
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	132	78	368	50	0				193	205	31
Adj No. of Lanes	0	1	0	1	1	0				0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	162	96	418	818	0				694	803	123
Arrive On Green	0.00	0.15	0.15	0.24	0.44	0.00				0.45	0.45	0.45
Sat Flow, veh/h	0	1097	648	1774	1863	0				1543	1784	274
Grp Volume(v), veh/h	0	0	210	368	50	0				223	0	206
Grp Sat Flow(s),veh/h/ln	0	0	1745	1774	1863	0				1786	0	1814
Q Serve(g_s), s	0.0	0.0	10.5	18.0	1.4	0.0				7.1	0.0	6.3
Cycle Q Clear(g_c), s	0.0	0.0	10.5	18.0	1.4	0.0				7.1	0.0	6.3
Prop In Lane	0.00		0.37	1.00		0.00				0.86		0.15
Lane Grp Cap(c), veh/h	0	0	258	418	818	0				804	0	817
V/C Ratio(X)	0.00	0.00	0.81	0.88	0.06	0.00				0.28	0.00	0.25
Avail Cap(c_a), veh/h	0	0	427	631	1221	0				804	0	817
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.62	0.62	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	37.1	33.2	14.6	0.0				15.6	0.0	15.4
Incr Delay (d2), s/veh	0.0	0.0	6.1	6.2	0.0	0.0				0.9	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.5	9.5	0.7	0.0				3.7	0.0	3.3
LnGrp Delay(d),s/veh	0.0	0.0	43.3	39.3	14.6	0.0				16.4	0.0	16.1
LnGrp LOS			D	D	B					B		B
Approach Vol, veh/h		210			418						429	
Approach Delay, s/veh		43.3			36.4						16.3	
Approach LOS		D			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			26.2	18.3		45.5		44.5
Change Period (Y+Rc), s			5.0	5.0		5.0		5.0
Max Green Setting (Gmax), s			32.0	22.0		21.0		59.0
Max Q Clear Time (g_c+I1), s			20.0	12.5		9.1		3.4
Green Ext Time (p_c), s			1.2	0.7		1.3		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	29.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	117	107	101	29	243	368	68	934	165	28	27	107
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1900	1863	1900	1863	1937	1900
Adj Flow Rate, veh/h	117	107	38	29	243	183	68	934	153	28	27	52
Adj No. of Lanes	0	2	0	0	1	1	0	2	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	162	59	36	298	283	127	1529	247	200	317	611
Arrive On Green	0.11	0.11	0.11	0.18	0.18	0.18	0.18	0.18	0.18	0.54	0.54	0.54
Sat Flow, veh/h	1519	1490	538	198	1655	1575	152	2807	453	517	583	1122
Grp Volume(v), veh/h	138	0	124	272	0	183	610	0	545	28	0	79
Grp Sat Flow(s),veh/h/ln	1787	0	1759	1853	0	1575	1799	0	1614	517	0	1705
Q Serve(g_s), s	6.7	0.0	6.1	12.7	0.0	9.7	16.5	0.0	28.1	4.0	0.0	2.0
Cycle Q Clear(g_c), s	6.7	0.0	6.1	12.7	0.0	9.7	27.9	0.0	28.1	32.0	0.0	2.0
Prop In Lane	0.85		0.31	0.11		1.00	0.11		0.28	1.00		0.66
Lane Grp Cap(c), veh/h	195	0	192	333	0	283	1024	0	879	200	0	928
V/C Ratio(X)	0.71	0.00	0.65	0.82	0.00	0.65	0.60	0.00	0.62	0.14	0.00	0.09
Avail Cap(c_a), veh/h	397	0	391	474	0	403	1024	0	879	200	0	928
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.00	0.62	1.00	0.00	1.00	0.71	0.00	0.71	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.7	0.0	38.5	35.5	0.0	34.2	28.1	0.0	28.3	28.0	0.0	9.8
Incr Delay (d2), s/veh	2.9	0.0	2.3	7.3	0.0	2.5	1.8	0.0	2.3	1.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	3.1	7.2	0.0	4.4	14.5	0.0	13.1	0.6	0.0	1.0
LnGrp Delay(d),s/veh	41.7	0.0	40.8	42.8	0.0	36.7	29.9	0.0	30.7	29.5	0.0	10.0
LnGrp LOS	D		D	D		D	C		C	C		A
Approach Vol, veh/h		262			455			1155			107	
Approach Delay, s/veh		41.2			40.3			30.3			15.1	
Approach LOS		D			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		54.0		14.8		54.0		21.2
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		32.0		20.0		32.0		23.0
Max Q Clear Time (g_c+I1), s		30.1		8.7		34.0		14.7
Green Ext Time (p_c), s		1.2		0.7		0.0		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	33.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	154	0	22	1	0	11	0	1002	0	0	157	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	0	1863	0	0	1863	0
Adj Flow Rate, veh/h	154	0	0	1	0	0	0	1002	0	0	157	0
Adj No. of Lanes	2	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0	0	2	0
Cap, veh/h	229	120	0	2	0	0	0	1430	0	0	1430	0
Arrive On Green	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.00	0.00	1.00	0.00
Sat Flow, veh/h	3548	1863	0	1774	0	0	0	1863	0	0	1863	0
Grp Volume(v), veh/h	154	0	0	1	0	0	0	1002	0	0	157	0
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	0	0	1863	0	0	1863	0
Q Serve(g_s), s	3.8	0.0	0.0	0.1	0.0	0.0	0.0	24.3	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.8	0.0	0.0	0.1	0.0	0.0	0.0	24.3	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	0.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	229	120	0	2	0	0	0	1430	0	0	1430	0
V/C Ratio(X)	0.67	0.00	0.00	0.51	0.00	0.00	0.00	0.70	0.00	0.00	0.11	0.00
Avail Cap(c_a), veh/h	315	166	0	79	0	0	0	1430	0	0	1430	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	41.2	0.0	0.0	44.9	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	128.6	0.0	0.0	0.0	2.9	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.0	0.1	0.0	0.0	0.0	13.4	0.0	0.0	0.1	0.0
LnGrp Delay(d),s/veh	44.6	0.0	0.0	173.5	0.0	0.0	0.0	8.1	0.0	0.0	0.2	0.0
LnGrp LOS	D			F				A			A	
Approach Vol, veh/h		154			1			1002			157	
Approach Delay, s/veh		44.6			173.5			8.1			0.2	
Approach LOS		D			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		74.1		10.8		74.1		5.1
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		63.0		8.0		63.0		4.0
Max Q Clear Time (g_c+I1), s		26.3		5.8		2.0		2.1
Green Ext Time (p_c), s		7.1		0.1		7.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 38 **I-580 EB Off-Ramp-98th Avenue/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Std. Dev.	Maximum	LOS
NB	U Turn	1	1	60.0%	0.8	0	2	0.4	11.3	19.4	0.0	71.8	B
	Second Left												
	Left Turn	49	53	107.3%	5.6	41	59	0.5	48.7	11.3	30.4	58.9	D
	Through												
	Right Turn	968	981	101.3%	19.9	942	1,003	0.4	7.7	8.0	2.3	6.9	A
	Second Right												
	Subtotal	1,018	1,034	101.5%	18.8	1,001	1,057	0.5	9.7	7.7	4.6	8.8	A
SB	U Turn												
	Second Left												
	Left Turn	142	143	100.6%	14.0	116	165	0.1	39.4	10.5	32.4	46.3	D
	Through	724	712	98.3%	23.9	671	758	0.5	36.6	7.4	25.9	42.2	D
	Right Turn	19	18	96.8%	2.8	13	23	0.1	27.8	14.9	6.9	55.9	C
	Second Right												
	Subtotal	885	873	98.6%	17.1	842	895	0.4	36.9	8.0	26.8	40.8	D
EB	U Turn												
	Second Left												
	Left Turn												
	Through	61	61	99.3%	7.9	48	71	0.1	48.1	27.5	27.5	56.7	D
	Right Turn	185	182	98.4%	12.1	165	205	0.2	15.0	5.7	8.5	15.5	B
	Second Right												
	Subtotal	246	243	98.6%	14.1	216	267	0.2	23.7	11.2	12.8	24.7	C
WB	U Turn												
	Second Left												
	Left Turn	587	471	80.3%	18.5	441	507	5.0	45.1	4.5	38.3	49.6	D
	Through	142	115	81.1%	9.6	103	137	2.4	25.2	6.5	15.3	33.4	C
	Right Turn												
	Second Right												
	Subtotal	729	587	80.5%	19.8	552	625	5.6	41.0	4.5	34.2	44.8	D
Total		2,878	2,736	95.1%	30.8	2,684	2,784	2.7	26.4	6.5	20.0	27.0	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 39 **I-580 Ramps/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	310	302	97.4%	20.0	275	348	0.5	37.3	4.8	32.2	44.3	D
	Through	2	2	95.0%	1.3	0	4	0.1	11.2	28.8	0.0	91.5	B
	Right Turn	376	383	101.8%	18.7	358	408	0.3	33.0	16.9	17.1	73.5	C
	Second Right												
	Subtotal	688	687	99.8%	25.5	644	726	0.1	35.0	10.9	23.1	61.4	C
SB	U Turn												
	Second Left												
	Left Turn												
	Through												
	Right Turn												
	Second Right												
	Subtotal												
EB	U Turn												
	Second Left												
	Left Turn	565	581	102.8%	12.4	559	598	0.7	41.3	2.2	37.7	44.9	D
	Through	606	610	100.7%	21.9	580	649	0.2	37.4	4.4	29.9	42.6	D
	Right Turn												
	Second Right												
	Subtotal	1,171	1,191	101.7%	27.9	1,155	1,247	0.6	39.3	2.4	34.9	42.3	D
WB	U Turn												
	Second Left												
	Left Turn												
	Through	419	277	66.2%	9.3	265	292	7.6	34.7	2.8	29.0	39.2	C
	Right Turn	85	57	67.4%	8.7	42	70	3.3	10.6	3.5	5.7	16.2	B
	Second Right												
	Subtotal	504	335	66.4%	11.3	319	349	8.3	30.8	2.8	25.9	34.8	C
Total		2,363	2,212	93.6%	40.7	2,143	2,276	3.2	36.7	4.1	31.7	44.8	D

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 40 **Mountain Boulevard-Oakland Zoo Driveway/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	6	5	80.0%	1.9	2	7	0.5	27.5	31.8	0.0	103.6	C
	Through	2	3	125.0%	2.0	0	5	0.3	22.9	27.6	0.0	84.7	C
	Right Turn												
	Second Right												
	Subtotal	8	7	91.3%	3.3	3	12	0.3	38.2	27.0	0.0	98.9	D
SB	U Turn												
	Second Left												
	Left Turn	12	12	95.8%	3.5	7	17	0.1	32.1	18.4	0.0	84.7	C
	Through	4	4	105.0%	1.6	2	7	0.1	31.5	27.2	0.0	73.4	C
	Right Turn	227	227	100.1%	14.3	210	255	0.0	23.4	5.4	16.5	45.8	C
	Second Right												
	Subtotal	243	243	100.0%	13.5	229	270	0.0	24.5	5.2	18.1	47.8	C
EB	U Turn												
	Second Left												
	Left Turn	630	634	100.6%	20.1	605	655	0.1	13.8	2.0	11.1	16.6	B
	Through	300	312	103.8%	8.2	300	328	0.7	14.6	1.8	10.5	15.9	B
	Right Turn	52	51	98.8%	7.2	38	61	0.1	10.2	6.1	1.8	16.4	B
	Second Right												
	Subtotal	982	997	101.5%	25.3	966	1,038	0.5	13.9	1.9	10.8	15.7	B
WB	U Turn												
	Second Left												
	Left Turn	1	0	20.0%	0.4	0	1	1.0	85.6	187.3	0.0	888.7	F
	Through	271	100	36.9%	11.1	88	120	12.5	545.7	44.6	455.8	727.8	F
	Right Turn	36	15	40.3%	2.7	11	18	4.3	621.2	96.7	441.7	857.0	F
	Second Right												
	Subtotal	308	115	37.3%	12.3	100	136	13.3	552.7	47.7	455.8	727.8	F
Total		1,541	1,362	88.4%	30.1	1,322	1,418	4.7	63.0	6.1	52.9	71.9	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	390	390	54	0	0	0	13	59	25	533	122	341
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900				1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	390	390	49				13	59	0	533	122	119
Adj No. of Lanes	1	1	0				0	1	0	1	1	1
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2				2	2	2	2	2	2
Cap, veh/h	799	729	92				19	85	0	579	608	515
Arrive On Green	0.45	0.45	0.45				0.06	0.06	0.00	0.33	0.33	0.33
Sat Flow, veh/h	1774	1618	203				333	1513	0	1774	1863	1576
Grp Volume(v), veh/h	390	0	439				72	0	0	533	122	119
Grp Sat Flow(s),veh/h/ln	1774	0	1822				1846	0	0	1774	1863	1576
Q Serve(g_s), s	13.9	0.0	15.7				3.4	0.0	0.0	26.0	4.2	4.9
Cycle Q Clear(g_c), s	13.9	0.0	15.7				3.4	0.0	0.0	26.0	4.2	4.9
Prop In Lane	1.00		0.11				0.18		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	799	0	820				104	0	0	579	608	515
V/C Ratio(X)	0.49	0.00	0.54				0.69	0.00	0.00	0.92	0.20	0.23
Avail Cap(c_a), veh/h	799	0	820				328	0	0	631	662	560
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	0.00	0.00	0.45	0.45	0.45
Uniform Delay (d), s/veh	17.4	0.0	17.9				41.7	0.0	0.0	29.2	21.8	22.1
Incr Delay (d2), s/veh	2.1	0.0	2.5				8.0	0.0	0.0	9.6	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	0.0	8.4				2.0	0.0	0.0	14.3	2.2	2.2
LnGrp Delay(d),s/veh	19.6	0.0	20.4				49.7	0.0	0.0	38.7	21.9	22.2
LnGrp LOS	B		C				D			D	C	C
Approach Vol, veh/h		829						72			774	
Approach Delay, s/veh		20.0						49.7			33.5	
Approach LOS		C						D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		10.1		45.5		34.4		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		16.0		27.0		32.0		
Max Q Clear Time (g_c+I1), s		5.4		17.7		28.0		
Green Ext Time (p_c), s		0.1		2.6		1.4		

Intersection Summary	
HCM 2010 Ctrl Delay	27.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	0	694	296	48	10	447	2	0	0	6	8
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	1	0	83	296	48	2	447	2	0	0	6	4
Adj No. of Lanes	0	1	0	1	1	0	1	2	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	1	0	105	332	332	14	886	2049	0	0	604	403
Arrive On Green	0.07	0.00	0.07	0.19	0.19	0.19	0.58	0.58	0.00	0.00	0.58	0.58
Sat Flow, veh/h	19	0	1566	1774	1776	74	1399	3632	0	0	1044	696
Grp Volume(v), veh/h	84	0	0	296	0	50	447	2	0	0	0	10
Grp Sat Flow(s),veh/h/ln	1585	0	0	1774	0	1850	1399	1770	0	0	0	1740
Q Serve(g_s), s	4.7	0.0	0.0	14.6	0.0	2.0	17.9	0.0	0.0	0.0	0.0	0.2
Cycle Q Clear(g_c), s	4.7	0.0	0.0	14.6	0.0	2.0	18.1	0.0	0.0	0.0	0.0	0.2
Prop In Lane	0.01		0.99	1.00		0.04	1.00		0.00	0.00		0.40
Lane Grp Cap(c), veh/h	107	0	0	332	0	346	886	2049	0	0	0	1007
V/C Ratio(X)	0.79	0.00	0.00	0.89	0.00	0.14	0.50	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	370	0	0	355	0	370	886	2049	0	0	0	1007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.83	0.83	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	41.3	0.0	0.0	35.7	0.0	30.6	11.9	8.0	0.0	0.0	0.0	8.0
Incr Delay (d2), s/veh	12.0	0.0	0.0	22.5	0.0	0.2	1.7	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.0	9.2	0.0	1.1	7.2	0.0	0.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh	53.3	0.0	0.0	58.2	0.0	30.7	13.6	8.0	0.0	0.0	0.0	8.0
LnGrp LOS	D			E		C	B	A				A
Approach Vol, veh/h		84			346			449			10	
Approach Delay, s/veh		53.3			54.2			13.5			8.0	
Approach LOS		D			D			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		21.8		57.1		11.1		57.1
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		18.0		36.0		21.0		36.0
Max Q Clear Time (g_c+I1), s		16.6		20.1		6.7		2.2
Green Ext Time (p_c), s		0.2		1.7		0.2		2.0

Intersection Summary		
HCM 2010 Ctrl Delay		33.1
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	85	93	325	123	0	0	0	0	400	160	59
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	85	45	325	123	0				400	160	52
Adj No. of Lanes	0	1	0	1	1	0				0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	122	65	386	707	0				903	686	223
Arrive On Green	0.00	0.11	0.11	0.07	0.13	0.00				0.51	0.51	0.51
Sat Flow, veh/h	0	1142	604	1774	1863	0				1774	1348	438
Grp Volume(v), veh/h	0	0	130	325	123	0				400	0	212
Grp Sat Flow(s),veh/h/ln	0	0	1746	1774	1863	0				1774	0	1785
Q Serve(g_s), s	0.0	0.0	6.5	16.3	5.3	0.0				12.9	0.0	6.0
Cycle Q Clear(g_c), s	0.0	0.0	6.5	16.3	5.3	0.0				12.9	0.0	6.0
Prop In Lane	0.00		0.35	1.00		0.00				1.00		0.25
Lane Grp Cap(c), veh/h	0	0	186	386	707	0				903	0	909
V/C Ratio(X)	0.00	0.00	0.70	0.84	0.17	0.00				0.44	0.00	0.23
Avail Cap(c_a), veh/h	0	0	349	552	1056	0				903	0	909
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.74	0.74	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	38.8	40.2	26.7	0.0				14.0	0.0	12.3
Incr Delay (d2), s/veh	0.0	0.0	4.7	6.0	0.1	0.0				1.6	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.3	8.7	2.8	0.0				6.6	0.0	3.1
LnGrp Delay(d),s/veh	0.0	0.0	43.5	46.3	26.8	0.0				15.6	0.0	12.9
LnGrp LOS			D	D	C					B		B
Approach Vol, veh/h		130			448						612	
Approach Delay, s/veh		43.5			40.9						14.6	
Approach LOS		D			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			24.6	14.6		50.8		39.2
Change Period (Y+Rc), s			5.0	5.0		5.0		5.0
Max Green Setting (Gmax), s			28.0	18.0		29.0		51.0
Max Q Clear Time (g_c+I1), s			18.3	8.5		14.9		7.3
Green Ext Time (p_c), s			1.3	0.3		2.2		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	66	218	201	32	171	186	128	446	237	88	84	149
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1863	1937	1900
Adj Flow Rate, veh/h	66	218	46	32	171	27	128	446	201	88	84	97
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	316	69	51	281	46	330	1102	489	378	488	564
Arrive On Green	0.04	0.04	0.04	0.10	0.10	0.10	0.20	0.20	0.20	0.60	0.60	0.60
Sat Flow, veh/h	691	2374	520	485	2683	440	466	1851	822	781	821	948
Grp Volume(v), veh/h	175	0	155	121	0	109	399	0	376	88	0	181
Grp Sat Flow(s),veh/h/ln	1828	0	1757	1839	0	1769	1603	0	1536	781	0	1768
Q Serve(g_s), s	8.5	0.0	7.8	5.7	0.0	5.3	14.9	0.0	19.2	7.1	0.0	4.2
Cycle Q Clear(g_c), s	8.5	0.0	7.8	5.7	0.0	5.3	19.1	0.0	19.2	26.3	0.0	4.2
Prop In Lane	0.38		0.30	0.26		0.25	0.32		0.54	1.00		0.54
Lane Grp Cap(c), veh/h	244	0	234	193	0	186	1007	0	915	378	0	1052
V/C Ratio(X)	0.72	0.00	0.66	0.63	0.00	0.59	0.40	0.00	0.41	0.23	0.00	0.17
Avail Cap(c_a), veh/h	406	0	390	470	0	452	1007	0	915	378	0	1052
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.71	0.00	0.71	1.00	0.00	1.00	0.88	0.00	0.88	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.3	0.0	41.0	38.6	0.0	38.4	22.1	0.0	22.4	19.4	0.0	8.2
Incr Delay (d2), s/veh	2.8	0.0	2.3	3.4	0.0	2.9	1.0	0.0	1.2	1.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	4.0	3.1	0.0	2.7	9.0	0.0	8.5	1.7	0.0	2.1
LnGrp Delay(d),s/veh	44.2	0.0	43.3	42.0	0.0	41.3	23.1	0.0	23.6	20.8	0.0	8.6
LnGrp LOS	D		D	D		D	C		C	C		A
Approach Vol, veh/h		330			230			775			269	
Approach Delay, s/veh		43.8			41.7			23.3			12.6	
Approach LOS		D			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		58.6		17.0		58.6		14.4
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		32.0		20.0		32.0		23.0
Max Q Clear Time (g_c+I1), s		21.2		10.5		28.3		7.7
Green Ext Time (p_c), s		3.8		0.9		1.8		0.7

Intersection Summary		
HCM 2010 Ctrl Delay		28.4
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	412	0	75	3	0	23	0	376	0	3	311	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	0	1863	0	1900	1863	0
Adj Flow Rate, veh/h	419	0	0	3	0	0	0	376	0	3	311	0
Adj No. of Lanes	2	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0	2	2	0
Cap, veh/h	543	285	0	6	0	0	0	1261	0	43	1257	0
Arrive On Green	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.00	0.22	0.22	0.00
Sat Flow, veh/h	3548	1863	0	1774	0	0	0	1863	0	3	1857	0
Grp Volume(v), veh/h	419	0	0	3	0	0	0	376	0	314	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	0	0	1863	0	1860	0	0
Q Serve(g_s), s	10.2	0.0	0.0	0.2	0.0	0.0	0.0	7.4	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.2	0.0	0.0	0.2	0.0	0.0	0.0	7.4	0.0	12.5	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	0.00		0.00	0.01		0.00
Lane Grp Cap(c), veh/h	543	285	0	6	0	0	0	1261	0	1300	0	0
V/C Ratio(X)	0.77	0.00	0.00	0.53	0.00	0.00	0.00	0.30	0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h	986	517	0	315	0	0	0	1261	0	1300	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.98	0.00	0.00
Uniform Delay (d), s/veh	36.6	0.0	0.0	44.8	0.0	0.0	0.0	5.9	0.0	16.1	0.0	0.0
Incr Delay (d2), s/veh	2.4	0.0	0.0	59.4	0.0	0.0	0.0	0.6	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.0	0.0	0.2	0.0	0.0	0.0	4.0	0.0	6.6	0.0	0.0
LnGrp Delay(d),s/veh	39.0	0.0	0.0	104.2	0.0	0.0	0.0	6.5	0.0	16.6	0.0	0.0
LnGrp LOS	D			F				A		B		
Approach Vol, veh/h		419			3			376			314	
Approach Delay, s/veh		39.0			104.2			6.5			16.6	
Approach LOS		D			F			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		65.9		18.8		65.9		5.3
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		34.0		25.0		34.0		16.0
Max Q Clear Time (g_c+I1), s		9.4		12.2		14.5		2.2
Green Ext Time (p_c), s		2.8		1.6		2.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.8
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing Plus Project Mitigated**
Volume and Delay by Movement **PM Peak Hour**

Intersection 38 **I-580 EB Off-Ramp-98th Avenue/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Std. Dev.	Maximum	LOS
NB	U Turn	6	7	110.0%	2.7	2	11	0.2	40.6	29.6	0.0	87.6	D
	Second Left												
	Left Turn	41	40	97.8%	7.7	30	54	0.1	45.2	10.3	29.0	65.2	D
	Through												
	Right Turn	619	610	98.6%	21.1	583	642	0.4	1.5	0.5	1.0	2.9	A
	Second Right												
	Subtotal	666	657	98.6%	23.7	619	693	0.3	4.5	1.4	2.0	6.9	A
SB	U Turn												
	Second Left												
	Left Turn	148	149	100.4%	14.8	115	165	0.0	35.0	3.5	28.9	39.2	D
	Through	490	483	98.6%	14.9	446	496	0.3	32.3	2.3	28.6	35.7	C
	Right Turn	32	36	110.9%	5.7	28	43	0.6	18.2	6.8	6.4	28.6	B
	Second Right												
	Subtotal	670	667	99.6%	17.6	641	691	0.1	32.1	2.7	27.8	35.4	C
EB	U Turn												
	Second Left												
	Left Turn												
	Through	64	68	105.5%	7.4	57	78	0.4	49.8	8.6	36.0	65.3	D
	Right Turn	163	170	104.1%	18.0	149	212	0.5	13.4	2.4	10.1	18.0	B
	Second Right												
	Subtotal	227	237	104.5%	19.2	217	283	0.7	23.8	4.5	18.7	31.7	C
WB	U Turn												
	Second Left												
	Left Turn	596	603	101.2%	17.6	566	627	0.3	25.3	1.4	22.5	26.8	C
	Through	180	187	103.6%	10.7	171	201	0.5	14.3	2.4	8.7	17.1	B
	Right Turn												
	Second Right												
	Subtotal	776	790	101.8%	19.6	761	828	0.5	22.8	1.3	19.7	24.3	C
Total		2,339	2,351	100.5%	22.2	2,306	2,381	0.2	20.5	1.7	17.2	22.7	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing Plus Project Mitigated**
Volume and Delay by Movement **PM Peak Hour**

Intersection 39 **I-580 Ramps/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	409	405	98.9%	15.2	375	425	0.2	33.0	6.1	24.7	46.5	C
	Through	2	2	95.0%	1.3	0	4	0.1	9.8	24.4	0.0	76.7	A
	Right Turn	236	238	101.0%	17.1	211	261	0.1	9.0	2.4	6.9	15.2	A
	Second Right												
	Subtotal	647	645	99.7%	20.5	610	666	0.1	24.3	4.8	18.5	35.2	C
SB	U Turn												
	Second Left												
	Left Turn												
	Through												
	Right Turn												
	Second Right												
	Subtotal												
EB	U Turn												
	Second Left												
	Left Turn	489	492	100.6%	18.9	463	517	0.1	45.2	3.1	40.2	48.8	D
	Through	342	344	100.4%	15.4	324	375	0.1	23.9	7.0	15.7	36.6	C
	Right Turn												
	Second Right												
	Subtotal	831	835	100.5%	24.9	805	887	0.1	36.7	4.2	31.4	44.0	D
WB	U Turn												
	Second Left												
	Left Turn												
	Through	367	376	102.5%	17.3	352	399	0.5	18.6	1.4	15.2	20.1	B
	Right Turn	123	124	101.1%	16.3	109	153	0.1	4.6	1.2	2.3	5.9	A
	Second Right												
	Subtotal	490	501	102.2%	14.9	476	518	0.5	15.2	1.4	12.5	17.0	B
Total		1,968	1,981	100.7%	24.6	1,942	2,022	0.3	27.4	2.9	23.3	31.8	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **Existing Plus Project Mitigated**
Volume and Delay by Movement **PM Peak Hour**

Intersection 40 **Mountain Boulevard-Oakland Zoo Driveway/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	29	26	90.3%	3.8	19	30	0.5	89.5	58.6	42.1	165.4	F
	Through	2	1	50.0%	1.3	0	3	0.8	6.3	18.0	0.0	34.7	A
	Right Turn	2	3	130.0%	1.2	1	5	0.4	2.1	5.6	0.0	25.9	A
	Second Right												
	Subtotal	33	30	90.3%	4.2	22	35	0.6	87.4	59.7	42.1	119.6	F
SB	U Turn												
	Second Left												
	Left Turn	22	20	89.1%	4.9	12	29	0.5	58.7	27.3	26.4	87.5	E
	Through	1	1	80.0%	1.0	0	3	0.2	30.4	59.0	0.0	42.9	C
	Right Turn	199	202	101.6%	10.1	182	214	0.2	30.7	22.8	12.2	74.0	C
	Second Right												
	Subtotal	222	223	100.3%	12.1	203	240	0.0	33.8	23.5	13.3	75.5	C
EB	U Turn												
	Second Left												
	Left Turn	256	252	98.4%	13.7	222	270	0.3	14.7	2.0	10.8	17.7	B
	Through	320	327	102.2%	21.6	296	364	0.4	17.0	1.2	15.8	18.3	B
	Right Turn	2	3	145.0%	1.7	0	5	0.6	5.4	11.2	0.0	32.8	A
	Second Right												
	Subtotal	578	582	100.7%	26.0	542	626	0.2	16.0	1.2	14.5	17.1	B
WB	U Turn												
	Second Left												
	Left Turn	2	2	95.0%	1.4	0	4	0.1	5.8	12.9	0.0	48.7	A
	Through	262	270	102.9%	13.6	251	291	0.5	42.0	5.4	33.5	46.0	D
	Right Turn	18	16	89.4%	3.5	11	22	0.5	34.8	16.1	0.0	45.9	C
	Second Right												
	Subtotal	282	288	102.0%	15.2	266	315	0.3	41.7	5.5	33.3	45.2	D
Total		1,115	1,122	100.6%	23.6	1,082	1,162	0.2	28.5	4.9	24.1	37.9	C

Signal Warrant Worksheets

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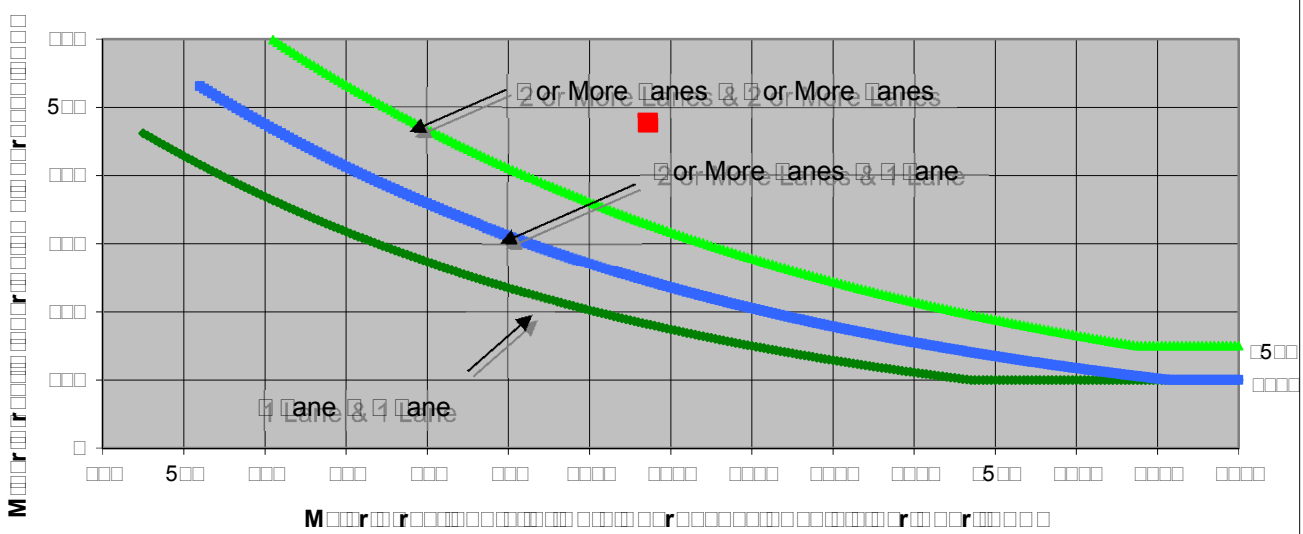

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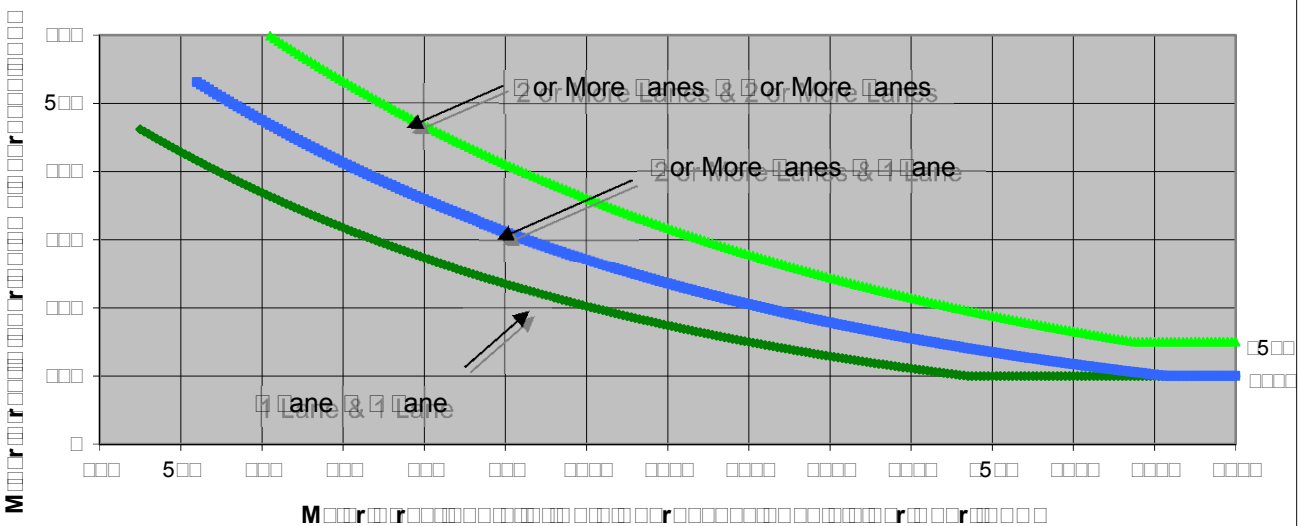

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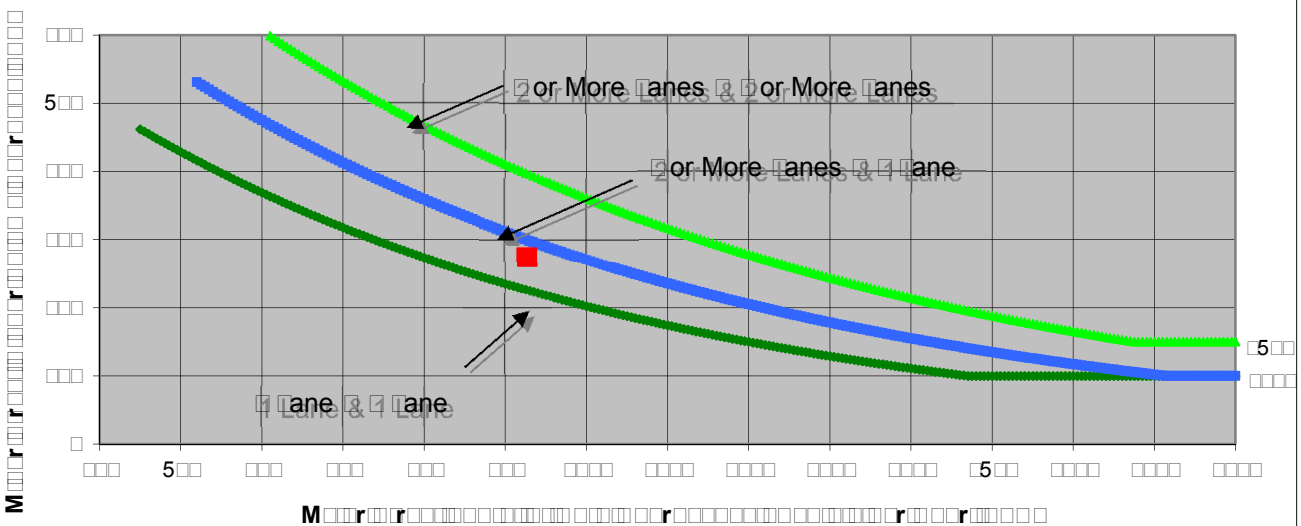

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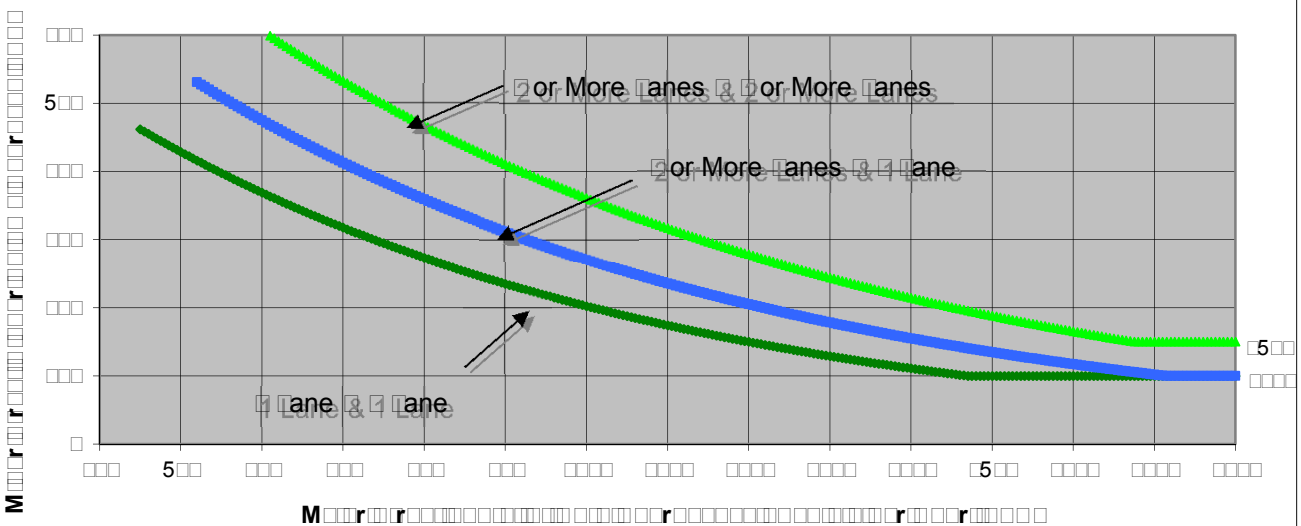
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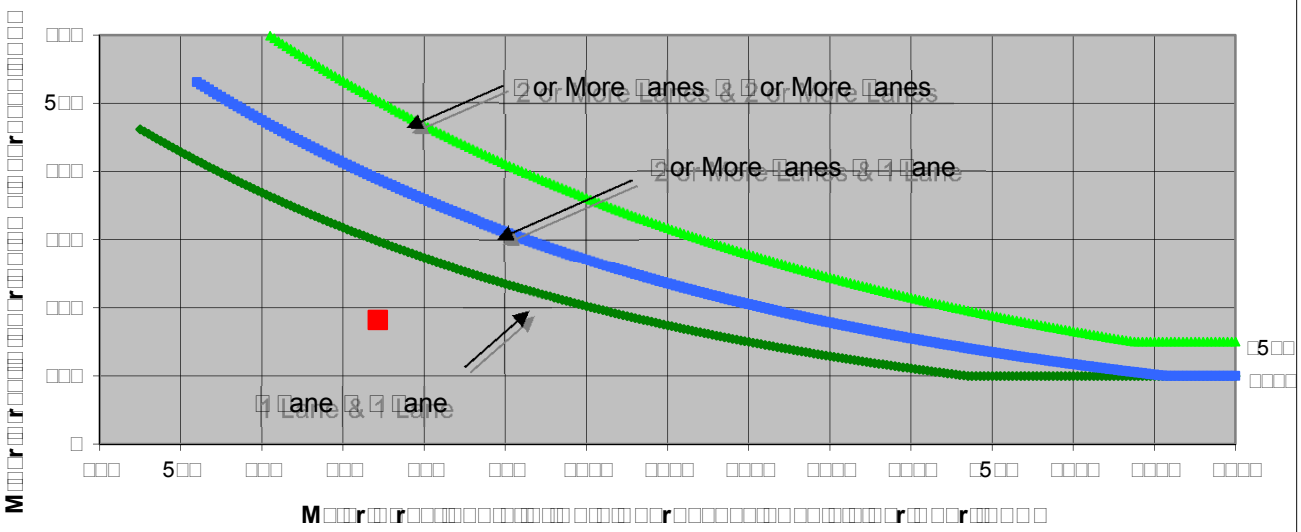

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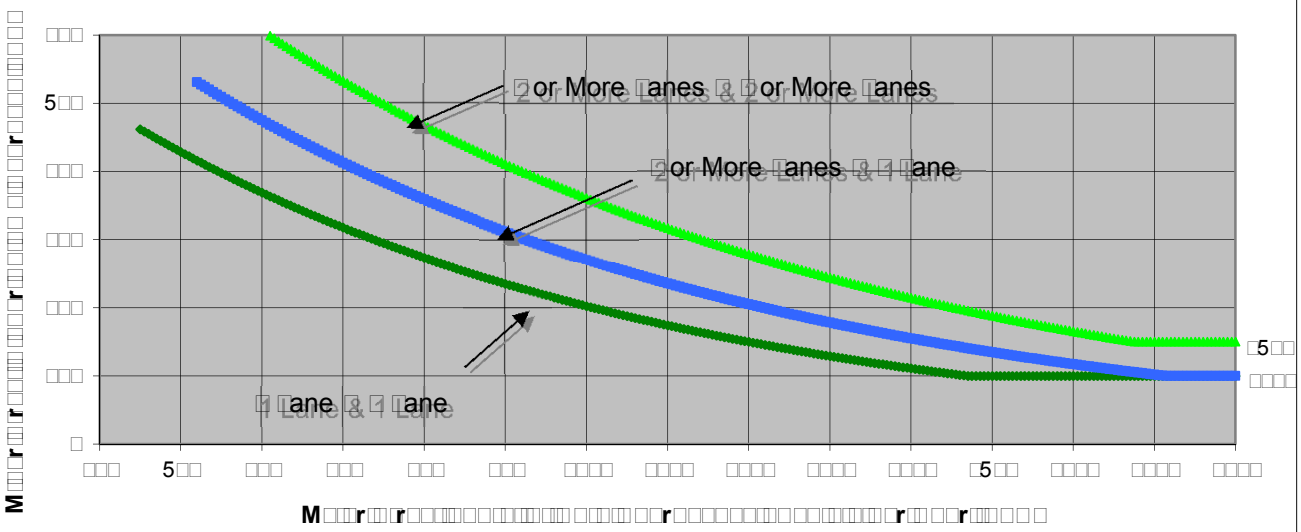

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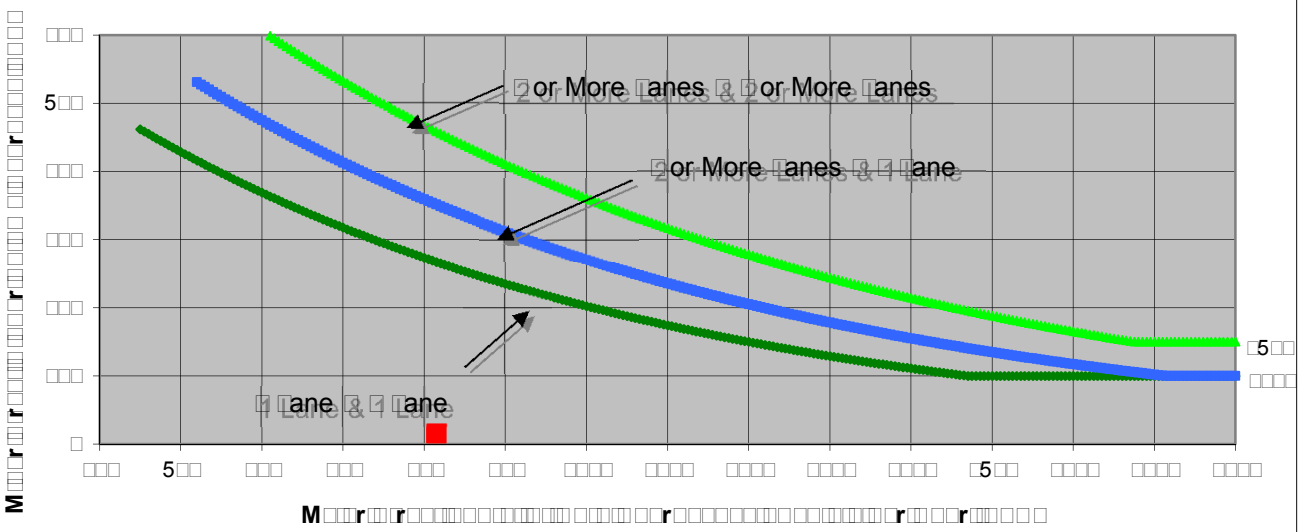

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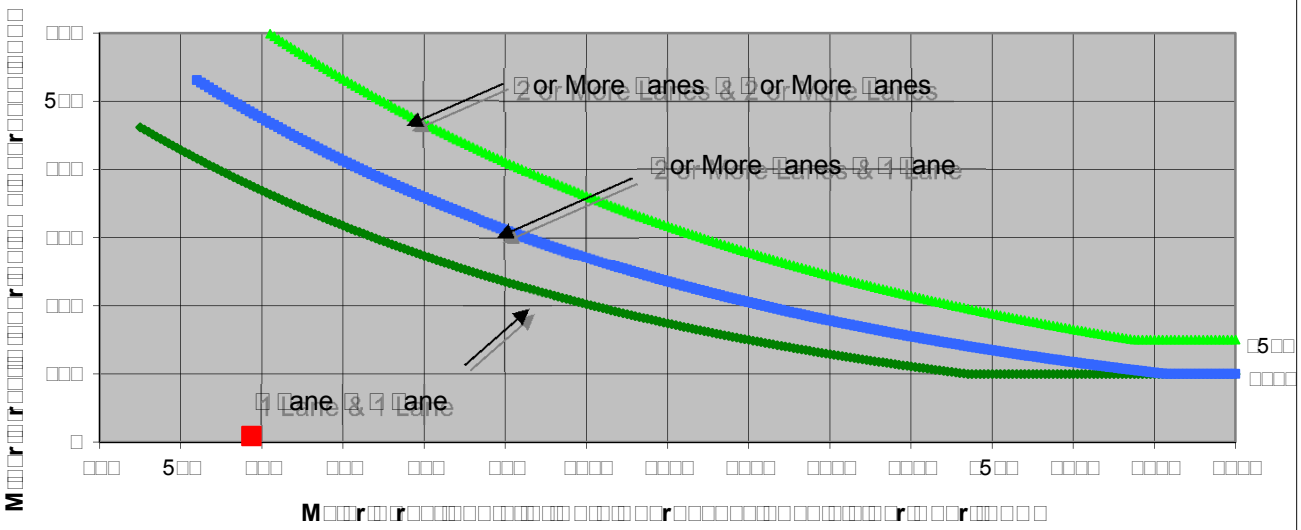

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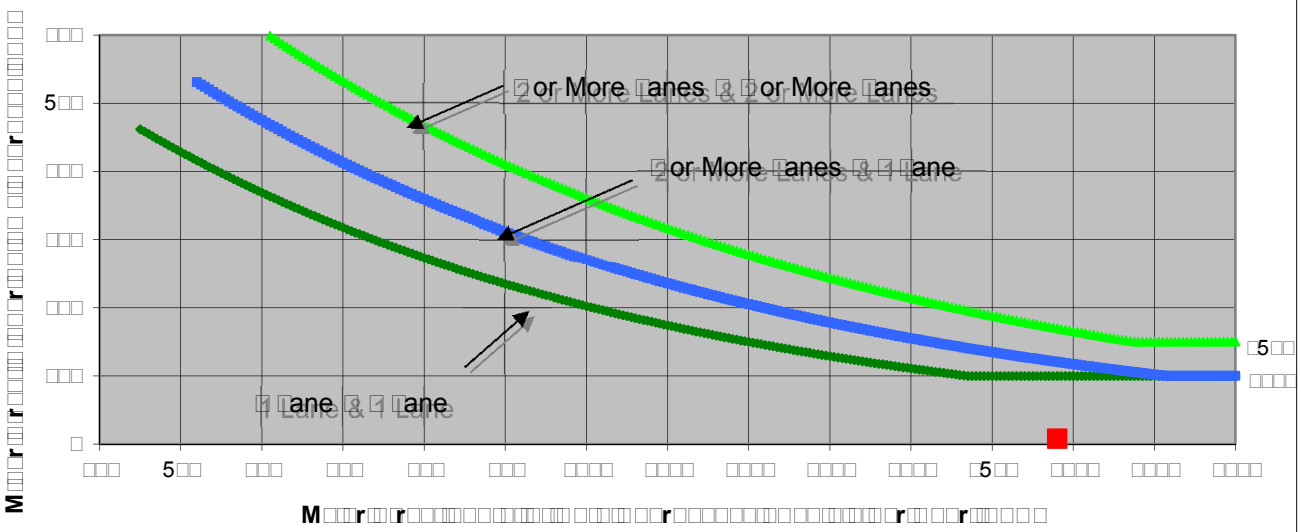

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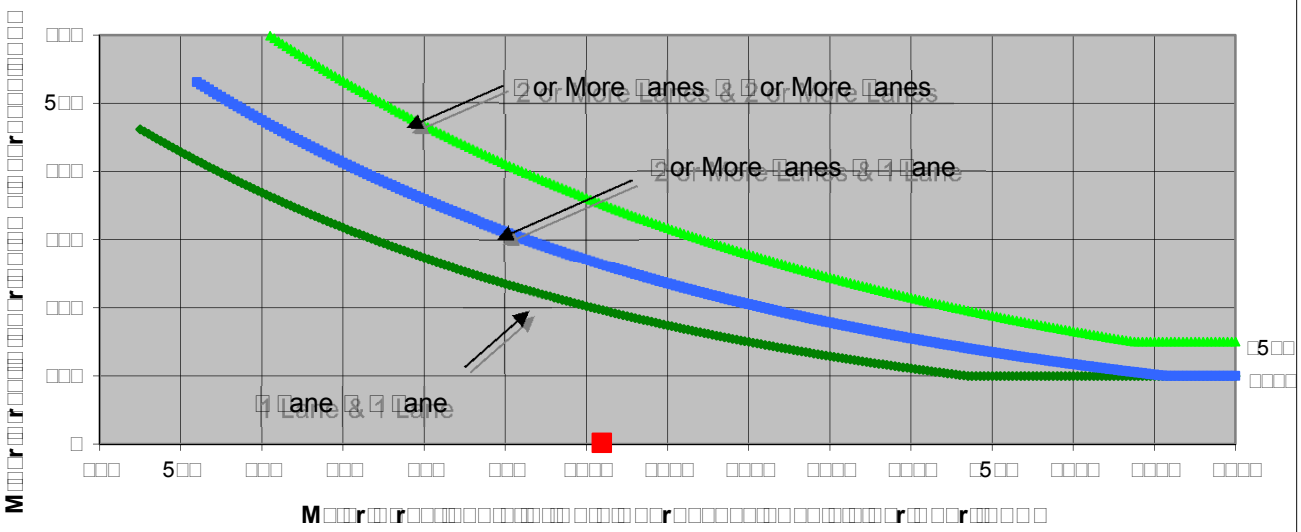

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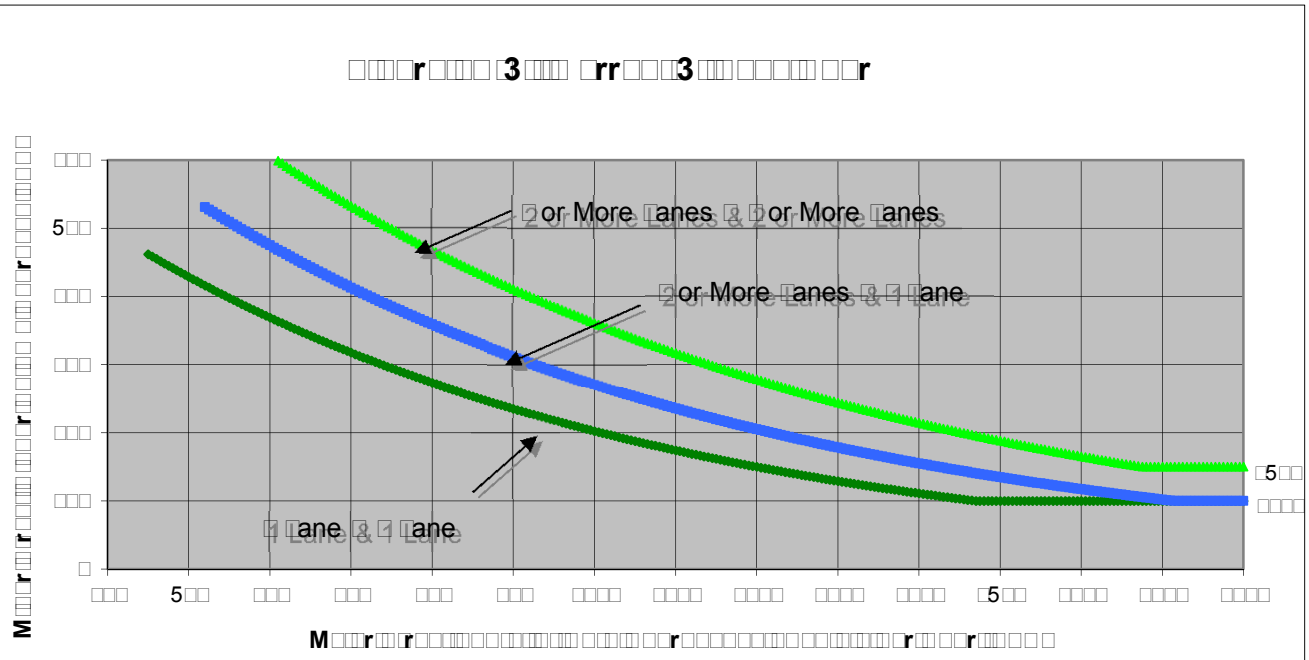
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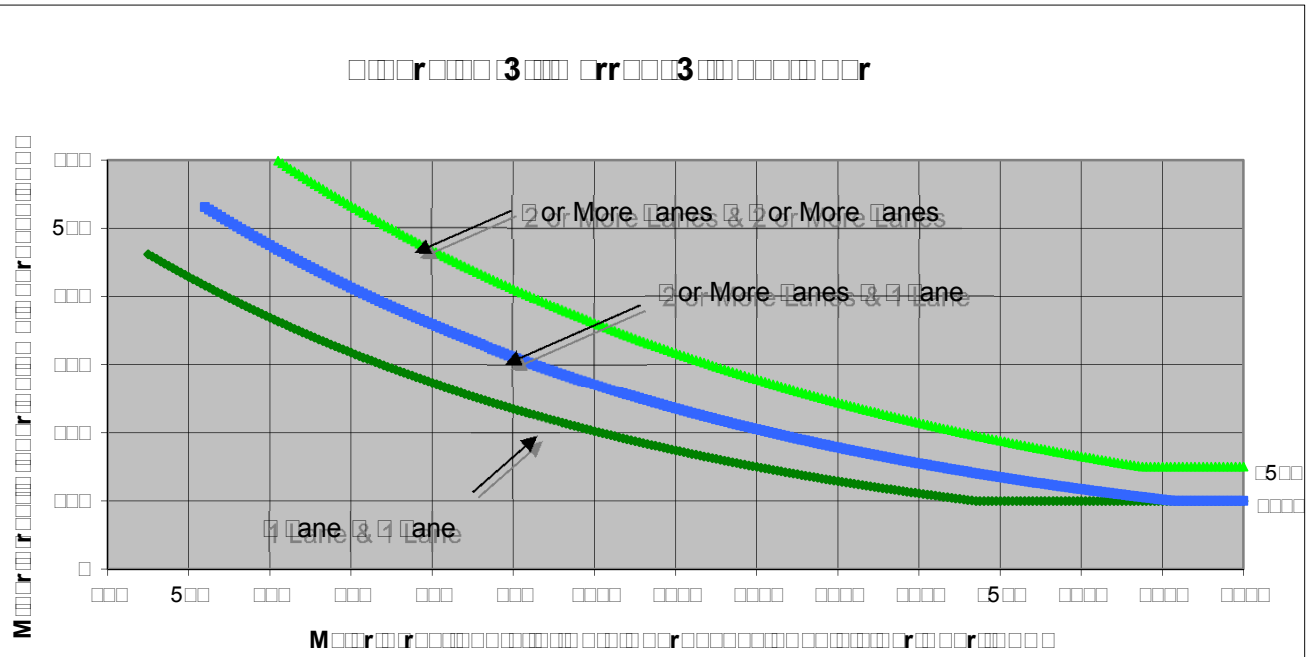
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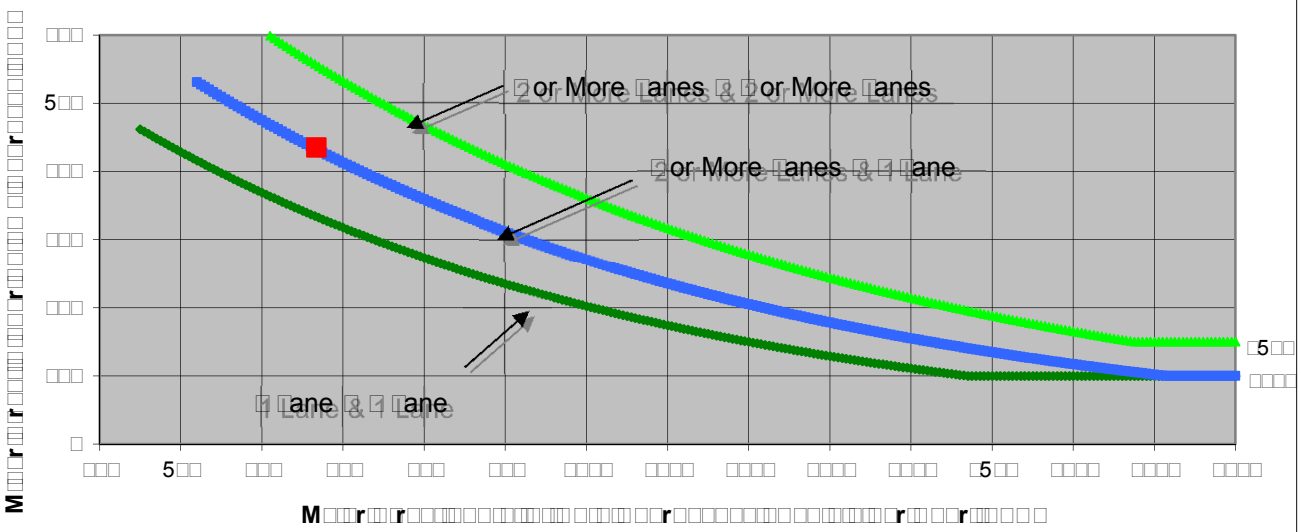

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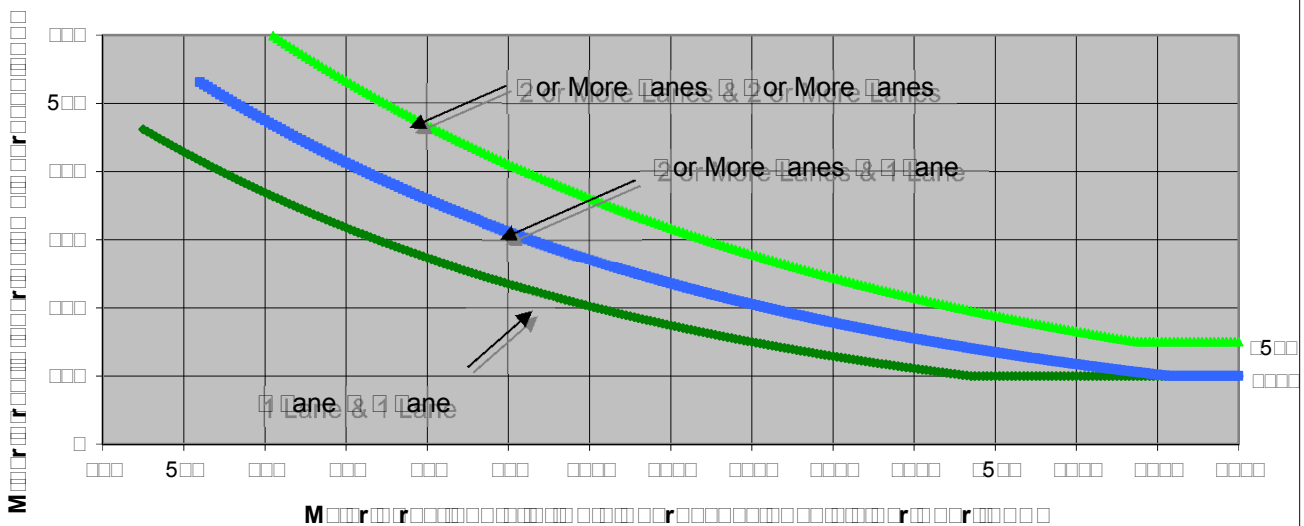

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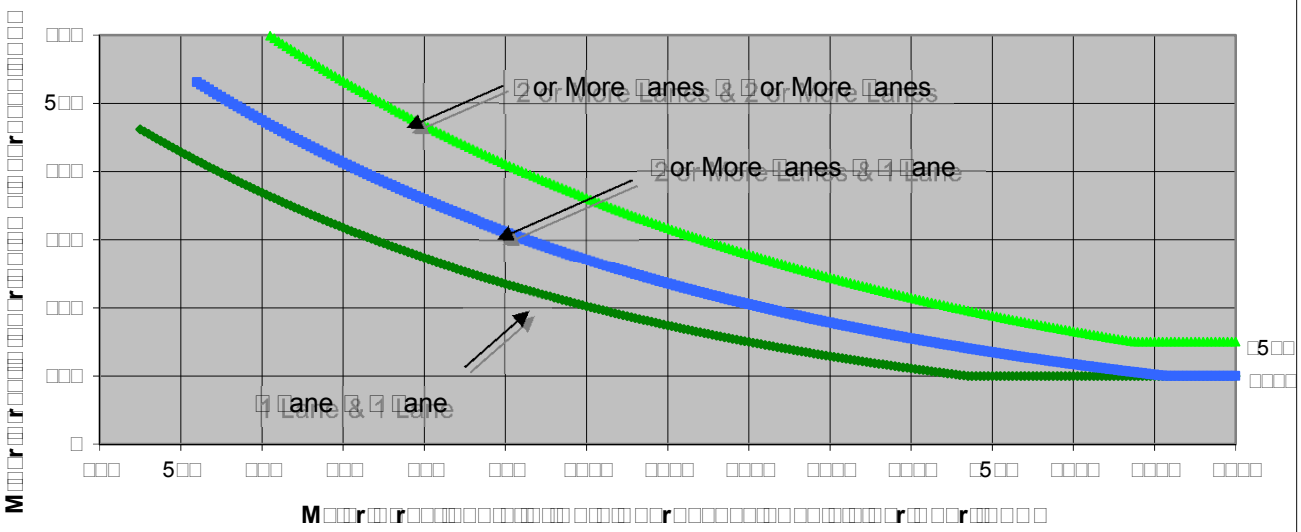

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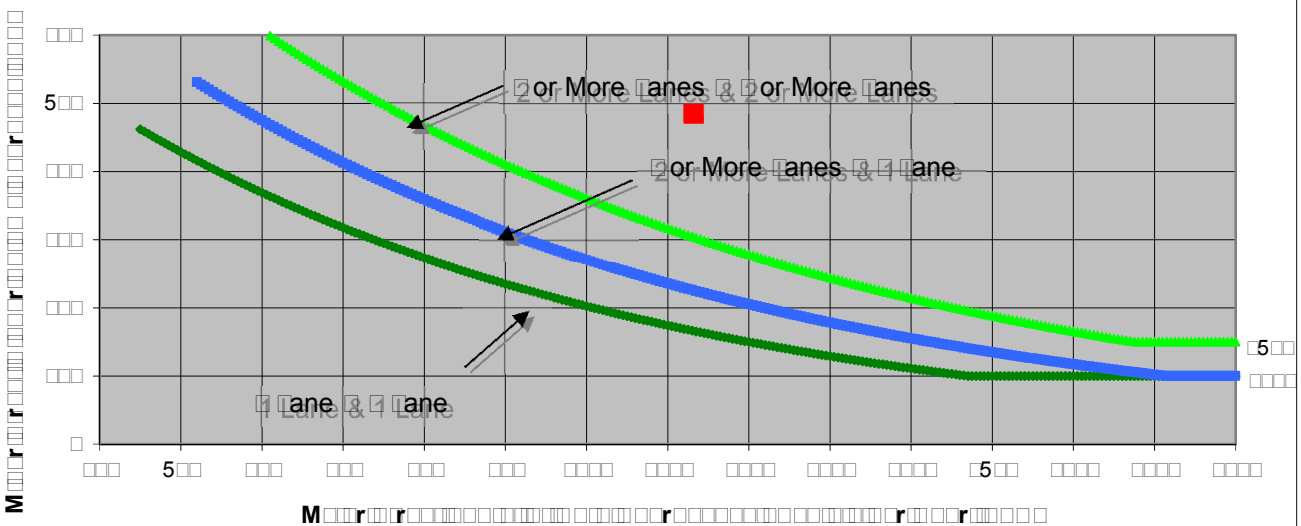

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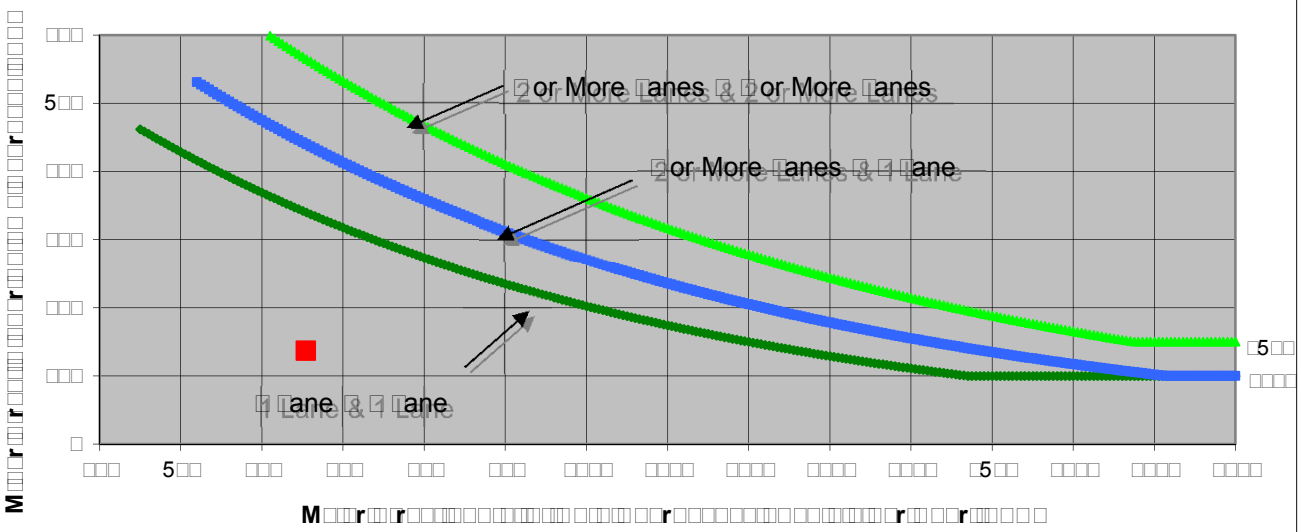

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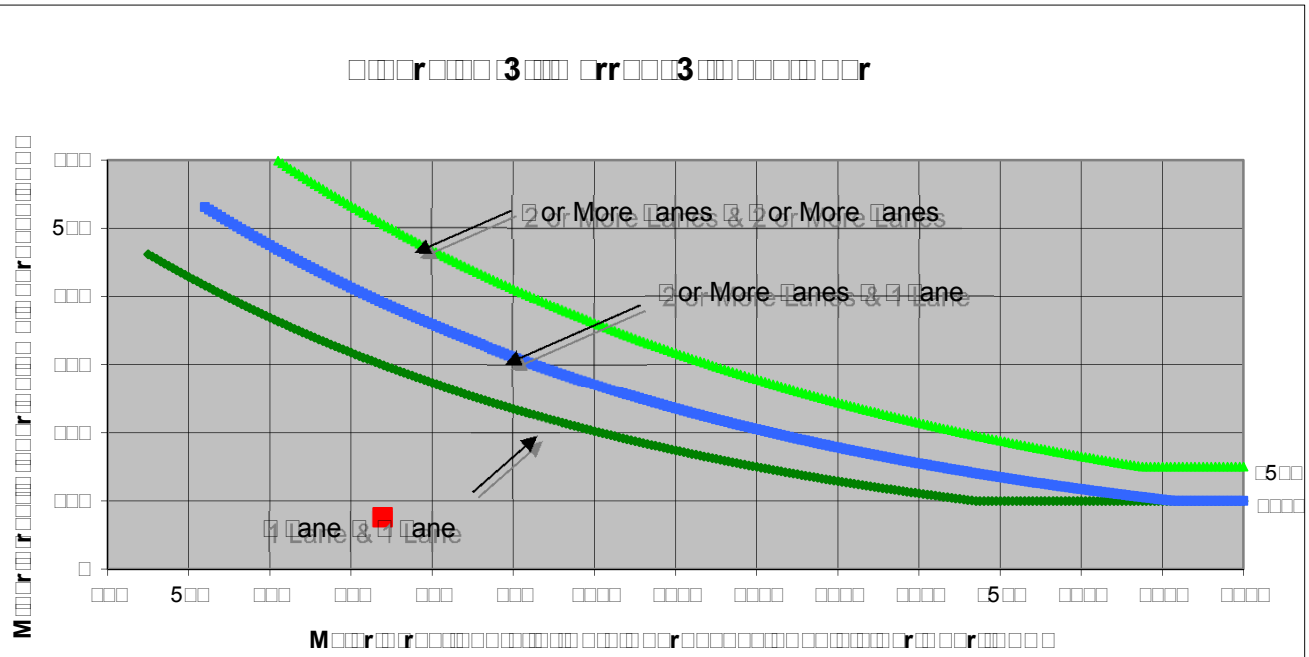
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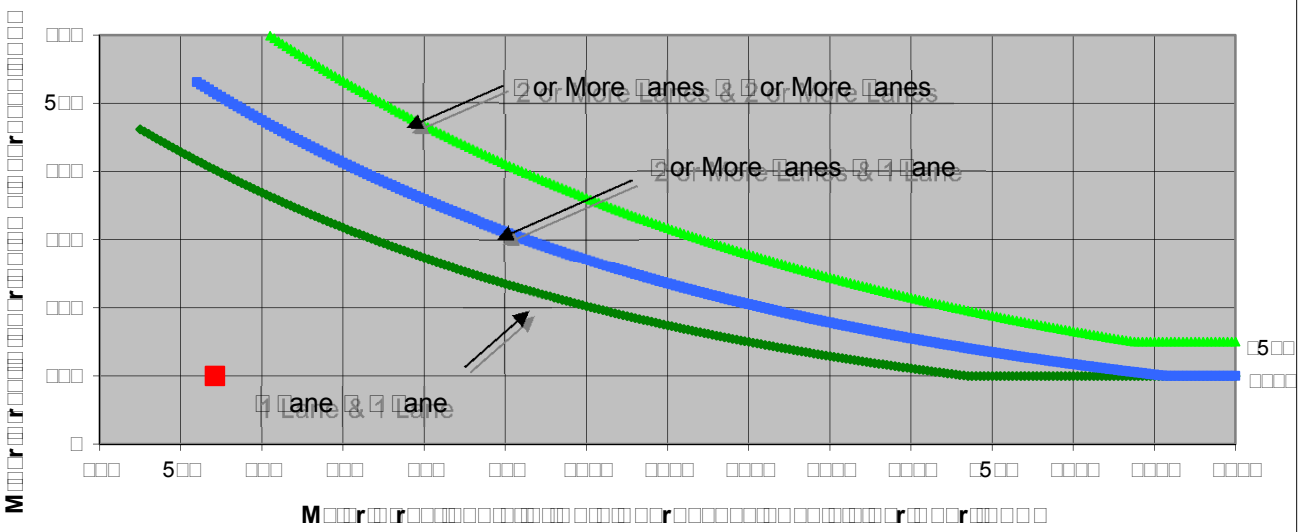
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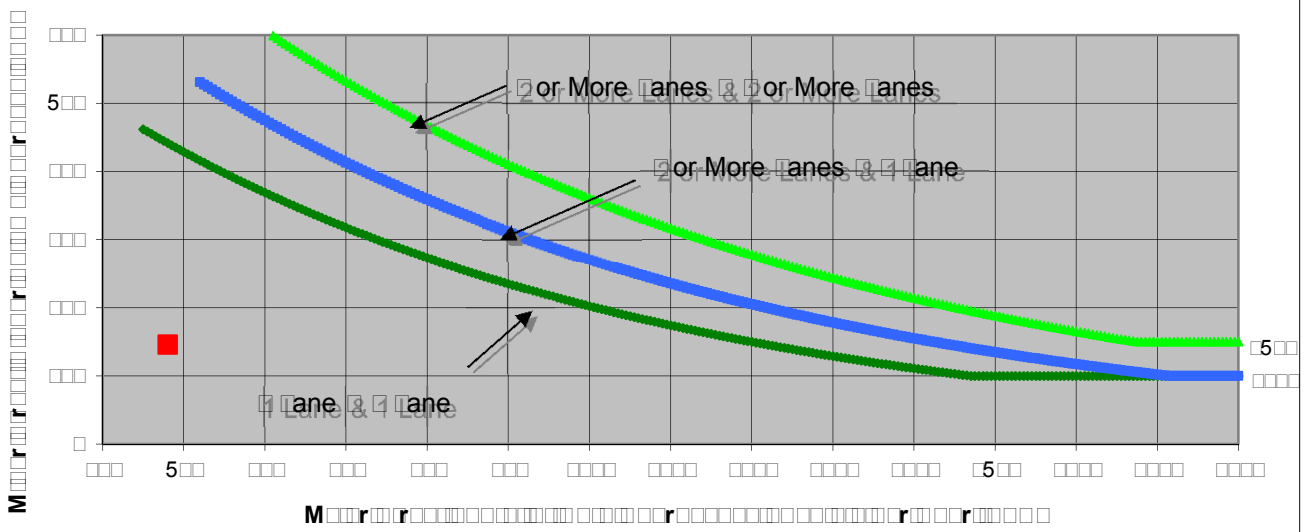

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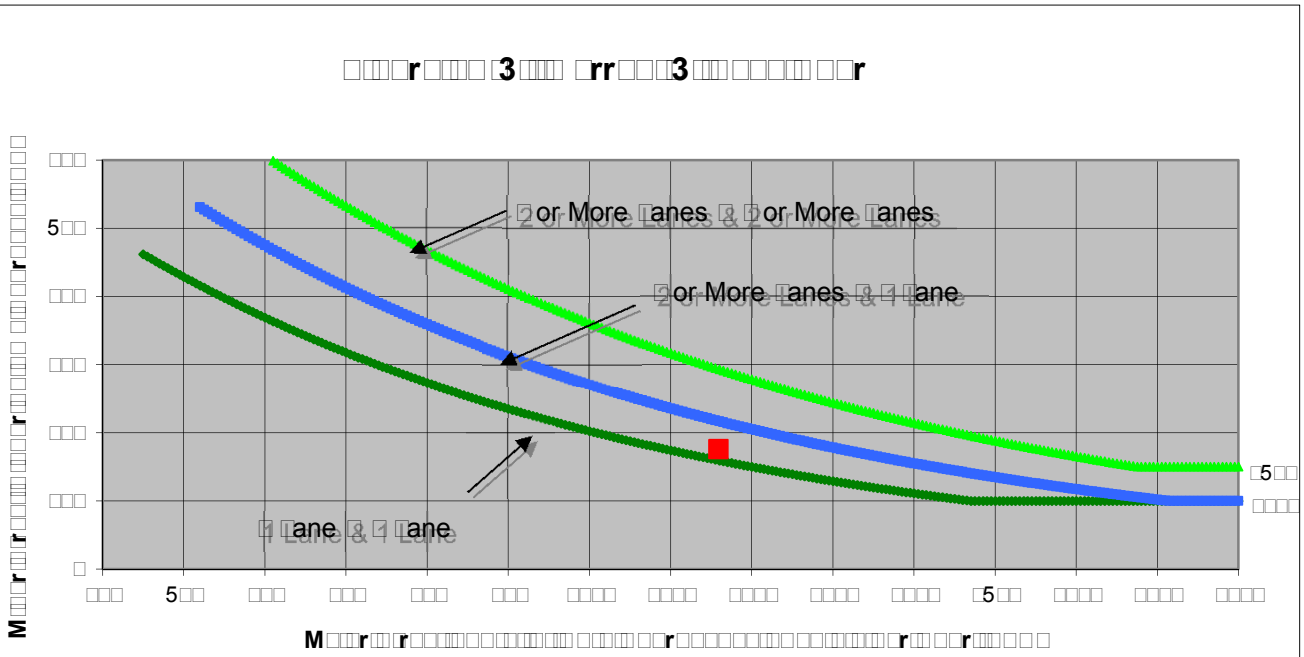
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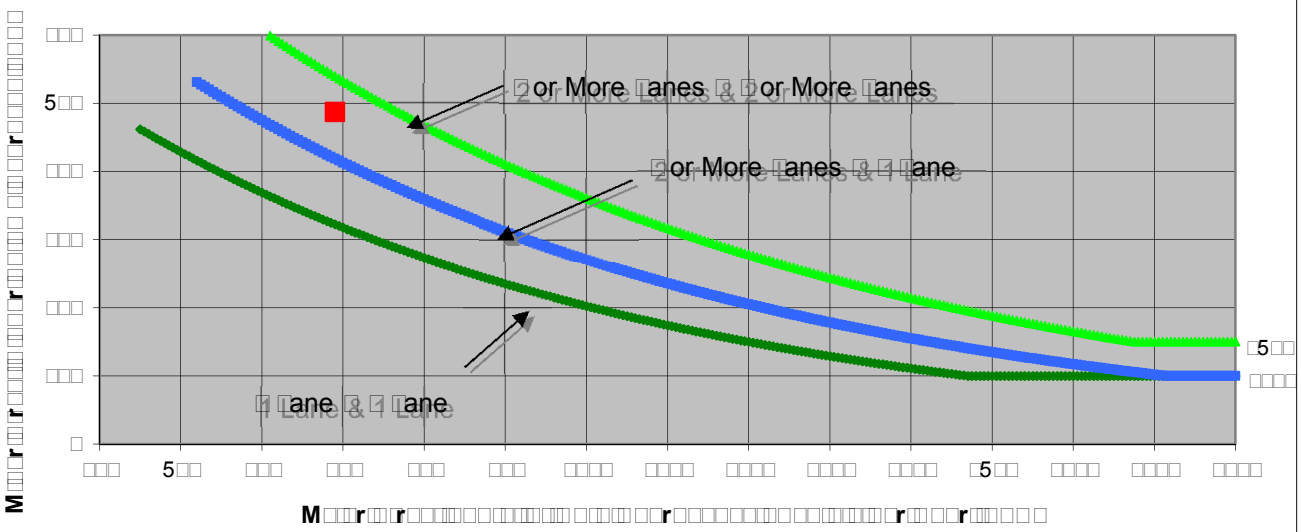

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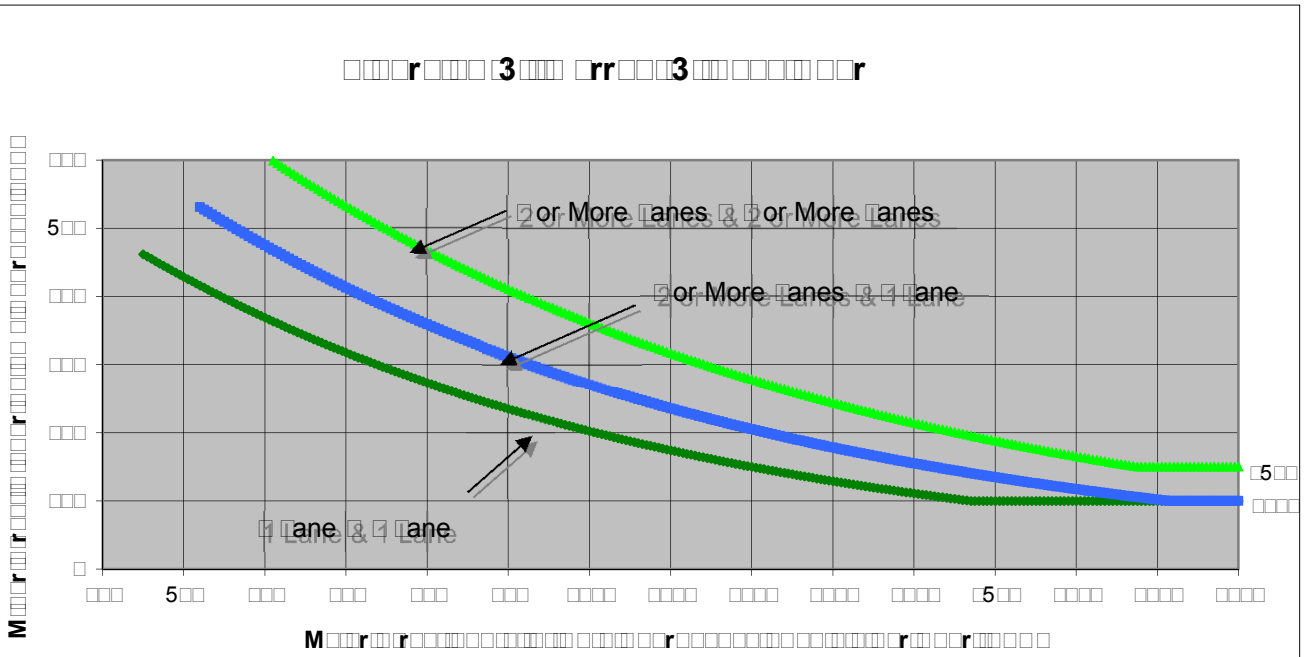
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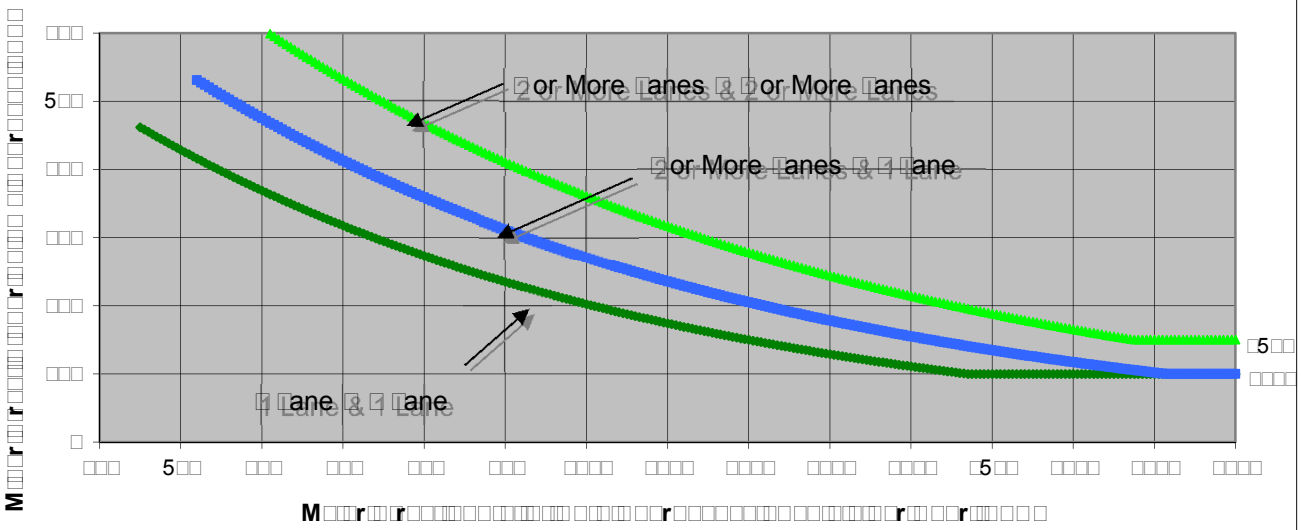
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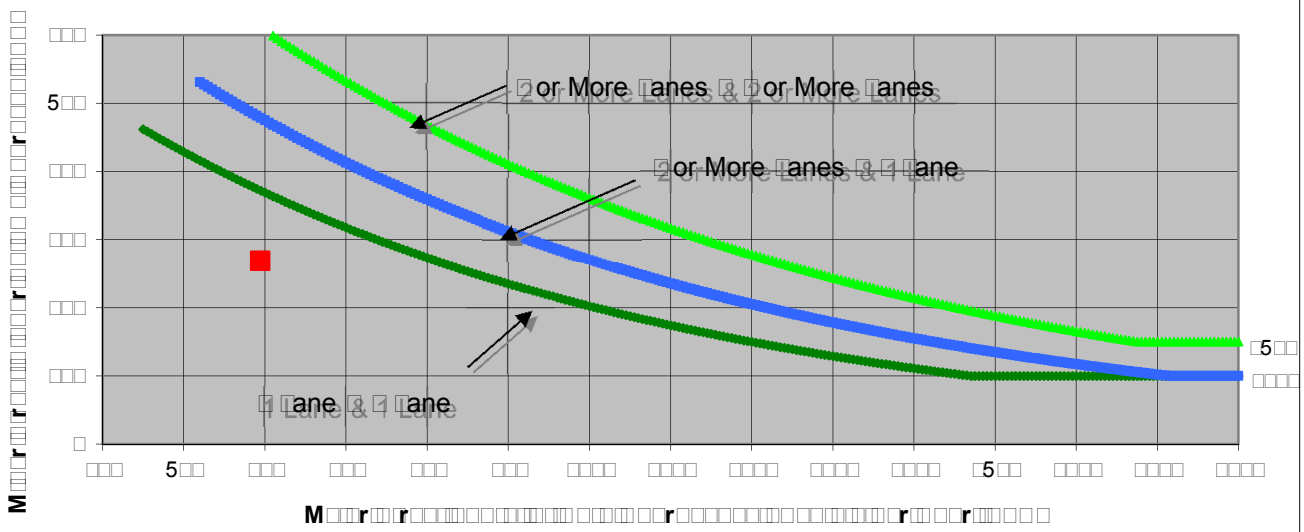
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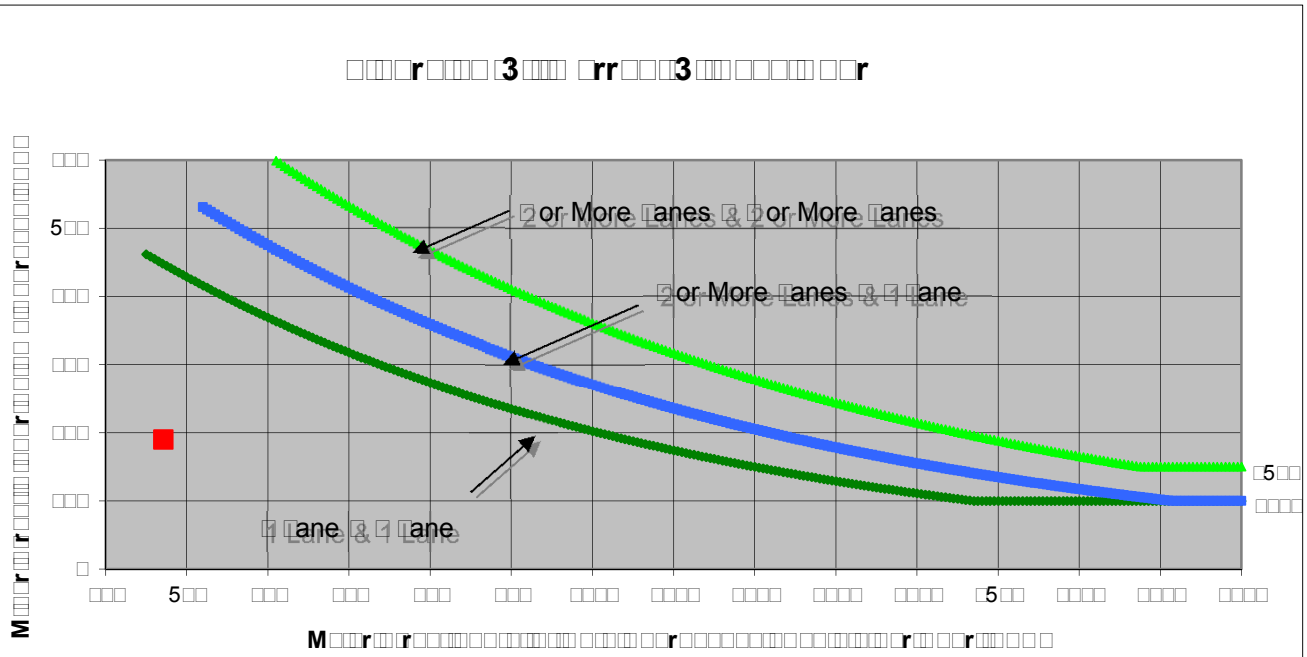

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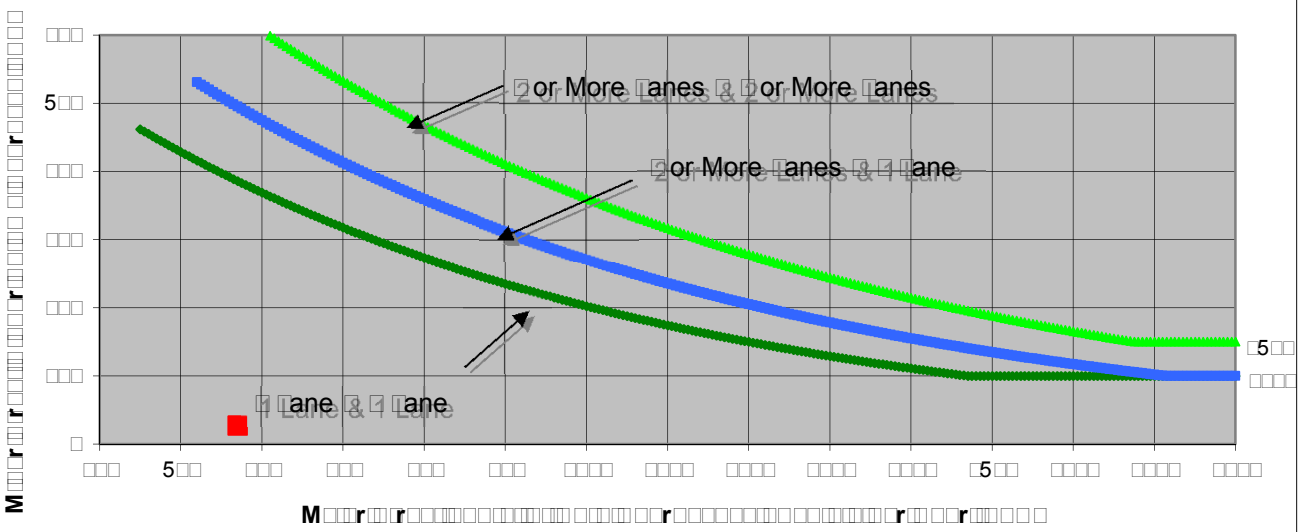
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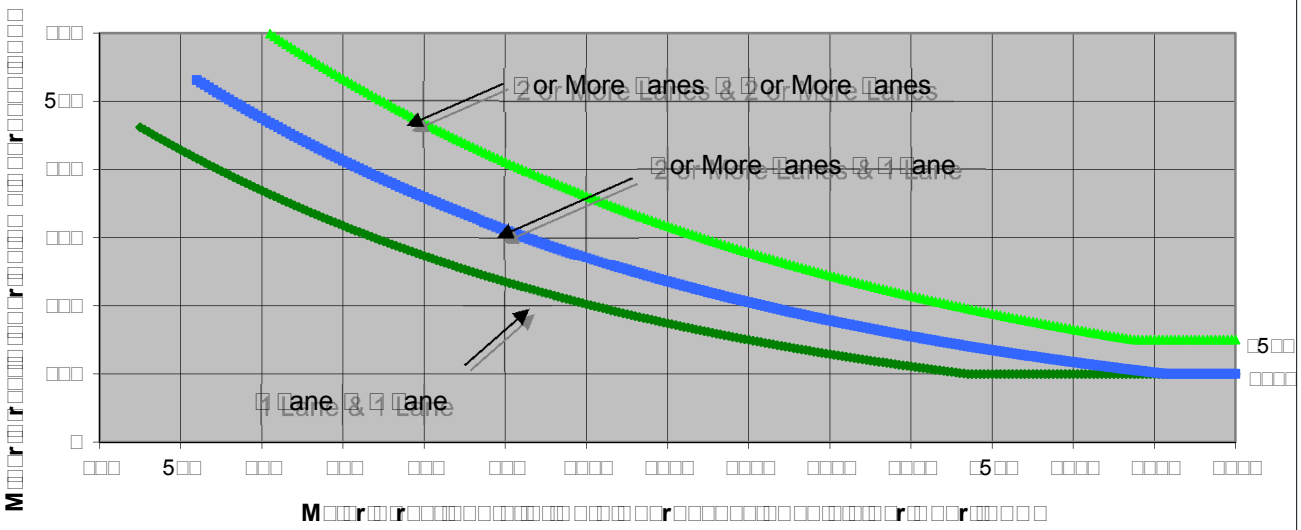
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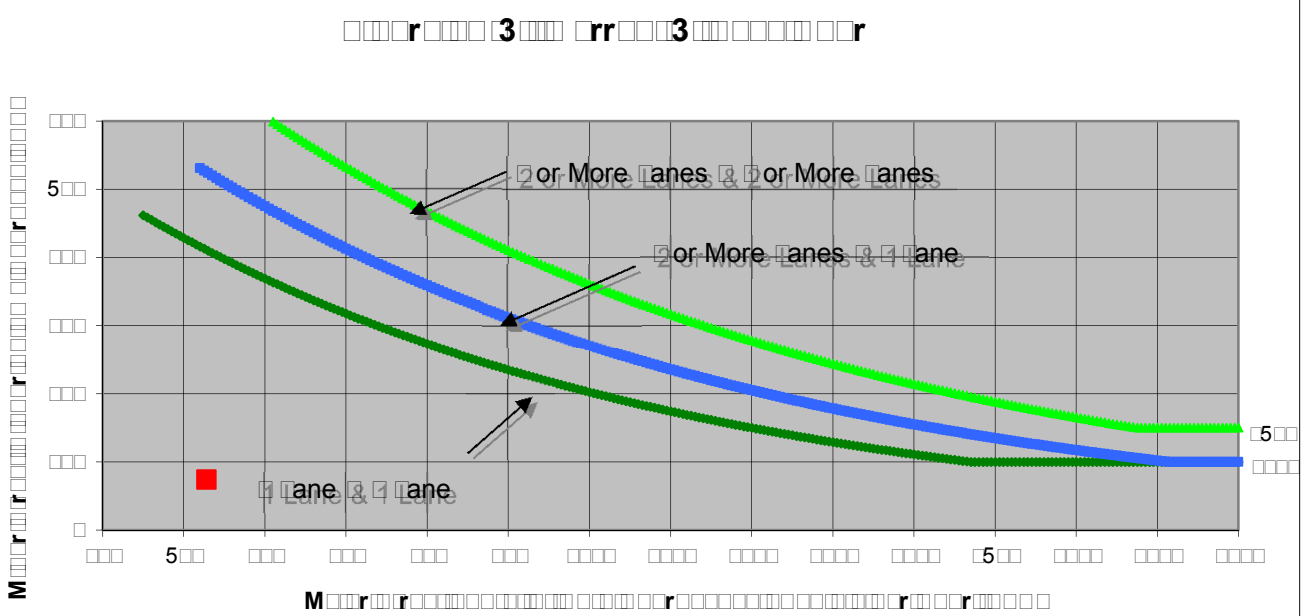

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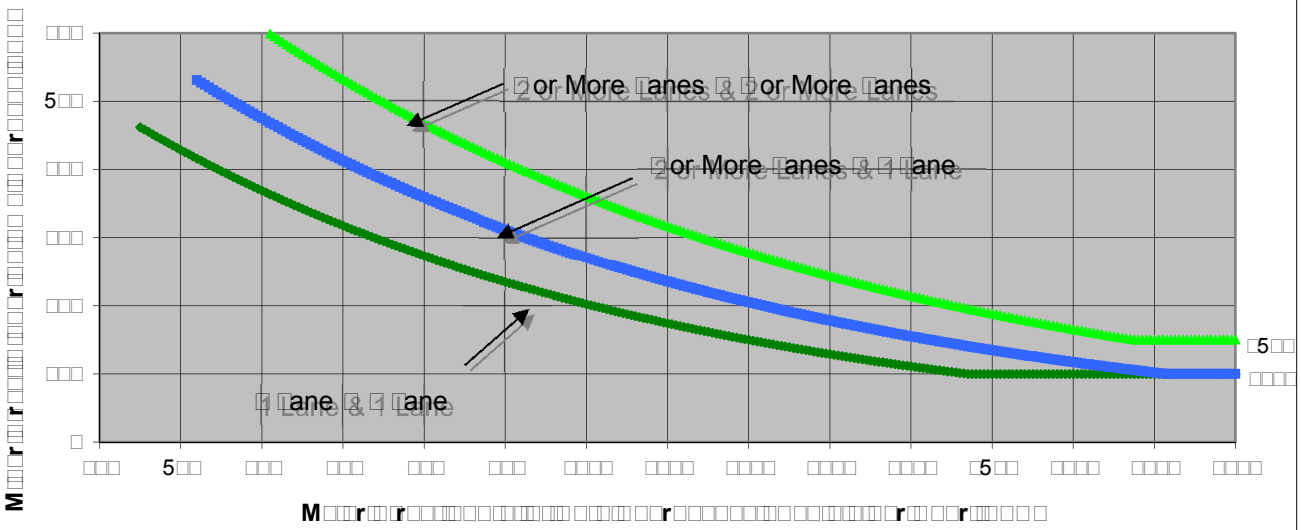

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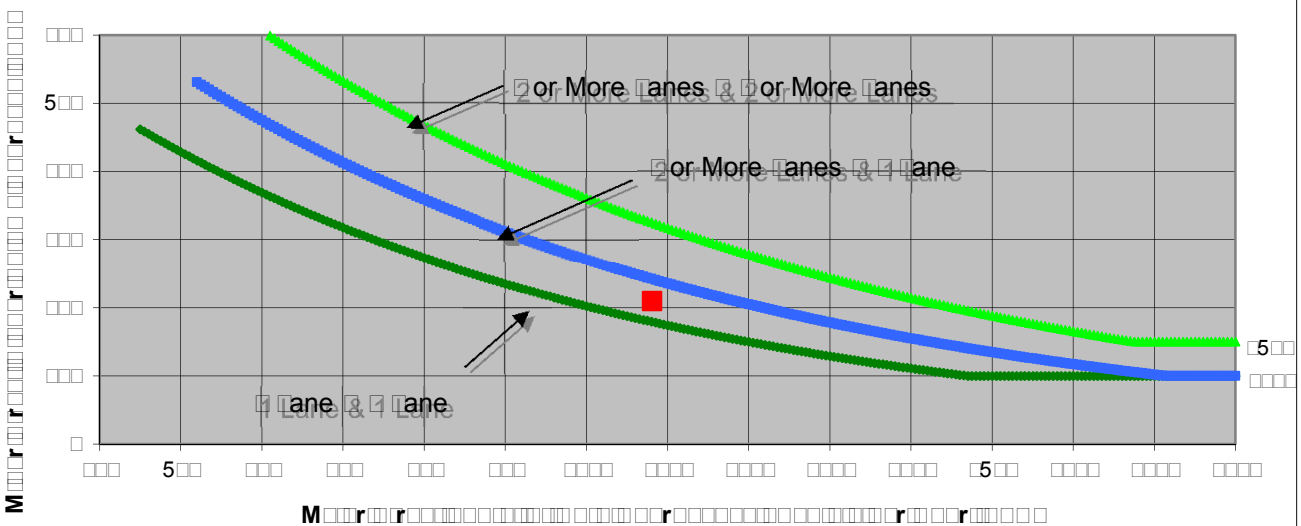

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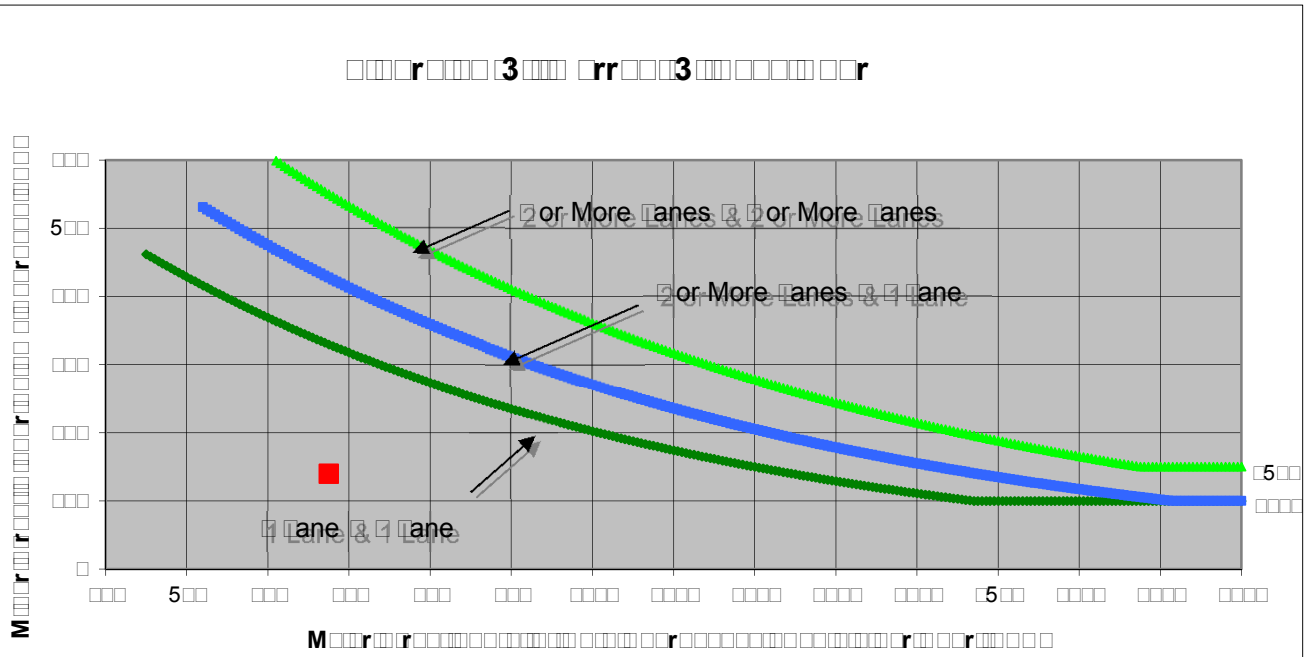

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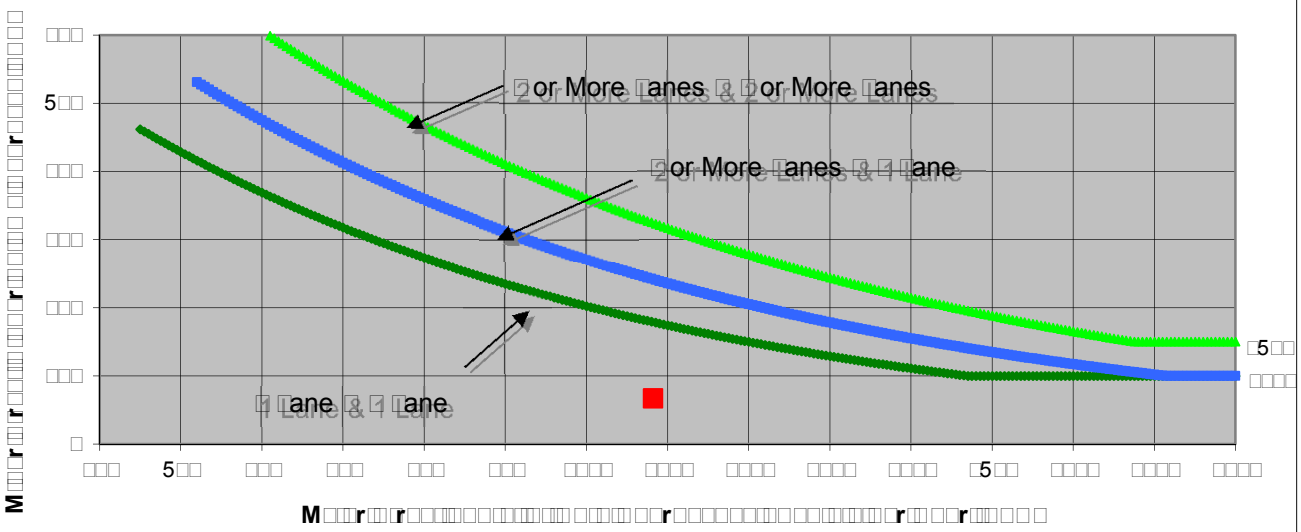
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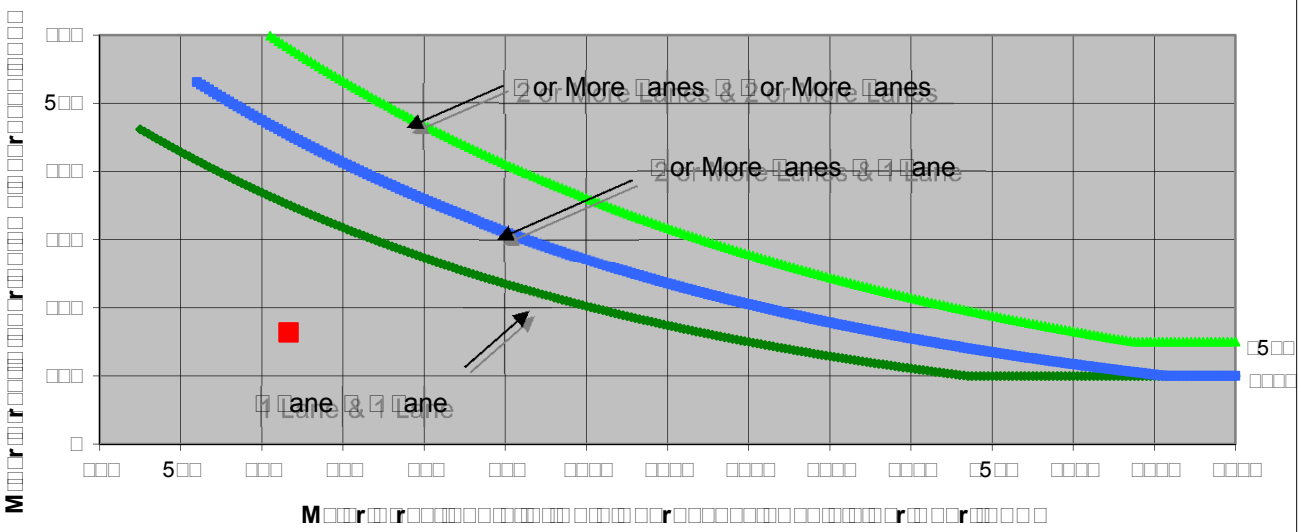
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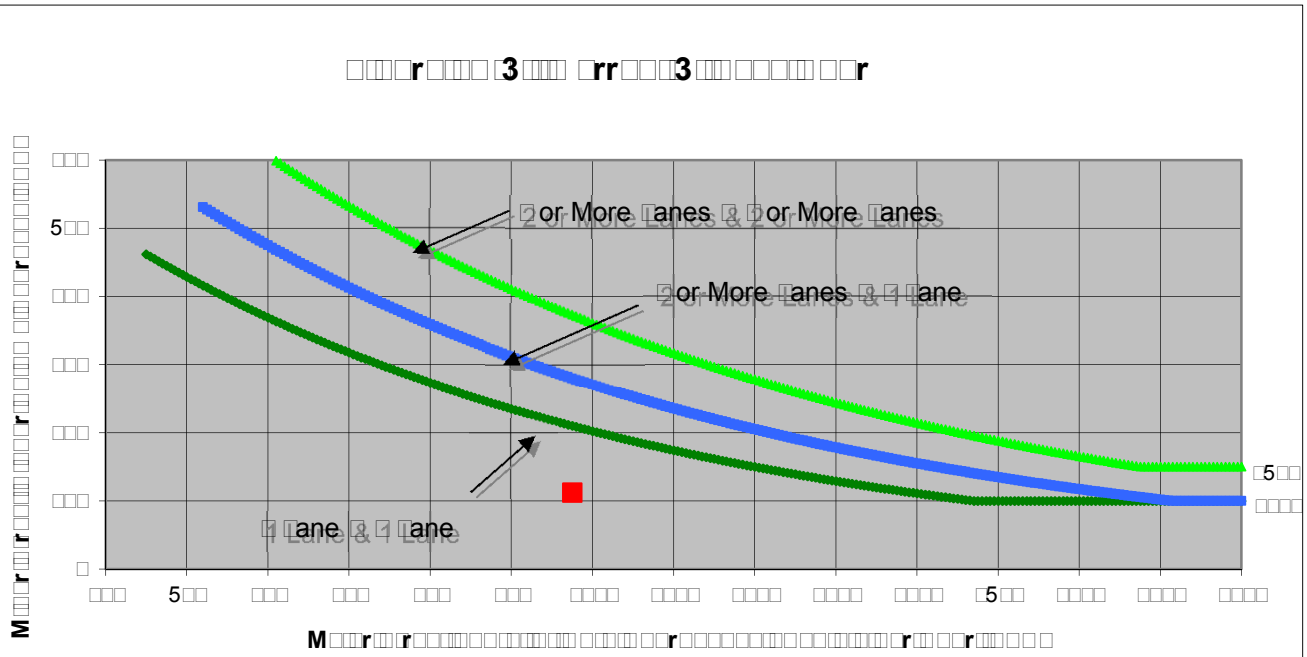
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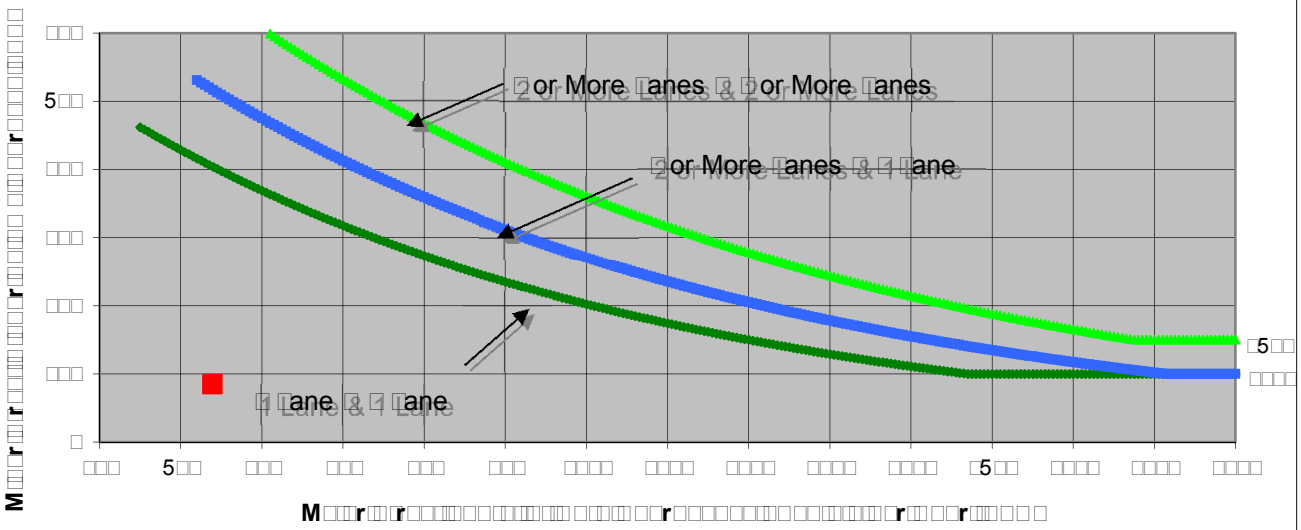

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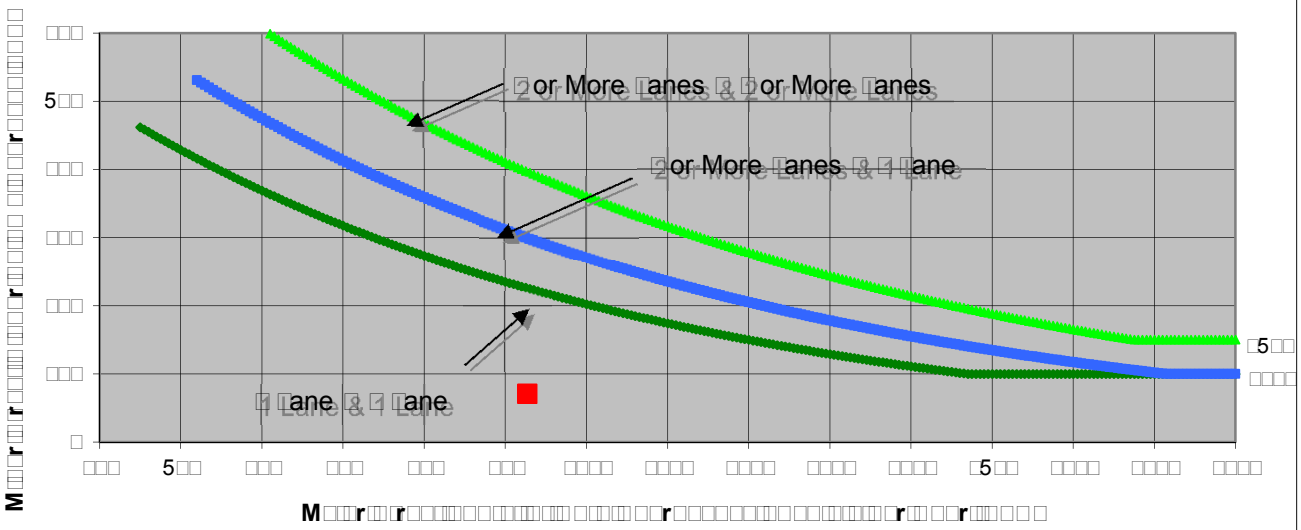

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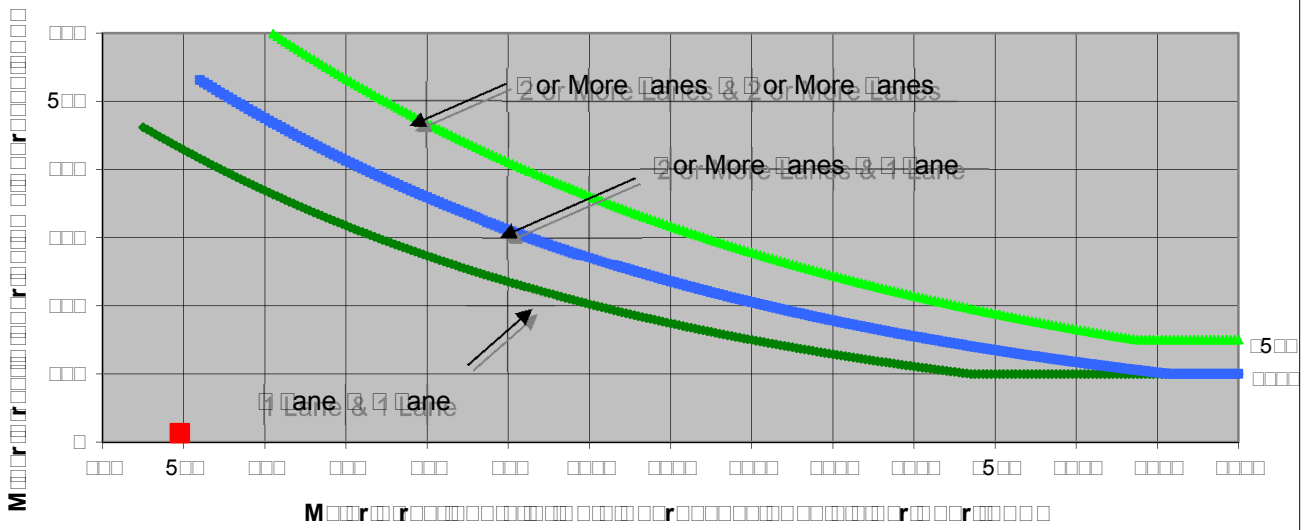

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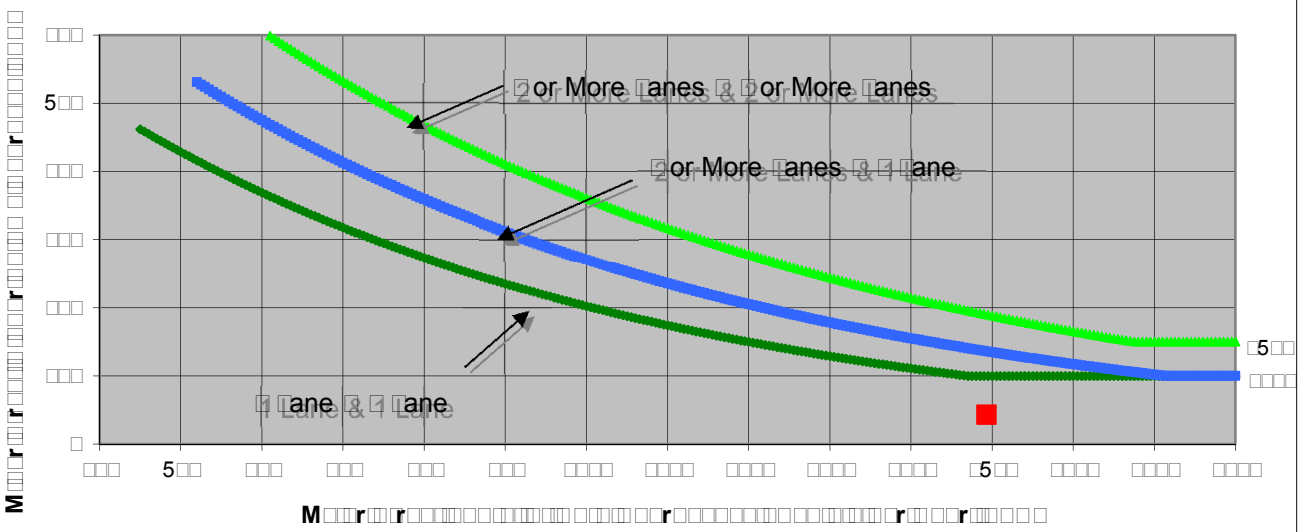

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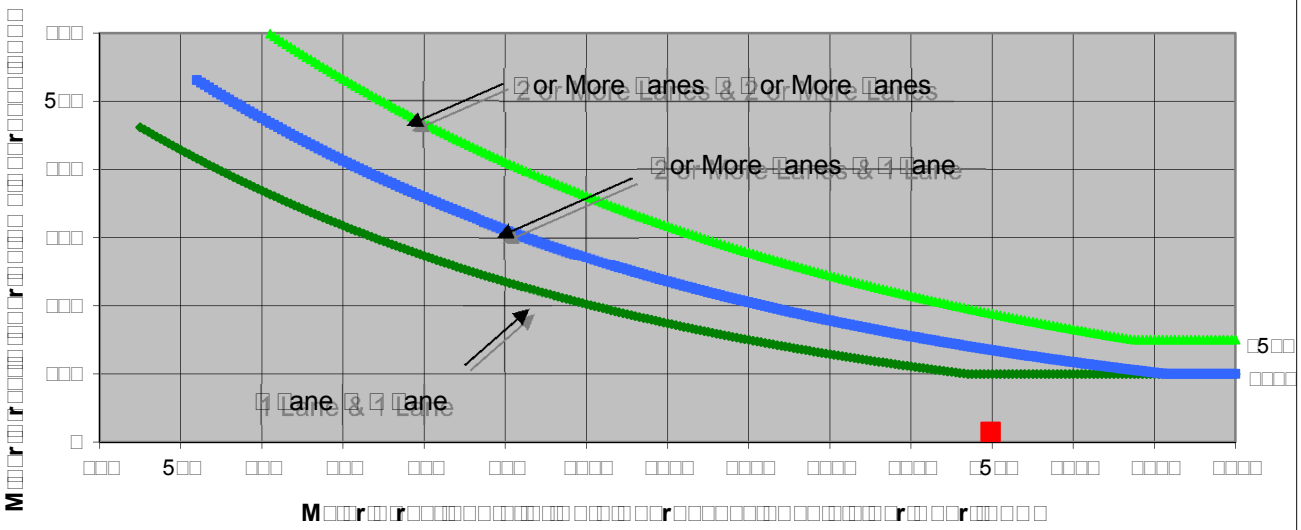
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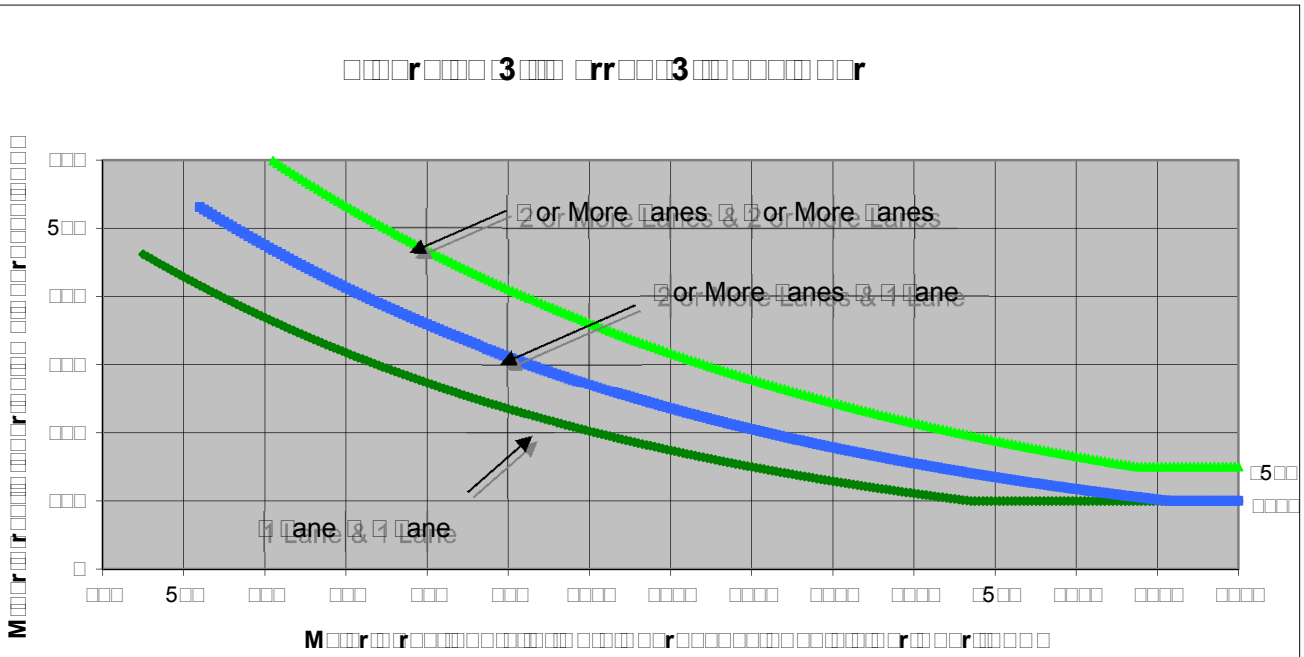
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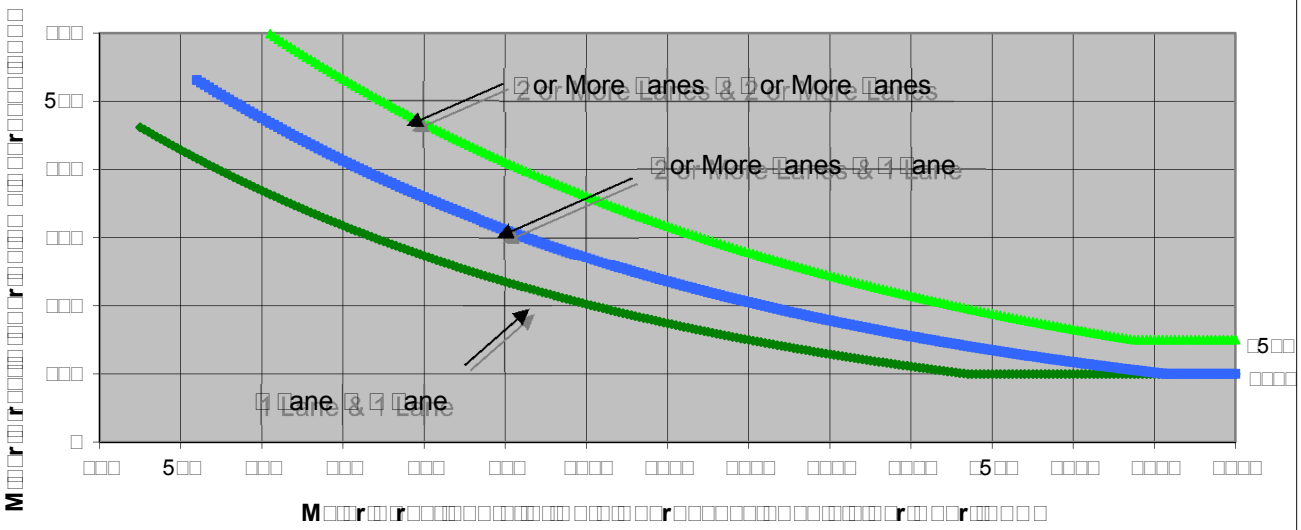
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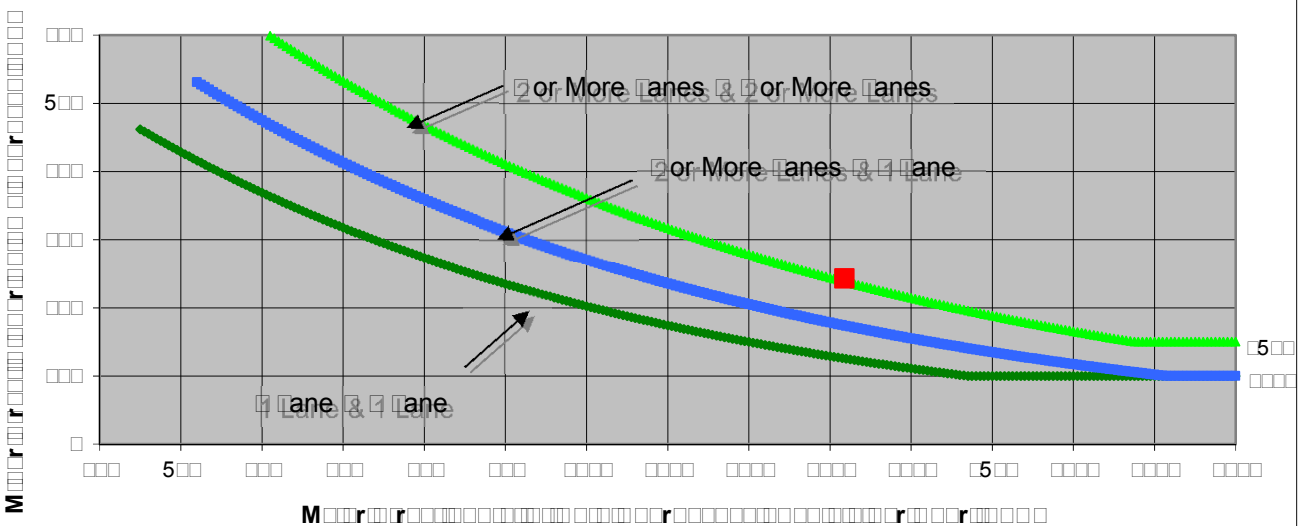

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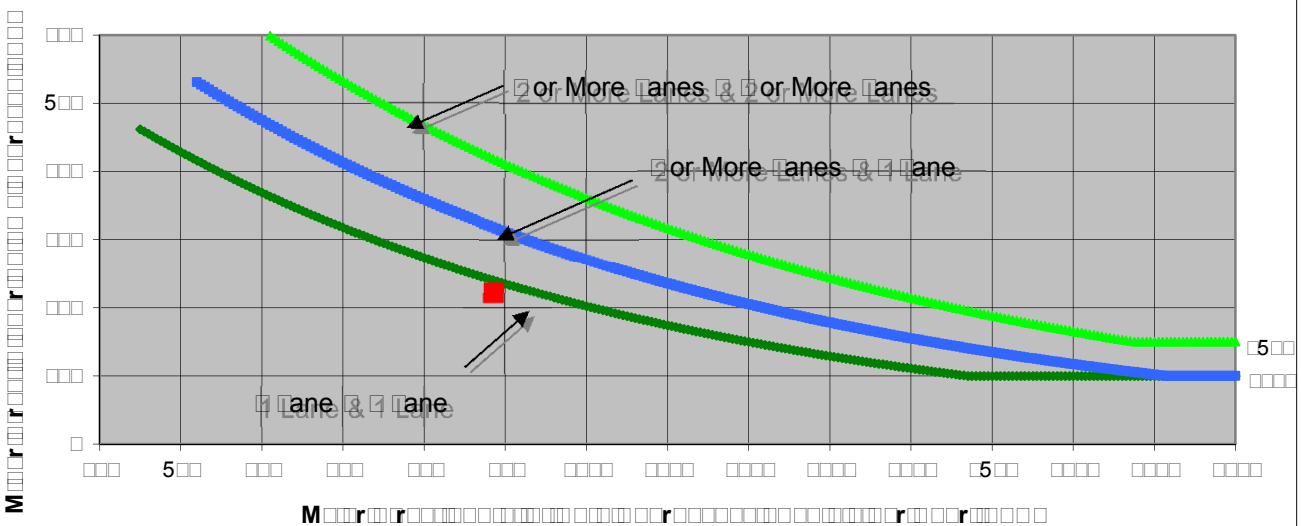
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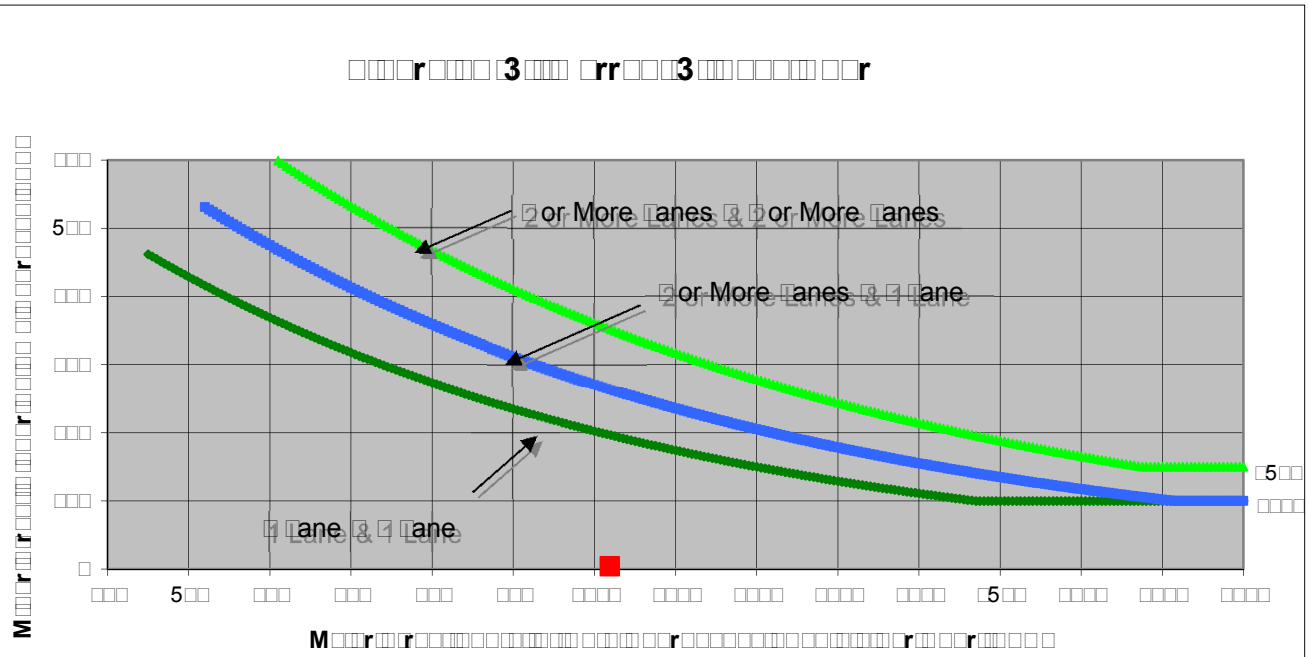
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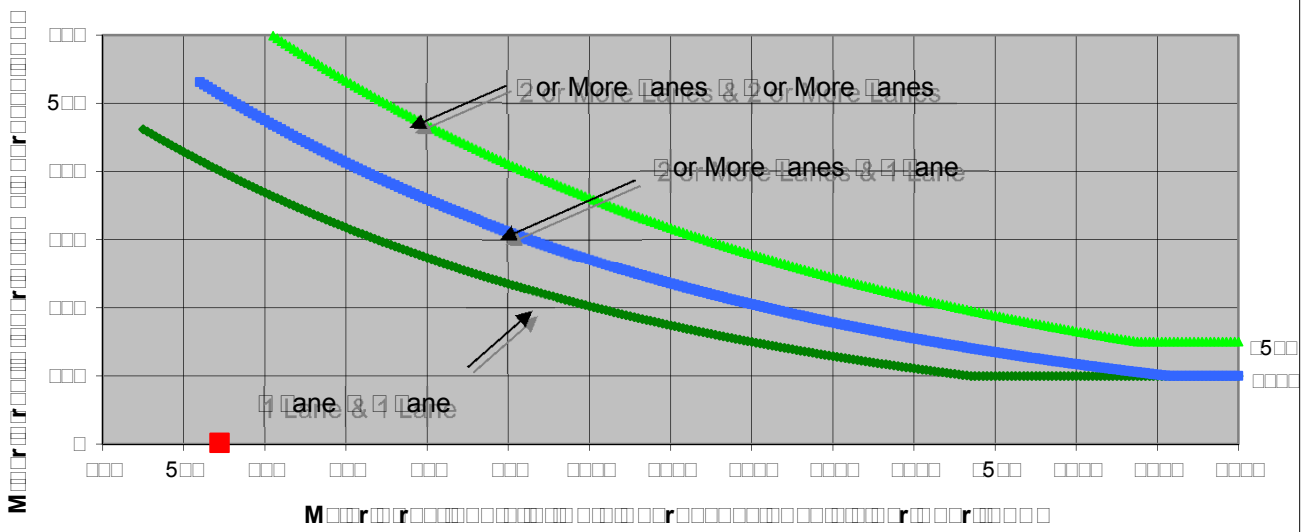
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Freeway Analysis Worksheets

FEHR PEERS

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd Off-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,943	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	647	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,943	647		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,736	162		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,943	647		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,392	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,943	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,296	pcph	9,600	pcph	No
Ramp volume, v_R	647	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,775	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,392	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.77	
Density, D_R	31.8	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.356	
Space mean speed in ramp influence area, S_R	60.0	mph
Space mean speed in outer lanes, S_O	73.8	mph
Space mean speed for all vehicles, S	66.3	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Off-ramp to On-ramp
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,296	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,574	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,296	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,574	pcphpl
Average passenger-car speed, S	68.4	mph
Volume-to-capacity ratio, v/c	0.66	
Density, D	23.0	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd On-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,910	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	614	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,910	614		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,728	154		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,910	614		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.141		(Equation 13-3, 13-4, or 13-5)
v_{12} =	888	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,296	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,910	pcph	9,600	pcph	No
Ramp volume, v_R	614	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,704	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,518	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,132	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.68	
Density, D_R	27.1	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.374	
Space mean speed in ramp influence area, S_R	59.5	mph
Space mean speed in outer lanes, S_O	65.0	mph
Space mean speed for all vehicles, S	62.4	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd to Keller Ave
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,910	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,728	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,910	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,728	pcphpl
Average passenger-car speed, S	66.8	mph
Volume-to-capacity ratio, v/c	0.72	
Density, D	25.9	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,910	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	487	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,910	487		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,728	122		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,910	487		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,287	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,910	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,423	pcph	9,600	pcph	No
Ramp volume, v_R	487	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,811	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,287	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.75	
Density, D_R	30.7	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.342	
Space mean speed in ramp influence area, S_R	60.4	mph
Space mean speed in outer lanes, S_O	73.6	mph
Space mean speed for all vehicles, S	66.7	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp to On-ramp
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,423	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,606	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,423	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,606	pcphpl
Average passenger-car speed, S	68.1	mph
Volume-to-capacity ratio, v/c	0.67	
Density, D	23.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave On-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,871	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	448	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,871	448		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,718	112		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,871	448		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.162		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	1,039	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,423	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,871	pcph	9,600	pcph	No
Ramp volume, v_R	448	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,692	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,569	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,017	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.66	
Density, D_R	26.3	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.365	
Space mean speed in ramp influence area, S_R	59.8	mph
Space mean speed in outer lanes, S_O	64.9	mph
Space mean speed for all vehicles, S	62.5	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave to Edwards Ave
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,871	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,718	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,871	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,718	pcphpl
Average passenger-car speed, S	66.9	mph
Volume-to-capacity ratio, v/c	0.72	
Density, D	25.7	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Edwards Ave On-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,555	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	684	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,555	684		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,889	171		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,555	684		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.132		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	909	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,871	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,555	pcph	9,600	pcph	No
Ramp volume, v_R	684	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,981	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,748	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,432	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.75	
Density, D_R	29.4	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.406	
Space mean speed in ramp influence area, S_R	58.6	mph
Space mean speed in outer lanes, S_O	64.4	mph
Space mean speed for all vehicles, S	61.6	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Semminary Ave Off-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,555	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	354	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,555	354		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,889	89		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,555	354		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,494	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,555	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,201	pcph	9,600	pcph	No
Ramp volume, v_R	354	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,031	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,494	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.79	
Density, D_R	32.5	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.330	
Space mean speed in ramp influence area, S_R	60.8	mph
Space mean speed in outer lanes, S_O	72.8	mph
Space mean speed for all vehicles, S	66.7	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB Off-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,201	vph

Off Ramp Data

Type of diverge	Major	
Number of lanes in ramp	2	
Free-flow speed on ramp	65	mph
Volume on ramp	1,987	vph
Length of deceleration lane(s)	740	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,201	1,987		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,800	497		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,201	1,987		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.260		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,343	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,201	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,214	pcph	9,600	pcph	No
Ramp volume, v_R	1,987	pcph	4,700	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,929	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,343	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.76	
Density, D_R	31.5	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.217	
Space mean speed in ramp influence area, S_R	63.9	mph
Space mean speed in outer lanes, S_O	73.2	mph
Space mean speed for all vehicles, S	68.6	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB to Frontage Rd
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	5,214	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,304	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,214	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,304	pcphpl
Average passenger-car speed, S	69.9	mph
Volume-to-capacity ratio, v/c	0.54	
Density, D	18.7	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	CA-13 NB: I-580 WB to Calaveras Ave
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	1,987	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	497	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	1,987	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	994	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.41	
Density, D	14.2	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd Off-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,095	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	688	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,095	688		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,774	172		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,095	688		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,481	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,095	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,407	pcph	9,600	pcph	No
Ramp volume, v_R	688	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,807	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,481	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.79	
Density, D_R	32.6	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.360	
Space mean speed in ramp influence area, S_R	59.9	mph
Space mean speed in outer lanes, S_O	73.6	mph
Space mean speed for all vehicles, S	66.2	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Off-ramp to On-ramp
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,407	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,602	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,407	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,602	pcphpl
Average passenger-car speed, S	68.1	mph
Volume-to-capacity ratio, v/c	0.67	
Density, D	23.5	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd On-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,059	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	652	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,059	652		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,765	163		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,059	652		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.136		(Equation 13-3, 13-4, or 13-5)
v_{12} =	873	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,407	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,059	pcph	9,600	pcph	No
Ramp volume, v_R	652	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,767	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,563	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,215	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.70	
Density, D_R	27.7	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.382	
Space mean speed in ramp influence area, S_R	59.3	mph
Space mean speed in outer lanes, S_O	64.9	mph
Space mean speed for all vehicles, S	62.2	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd to Keller Ave
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	7,059	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,765	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,059	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,765	pcphpl
Average passenger-car speed, S	66.3	mph
Volume-to-capacity ratio, v/c	0.74	
Density, D	26.6	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,059	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	176	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,059	176		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,765	44		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,059	176		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,177	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,059	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,883	pcph	9,600	pcph	No
Ramp volume, v_R	176	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,941	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,177	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.72	
Density, D_R	29.8	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.314	
Space mean speed in ramp influence area, S_R	61.2	mph
Space mean speed in outer lanes, S_O	73.1	mph
Space mean speed for all vehicles, S	67.2	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp to On-ramp
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,883	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,721	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,883	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,721	pcphpl
Average passenger-car speed, S	66.9	mph
Volume-to-capacity ratio, v/c	0.72	
Density, D	25.7	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave On-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,656	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	773	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,656	773		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,914	193		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,656	773		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.121		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	834	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,883	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,656	pcph	9,600	pcph	No
Ramp volume, v_R	773	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,024	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,753	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,526	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.77	
Density, D_R	30.1	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.418	
Space mean speed in ramp influence area, S_R	58.3	mph
Space mean speed in outer lanes, S_O	64.4	mph
Space mean speed for all vehicles, S	61.4	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave to Edwards Ave
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	7,656	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,914	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,656	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,914	pcphpl
Average passenger-car speed, S	64.1	mph
Volume-to-capacity ratio, v/c	0.80	
Density, D	29.9	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Edwards Ave On-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,749	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	1,093	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,749	1,093		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,187	273		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,749	1,093		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.081		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	621	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,656	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,749	pcph	9,600	pcph	No
Ramp volume, v_R	1,093	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,517	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	3,062	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	4,155	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.90	
Density, D_R	34.9	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.534	
Space mean speed in ramp influence area, S_R	55.1	mph
Space mean speed in outer lanes, S_O	63.5	mph
Space mean speed for all vehicles, S	59.2	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Semminary Ave Off-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,749	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	182	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,749	182		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,187	46		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,749	182		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,917	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,749	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,567	pcph	9,600	pcph	No
Ramp volume, v_R	182	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,416	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,917	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.89	
Density, D_R	36.1	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.314	
Space mean speed in ramp influence area, S_R	61.2	mph
Space mean speed in outer lanes, S_O	71.3	mph
Space mean speed for all vehicles, S	66.4	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB Off-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,567	vph

Off Ramp Data

Type of diverge	Major	
Number of lanes in ramp	2	
Free-flow speed on ramp	65	mph
Volume on ramp	2,044	vph
Length of deceleration lane(s)	740	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,567	2,044		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,142	511		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,567	2,044		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.260		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,740	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,567	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,523	pcph	9,600	pcph	No
Ramp volume, v_R	2,044	pcph	4,700	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,414	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,740	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.85	
Density, D_R	37.5	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.222	
Space mean speed in ramp influence area, S_R	63.8	mph
Space mean speed in outer lanes, S_O	71.3	mph
Space mean speed for all vehicles, S	67.8	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB to Frontage Rd
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,523	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,631	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,523	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,631	pcphpl
Average passenger-car speed, S	67.8	mph
Volume-to-capacity ratio, v/c	0.68	
Density, D	24.0	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	CA-13 NB: I-580 WB to Calaveras Ave
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	2,044	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	511	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	2,044	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,022	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.43	
Density, D	14.6	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave Off-ramp to CA-13 SB
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	4,878	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,220	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	4,878	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,220	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.51	
Density, D	17.4	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: CA-13 SB On-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,590	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	65	mph
Volume on ramp	1,712	vph
Length of acceleration lane(s)	600	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,590	1,712		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,648	428		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,590	1,712		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.004		(Equation 13-3, 13-4, or 13-5)
v_{12} =	19	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	4,878	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,590	pcph	9,600	pcph	No
Ramp volume, v_R	1,712	pcph	2,200	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,430	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	1,951	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,663	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.80	
Density, D_R	29.5	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.395	
Space mean speed in ramp influence area, S_R	58.9	mph
Space mean speed in outer lanes, S_O	66.5	mph
Space mean speed for all vehicles, S	62.1	mph

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave On-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,538	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	948	vph
Length of acceleration lane(s)	540	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,538	948		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,885	237		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,538	948		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.099		(Equation 13-3, 13-4, or 13-5)
v_{12} =	654	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,590	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,538	pcph	9,600	pcph	No
Ramp volume, v_R	948	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,968	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,636	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,584	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.78	
Density, D_R	29.6	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.413	
Space mean speed in ramp influence area, S_R	58.4	mph
Space mean speed in outer lanes, S_O	64.7	mph
Space mean speed for all vehicles, S	61.6	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave Off-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,538	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	462	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,538	462		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,885	116		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,538	462		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,547	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,538	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,076	pcph	9,600	pcph	No
Ramp volume, v_R	462	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,995	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,547	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.81	
Density, D_R	33.1	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.340	
Space mean speed in ramp influence area, S_R	60.5	mph
Space mean speed in outer lanes, S_O	72.9	mph
Space mean speed for all vehicles, S	66.5	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave To Keller Ave
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,076	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,769	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,076	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,769	pcphpl
Average passenger-car speed, S	66.2	mph
Volume-to-capacity ratio, v/c	0.74	
Density, D	26.7	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,076	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	619	vph
Length of deceleration lane(s)	220	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,076	619		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,769	155		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,076	619		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,434	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,076	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,457	pcph	9,600	pcph	No
Ramp volume, v_R	619	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,821	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,434	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.78	
Density, D_R	31.8	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.354	
Space mean speed in ramp influence area, S_R	60.1	mph
Space mean speed in outer lanes, S_O	73.6	mph
Space mean speed for all vehicles, S	66.4	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp to On-ramp
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,457	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,614	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,457	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,614	pcphpl
Average passenger-car speed, S	68.0	mph
Volume-to-capacity ratio, v/c	0.67	
Density, D	23.7	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave On-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,835	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	378	vph
Length of acceleration lane(s)	380	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,835	378		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,709	95		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,835	378		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.171		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,101	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,457	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,835	pcph	9,600	pcph	No
Ramp volume, v_R	378	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,678	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,583	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	2,961	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.64	
Density, D_R	26.0	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.362	
Space mean speed in ramp influence area, S_R	59.9	mph
Space mean speed in outer lanes, S_O	64.8	mph
Space mean speed for all vehicles, S	62.6	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave to Golf Links Rd
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,835	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,709	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,835	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,709	pcphpl
Average passenger-car speed, S	67.0	mph
Volume-to-capacity ratio, v/c	0.71	
Density, D	25.5	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp
Alternative	Existing with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,835	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	670	vph
Length of deceleration lane(s)	160	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,835	670		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,709	168		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,835	670		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,358	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,835	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,165	pcph	9,600	pcph	No
Ramp volume, v_R	670	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,739	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,358	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.76	
Density, D_R	31.7	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.358	
Space mean speed in ramp influence area, S_R	60.0	mph
Space mean speed in outer lanes, S_O	73.9	mph
Space mean speed for all vehicles, S	66.3	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp to On-ramp
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,165	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,541	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,165	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,541	pcphpl
Average passenger-car speed, S	68.6	mph
Volume-to-capacity ratio, v/c	0.64	
Density, D	22.5	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd On-ramp
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	6,873	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,718	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,873	pcph

Speed Inputs and Adjustments

Number of lanes, N	5	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	6,873	pcph	9,600	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	Yes
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,375	pcphpl
Average passenger-car speed, S	69.6	mph
Volume-to-capacity ratio, v/c	0.57	
Density, D	19.7	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	CA-13 SB: Calaveras Ave to Seminary Ave
Alternative	Existing with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	1,899	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	475	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	1,899	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	950	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.40	
Density, D	13.6	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave Off-ramp to CA-13 SB
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	3,626	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	907	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	3,626	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	907	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.38	
Density, D	13.0	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: CA-13 SB On-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	5,685	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	65	mph
Volume on ramp	2,059	vph
Length of acceleration lane(s)	600	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	5,685	2,059		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,421	515		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	5,685	2,059		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.063		(Equation 13-3, 13-4, or 13-5)
v_{12} =	230	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	3,626	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,685	pcph	9,600	pcph	No
Ramp volume, v_R	2,059	pcph	2,200	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,698	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	1,450	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,509	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.76	
Density, D_R	28.1	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.373	
Space mean speed in ramp influence area, S_R	59.5	mph
Space mean speed in outer lanes, S_O	67.9	mph
Space mean speed for all vehicles, S	62.5	mph

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave On-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,145	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	460	vph
Length of acceleration lane(s)	540	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,145	460		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,536	115		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,145	460		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.160		(Equation 13-3, 13-4, or 13-5)
v_{12} =	911	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	5,685	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,145	pcph	9,600	pcph	No
Ramp volume, v_R	460	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,387	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,274	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	2,734	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.59	
Density, D_R	23.2	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.332	
Space mean speed in ramp influence area, S_R	60.7	mph
Space mean speed in outer lanes, S_O	65.7	mph
Space mean speed for all vehicles, S	63.4	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave Off-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,145	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	532	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,145	532		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,536	133		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,145	532		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	2,979	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,145	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,613	pcph	9,600	pcph	No
Ramp volume, v_R	532	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,583	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	2,979	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.68	
Density, D_R	28.3	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.346	
Space mean speed in ramp influence area, S_R	60.3	mph
Space mean speed in outer lanes, S_O	74.5	mph
Space mean speed for all vehicles, S	66.9	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave To Keller Ave
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	5,613	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,403	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,613	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,403	pcphpl
Average passenger-car speed, S	69.5	mph
Volume-to-capacity ratio, v/c	0.58	
Density, D	20.2	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	5,613	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	435	vph
Length of deceleration lane(s)	220	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	5,613	435		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,403	109		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	5,613	435		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	2,693	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	5,613	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,178	pcph	9,600	pcph	No
Ramp volume, v_R	435	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,460	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	2,693	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.61	
Density, D_R	25.4	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.337	
Space mean speed in ramp influence area, S_R	60.6	mph
Space mean speed in outer lanes, S_O	75.0	mph
Space mean speed for all vehicles, S	67.3	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp to On-ramp
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	5,178	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,295	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,178	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,295	pcphpl
Average passenger-car speed, S	69.9	mph
Volume-to-capacity ratio, v/c	0.54	
Density, D	18.5	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave On-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	5,515	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	337	vph
Length of acceleration lane(s)	380	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	5,515	337		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,379	84		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	5,515	337		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.176		(Equation 13-3, 13-4, or 13-5)
v_{12} =	910	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	5,178	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,515	pcph	9,600	pcph	No
Ramp volume, v_R	337	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,134	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,071	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	2,408	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.52	
Density, D_R	21.7	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.330	
Space mean speed in ramp influence area, S_R	60.8	mph
Space mean speed in outer lanes, S_O	66.2	mph
Space mean speed for all vehicles, S	63.7	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave to Golf Links Rd
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	5,515	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,379	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,515	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,379	pcphpl
Average passenger-car speed, S	69.6	mph
Volume-to-capacity ratio, v/c	0.57	
Density, D	19.8	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp
Alternative	Existing with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	5,515	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	885	vph
Length of deceleration lane(s)	160	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	5,515	885		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,379	221		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	5,515	885		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	2,904	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	5,515	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	4,630	pcph	9,600	pcph	No
Ramp volume, v_R	885	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,306	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	2,904	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.66	
Density, D_R	27.8	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.378	
Space mean speed in ramp influence area, S_R	59.4	mph
Space mean speed in outer lanes, S_O	75.6	mph
Space mean speed for all vehicles, S	66.1	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp to On-ramp
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	4,630	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,158	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	4,630	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,158	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.48	
Density, D	16.5	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd On-ramp
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	5,400	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,350	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,400	pcph

Speed Inputs and Adjustments

Number of lanes, N	5	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	5,400	pcph	9,600	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	Yes
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,080	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.45	
Density, D	15.4	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	CA-13 SB: Calaveras Ave to Seminary Ave
Alternative	Existing with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	2,277	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	569	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	2,277	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,139	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.47	
Density, D	16.3	pcpmpl
Level of service, LOS	B	

APPENDIX V-G

2040 PLUS PROJECT CONDITIONS ANALYSIS WORKSHEETS



Intersection Analysis Worksheets

FEHR PEERS

Intersection	
Int Delay, s/veh	36.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1005	30	10	243	0	20	0	30	60	40	720
Conflicting Peds, #/hr	0	0	2	2	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1005	30	10	243	0	20	0	30	60	40	720

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	243	0	0	1035	0	0	1303	1283	520	766	1298	245
Stage 1	-	-	-	-	-	-	1020	1020	-	263	263	-
Stage 2	-	-	-	-	-	-	283	263	-	503	1035	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.218	-	-	2.22	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1323	-	-	667	-	-	127	164	502	306	161	793
Stage 1	-	-	-	-	-	-	254	313	-	741	690	-
Stage 2	-	-	-	-	-	-	723	690	-	520	308	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1321	-	-	666	-	-	~ 9	162	501	284	159	792
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 9	162	-	284	159	-
Stage 1	-	-	-	-	-	-	254	313	-	741	680	-
Stage 2	-	-	-	-	-	-	61	680	-	488	308	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	$ 954.4	36.6
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	22	1321	-	-	666	-	-	216	792
HCM Lane V/C Ratio	2.273	-	-	-	0.015	-	-	0.463	0.909
HCM Control Delay (s)	$ 954.4	0	-	-	10.5	-	-	35.3	36.8
HCM Lane LOS	F	A	-	-	B	-	-	E	E
HCM 95th %tile Q(veh)	6.4	0	-	-	0	-	-	2.2	12.5

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	38.7
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	650	405	40	0	0	0	0	0	60	190	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	650	405	40	0	0	0	0	0	60	190	40
Number of Lanes	0	1	1	0	0	0	0	0	0	0	1	0

Approach	EB	NB
Opposing Approach		SB
Opposing Lanes	0	2
Conflicting Approach Left	SB	EB
Conflicting Lanes Left	2	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	51.2	18.5
HCM LOS	F	C

Lane	NBLn1	EBLn1	EBLn2	SBLn1	SBLn2
Vol Left, %	21%	100%	0%	100%	0%
Vol Thru, %	66%	0%	91%	0%	13%
Vol Right, %	14%	0%	9%	0%	87%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	290	650	445	90	223
LT Vol	60	650	0	90	0
Through Vol	190	0	405	0	30
RT Vol	40	0	40	0	193
Lane Flow Rate	290	650	445	90	223
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.559	1	0.796	0.197	0.419
Departure Headway (Hd)	6.939	7.007	6.436	7.963	6.859
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	516	527	565	454	529
Service Time	5.015	4.707	4.136	5.663	4.559
HCM Lane V/C Ratio	0.562	1.233	0.788	0.198	0.422
HCM Control Delay	18.5	65.9	29.7	12.6	14.4
HCM Lane LOS	C	F	D	B	B
HCM 95th-tile Q	3.4	13.9	7.6	0.7	2.1

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	90	30	193
Peak Hour Factor	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	90	30	193
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	
Conflicting Lanes Left	0
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	13.9
HCM LOS	B

Lane

Intersection	
Int Delay, s/veh	377.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	100	203	40	10	820	20	0	0	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	300	125	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	100	203	40	10	820	20	0	0	10	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1700	1675	15	1725	1680	20	20	0	0	20	0	0
Stage 1	15	15	-	1660	1660	-	-	-	-	-	-	-
Stage 2	1685	1660	-	65	20	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	73	95	1065	~ 70	95	1058	1596	-	-	1596	-	-
Stage 1	1005	883	-	~ 123	154	-	-	-	-	-	-	-
Stage 2	119	154	-	946	879	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	12	46	1065	~ 38	46	1058	1596	-	-	1596	-	-
Mov Cap-2 Maneuver	12	46	-	~ 38	46	-	-	-	-	-	-	-
Stage 1	489	883	-	~ 60	75	-	-	-	-	-	-	-
Stage 2	27	75	-	857	879	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	$ 1776	9.4	0
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1596	-	-	1065	38	57	1596	-	-
HCM Lane V/C Ratio	0.514	-	-	0.094	5.342	0.877	-	-	-
HCM Control Delay (s)	9.6	-	-	8.7	$ 2164	200.8	0	-	-
HCM Lane LOS	A	-	-	A	F	F	A	-	-
HCM 95th %tile Q(veh)	3.1	-	-	0.3	23.8	3.9	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	180	477	120	22	640	60	250	490	33	95	450	150
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	180	477	46	22	640	57	250	490	31	95	450	0
Adj No. of Lanes	1	1	1	1	1	0	0	2	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	721	594	31	540	48	206	432	28	444	466	0
Arrive On Green	0.08	0.39	0.39	0.02	0.32	0.32	0.19	0.18	0.18	0.25	0.25	0.00
Sat Flow, veh/h	1774	1863	1535	1774	1683	150	1125	2357	153	1774	1863	0
Grp Volume(v), veh/h	180	477	46	22	0	697	401	0	370	95	450	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1535	1774	0	1832	1806	0	1829	1774	1863	0
Q Serve(g_s), s	10.0	25.3	2.3	1.5	0.0	38.5	22.0	0.0	22.0	5.1	28.7	0.0
Cycle Q Clear(g_c), s	10.0	25.3	2.3	1.5	0.0	38.5	22.0	0.0	22.0	5.1	28.7	0.0
Prop In Lane	1.00		1.00	1.00		0.08	0.62		0.08	1.00		0.00
Lane Grp Cap(c), veh/h	148	721	594	31	0	588	331	0	335	444	466	0
V/C Ratio(X)	1.22	0.66	0.08	0.72	0.00	1.19	1.21	0.00	1.10	0.21	0.97	0.00
Avail Cap(c_a), veh/h	148	721	594	59	0	588	331	0	335	444	466	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.78	0.00	0.78	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.0	30.3	23.3	58.7	0.0	40.8	48.7	0.0	49.0	35.7	44.5	0.0
Incr Delay (d2), s/veh	144.2	4.7	0.3	8.7	0.0	96.7	120.1	0.0	79.6	0.1	32.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	13.9	1.0	0.8	0.0	35.2	22.0	0.0	18.5	2.5	19.0	0.0
LnGrp Delay(d),s/veh	199.2	35.1	23.5	67.4	0.0	137.5	168.8	0.0	128.6	35.7	77.3	0.0
LnGrp LOS	F	D	C	E		F	F		F	D	E	
Approach Vol, veh/h		703			719			771			545	
Approach Delay, s/veh		76.3			135.3			149.5			70.1	
Approach LOS		E			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	51.9		35.0	14.0	44.0		27.0
Change Period (Y+Rc), s	4.0	5.5		5.0	4.0	5.5		5.0
Max Green Setting (Gmax), s	4.0	44.5		30.0	10.0	38.5		22.0
Max Q Clear Time (g_c+I1), s	3.5	27.3		30.7	12.0	40.5		24.0
Green Ext Time (p_c), s	0.0	3.2		0.0	0.0	0.0		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		111.2
HCM 2010 LOS		F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	565	20	30	662	10	30	30	100	20	10	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.98	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	10	565	18	30	662	9	30	30	20	20	10	5
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	939	30	182	932	12	291	94	57	352	83	32
Arrive On Green	0.57	0.53	0.53	0.57	0.53	0.53	0.19	0.14	0.14	0.19	0.14	0.14
Sat Flow, veh/h	11	1769	56	35	1755	23	531	662	398	742	585	221
Grp Volume(v), veh/h	593	0	0	701	0	0	80	0	0	35	0	0
Grp Sat Flow(s),veh/h/ln	1835	0	0	1814	0	0	1590	0	0	1547	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.9	0.0	0.0	6.2	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0
Prop In Lane	0.02		0.03	0.04		0.01	0.37		0.25	0.57		0.14
Lane Grp Cap(c), veh/h	1214	0	0	1205	0	0	511	0	0	534	0	0
V/C Ratio(X)	0.49	0.00	0.00	0.58	0.00	0.00	0.16	0.00	0.00	0.07	0.00	0.00
Avail Cap(c_a), veh/h	4578	0	0	4488	0	0	1653	0	0	1606	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.7	0.0	0.0	4.0	0.0	0.0	8.7	0.0	0.0	8.4	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	2.7	0.0	0.0	0.4	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	3.8	0.0	0.0	4.1	0.0	0.0	8.7	0.0	0.0	8.4	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h		593			701			80			35	
Approach Delay, s/veh		3.8			4.1			8.7			8.4	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		16.7		6.3		16.7		6.3
Change Period (Y+Rc), s		4.5		3.0		4.5		3.0
Max Green Setting (Gmax), s		55.0		20.0		55.0		20.0
Max Q Clear Time (g_c+I1), s		6.9		2.4		8.2		3.0
Green Ext Time (p_c), s		4.0		0.2		4.0		0.2

Intersection Summary		
HCM 2010 Ctrl Delay		4.4
HCM 2010 LOS		A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	635	50	30	852	60	80
Number	6	16	5	2	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1900
Adj Flow Rate, veh/h	635	47	30	852	60	30
Adj No. of Lanes	1	0	1	1	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	866	64	446	1236	104	52
Arrive On Green	0.51	0.51	0.04	0.66	0.09	0.09
Sat Flow, veh/h	1714	127	1774	1863	1119	559
Grp Volume(v), veh/h	0	682	30	852	91	0
Grp Sat Flow(s),veh/h/ln	0	1840	1774	1863	1697	0
Q Serve(g_s), s	0.0	9.6	0.2	9.3	1.7	0.0
Cycle Q Clear(g_c), s	0.0	9.6	0.2	9.3	1.7	0.0
Prop In Lane		0.07	1.00		0.66	0.33
Lane Grp Cap(c), veh/h	0	930	446	1236	158	0
V/C Ratio(X)	0.00	0.73	0.07	0.69	0.58	0.00
Avail Cap(c_a), veh/h	0	3696	705	4308	826	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.4	4.8	3.4	14.3	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.3	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.8	0.1	4.6	0.8	0.0
LnGrp Delay(d),s/veh	0.0	6.8	4.8	3.7	15.5	0.0
LnGrp LOS		A	A	A	B	
Approach Vol, veh/h	682			882	91	
Approach Delay, s/veh	6.8			3.7	15.5	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		25.8		7.1	5.2	20.6		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		76.0		16.0	6.0	66.0		
Max Q Clear Time (g_c+I1), s		11.3		3.7	2.2	11.6		
Green Ext Time (p_c), s		5.0		0.1	0.0	5.0		

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	755	0	0	292	0	10	0	10	55	10	650
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	0	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	0	755	0	0	292	0	10	0	0	55	10	249
Adj No. of Lanes	1	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	4	961	0	0	961	0	32	0	0	399	73	316
Arrive On Green	0.00	0.52	0.00	0.00	0.52	0.00	0.02	0.00	0.00	0.24	0.26	0.26
Sat Flow, veh/h	1774	1863	0	0	1863	0	1774	0	0	1512	275	1577
Grp Volume(v), veh/h	0	755	0	0	292	0	10	0	0	65	0	249
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1863	0	1774	0	0	1787	0	1577
Q Serve(g_s), s	0.0	15.5	0.0	0.0	4.2	0.0	0.3	0.0	0.0	1.3	0.0	10.1
Cycle Q Clear(g_c), s	0.0	15.5	0.0	0.0	4.2	0.0	0.3	0.0	0.0	1.3	0.0	10.1
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00	0.85		1.00
Lane Grp Cap(c), veh/h	4	961	0	0	961	0	32	0	0	472	0	316
V/C Ratio(X)	0.00	0.79	0.00	0.00	0.30	0.00	0.31	0.00	0.00	0.14	0.00	0.79
Avail Cap(c_a), veh/h	528	1306	0	0	1385	0	452	0	0	721	0	536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.3	0.0	0.0	6.5	0.0	22.8	0.0	0.0	13.6	0.0	33.7
Incr Delay (d2), s/veh	0.0	2.8	0.0	0.0	0.3	0.0	2.0	0.0	0.0	0.0	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.5	0.0	0.0	2.2	0.0	0.1	0.0	0.0	0.7	0.0	7.0
LnGrp Delay(d),s/veh	0.0	12.1	0.0	0.0	6.8	0.0	24.8	0.0	0.0	13.6	0.0	35.3
LnGrp LOS		B			A		C			B		D
Approach Vol, veh/h		755			292			10			314	
Approach Delay, s/veh		12.1			6.8			24.8			30.8	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		27.8		15.4	0.0	27.8		3.9
Change Period (Y+Rc), s		3.5		3.0	3.0	3.5		3.0
Max Green Setting (Gmax), s		33.0		19.0	14.0	35.0		12.0
Max Q Clear Time (g_c+I1), s		17.5		12.1	0.0	6.2		2.3
Green Ext Time (p_c), s		6.8		0.5	0.0	8.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	630	40	150	60	20	90	272	404	20	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863			
Adj Flow Rate, veh/h	630	40	93	60	20	13	272	404	6			
Adj No. of Lanes	1	1	0	0	1	1	1	1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Cap, veh/h	731	293	681	234	62	207	463	486	413			
Arrive On Green	0.41	0.60	0.60	0.14	0.13	0.13	0.26	0.26	0.26			
Sat Flow, veh/h	1774	490	1138	929	464	1561	1774	1863	1583			
Grp Volume(v), veh/h	630	0	133	80	0	13	272	404	6			
Grp Sat Flow(s),veh/h/ln	1774	0	1628	1393	0	1561	1774	1863	1583			
Q Serve(g_s), s	18.3	0.0	2.0	2.1	0.0	0.4	7.6	11.6	0.2			
Cycle Q Clear(g_c), s	18.3	0.0	2.0	2.8	0.0	0.4	7.6	11.6	0.2			
Prop In Lane	1.00		0.70	0.75		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	731	0	973	308	0	207	463	486	413			
V/C Ratio(X)	0.86	0.00	0.14	0.26	0.00	0.06	0.59	0.83	0.01			
Avail Cap(c_a), veh/h	1221	0	973	558	0	496	720	756	643			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	15.2	0.0	5.0	22.3	0.0	21.5	18.3	19.8	15.5			
Incr Delay (d2), s/veh	3.5	0.0	0.1	0.2	0.0	0.0	0.4	2.5	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	9.6	0.0	0.9	1.1	0.0	0.2	3.8	6.3	0.2			
LnGrp Delay(d),s/veh	18.7	0.0	5.1	22.4	0.0	21.5	18.7	22.3	15.5			
LnGrp LOS	B		A	C		C	B	C	B			
Approach Vol, veh/h		763			93			682				
Approach Delay, s/veh		16.3			22.3			20.8				
Approach LOS		B			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		38.4		18.3	26.3	12.0		
Change Period (Y+Rc), s		* 4.5		3.5	3.0	4.5		
Max Green Setting (Gmax), s		* 23		23.0	39.0	18.0		
Max Q Clear Time (g_c+I1), s		4.0		13.6	20.3	4.8		
Green Ext Time (p_c), s		1.0		1.2	3.0	0.3		

Intersection Summary		
HCM 2010 Ctrl Delay		18.7
HCM 2010 LOS		B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	20	686	10	10	200
Conflicting Peds, #/hr	0	2	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	20	686	10	10	200

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	913	693	0	0	698	0
Stage 1	693	-	-	-	-	-
Stage 2	220	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	304	443	-	-	898	-
Stage 1	496	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	300	442	-	-	898	-
Mov Cap-2 Maneuver	300	-	-	-	-	-
Stage 1	495	-	-	-	-	-
Stage 2	806	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.2	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	382	898	-
HCM Lane V/C Ratio	-	-	0.079	0.011	-
HCM Control Delay (s)	-	-	15.2	9.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	16

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	10	10	10	823	686	10	0	210	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	10	10	10	823	686	10	0	210	10

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	2552	2557	691	220	0	0	696	0	0
Stage 1	2337	2337	-	-	-	-	-	-	-
Stage 2	215	220	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	29	26	445	1349	-	-	900	-	-
Stage 1	77	70	-	-	-	-	-	-	-
Stage 2	821	721	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	11	0	445	1349	-	-	900	-	-
Mov Cap-2 Maneuver	11	0	-	-	-	-	-	-	-
Stage 1	30	0	-	-	-	-	-	-	-
Stage 2	821	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 618.5	6.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1349	-	-	21	900	-	-
HCM Lane V/C Ratio	0.61	-	-	1.429	-	-	-
HCM Control Delay (s)	11.7	-	-	$ 618.5	0	-	-
HCM Lane LOS	B	-	-	F	A	-	-
HCM 95th %tile Q(veh)	4.4	-	-	4	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	20	71	0	20	50	0	142	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	20	71	0	20	50	0	142	10
Number of Lanes	0	1	0	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.5	7.2	8.4
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	22%	93%
Vol Thru, %	29%	0%	7%
Vol Right, %	71%	78%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	70	91	152
LT Vol	0	20	142
Through Vol	20	0	10
RT Vol	50	71	0
Lane Flow Rate	70	91	152
Geometry Grp	1	1	1
Degree of Util (X)	0.074	0.101	0.183
Departure Headway (Hd)	3.781	4.001	4.335
Convergence, Y/N	Yes	Yes	Yes
Cap	933	901	824
Service Time	1.863	2.001	2.385
HCM Lane V/C Ratio	0.075	0.101	0.184
HCM Control Delay	7.2	7.5	8.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.7

Intersection	
Intersection Delay, s/veh	24.4
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	0	142	130	0	418	61	0	0	0	0	0	0	234	220	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	142	130	0	418	61	0	0	0	0	0	0	234	220	40
Number of Lanes	0	0	1	0	0	1	1	0	0	0	0	0	0	0	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	16.5	32.8	20.7
HCM LOS	C	D	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	68%	0%
Vol Thru, %	52%	0%	100%	32%	73%
Vol Right, %	48%	0%	0%	0%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	272	418	61	344	150
LT Vol	0	418	0	234	0
Through Vol	142	0	61	110	110
RT Vol	130	0	0	0	40
Lane Flow Rate	272	418	61	344	150
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.506	0.829	0.112	0.688	0.278
Departure Headway (Hd)	6.691	7.144	6.634	7.199	6.662
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	536	506	537	499	536
Service Time	4.776	4.925	4.415	4.978	4.442
HCM Lane V/C Ratio	0.507	0.826	0.114	0.689	0.28
HCM Control Delay	16.5	36.1	10.3	24.5	12
HCM Lane LOS	C	E	B	C	B
HCM 95th-tile Q	2.8	8.2	0.4	5.2	1.1

Intersection	
Intersection Delay, s/veh	63.9
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	150	113	113	0	37	267	386	0	72	983	170	0	45	35	140
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	150	113	113	0	37	267	386	0	72	983	170	0	45	35	140
Number of Lanes	0	0	1	0	0	0	2	0	0	0	2	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	61.3	59	74.2	26
HCM LOS	F	F	F	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	13%	0%	40%	22%	0%	20%
Vol Thru, %	87%	74%	30%	78%	26%	16%
Vol Right, %	0%	26%	30%	0%	74%	64%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	564	662	376	171	520	220
LT Vol	72	0	150	37	0	45
Through Vol	492	492	113	134	134	35
RT Vol	0	170	113	0	386	140
Lane Flow Rate	564	662	376	170	520	220
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	1	1	0.937	0.425	1	0.594
Departure Headway (Hd)	8.873	8.629	8.974	8.976	8.347	9.724
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	411	423	402	402	436	374
Service Time	6.587	6.343	7.072	6.689	6.06	7.724
HCM Lane V/C Ratio	1.372	1.565	0.935	0.423	1.193	0.588
HCM Control Delay	74.8	73.7	61.3	18.2	72.4	26
HCM Lane LOS	F	F	F	C	F	D
HCM 95th-tile Q	12.3	12.5	10.3	2.1	12.7	3.7

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	30	225	33	3	7	414	10	0	126	0	11	0	10	0	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	30	225	33	3	7	414	10	0	126	0	11	0	10	0	70
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	10	11.6	11.9	9.7
HCM LOS	A	B	B	A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	92%	100%	0%	0%	100%	0%	0%	12%
Vol Thru, %	0%	0%	100%	69%	0%	100%	93%	0%
Vol Right, %	8%	0%	0%	31%	0%	0%	7%	88%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	137	30	150	108	10	276	148	80
LT Vol	126	30	0	0	10	0	0	10
Through Vol	0	0	150	75	0	276	138	0
RT Vol	11	0	0	33	0	0	10	70
Lane Flow Rate	137	30	150	108	10	276	148	80
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.259	0.053	0.243	0.168	0.017	0.433	0.23	0.133
Departure Headway (Hd)	6.802	6.328	5.821	5.604	6.154	5.648	5.6	6
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	529	566	618	640	582	638	642	597
Service Time	4.539	4.06	3.553	3.336	3.883	3.377	3.329	3.742
HCM Lane V/C Ratio	0.259	0.053	0.243	0.169	0.017	0.433	0.231	0.134
HCM Control Delay	11.9	9.4	10.4	9.5	9	12.6	10	9.7
HCM Lane LOS	B	A	B	A	A	B	A	A
HCM 95th-tile Q	1	0.2	0.9	0.6	0.1	2.2	0.9	0.5

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	100	149	0	10	297	30	10	0	10	10	10	127
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	100	149	0	10	297	30	10	0	10	10	10	127

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	327	0	0	149	0	0	523	696	78	607	681	167
Stage 1	-	-	-	-	-	-	349	349	-	332	332	-
Stage 2	-	-	-	-	-	-	174	347	-	275	349	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1229	-	-	1430	-	-	437	364	967	380	371	848
Stage 1	-	-	-	-	-	-	640	632	-	655	643	-
Stage 2	-	-	-	-	-	-	811	633	-	708	632	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1226	-	-	1426	-	-	337	331	965	349	338	846
Mov Cap-2 Maneuver	-	-	-	-	-	-	337	331	-	349	338	-
Stage 1	-	-	-	-	-	-	588	580	-	602	637	-
Stage 2	-	-	-	-	-	-	671	627	-	642	580	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.3	0.2	12.5	11.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	500	1226	-	-	1426	-	-	706
HCM Lane V/C Ratio	0.04	0.082	-	-	0.007	-	-	0.208
HCM Control Delay (s)	12.5	8.2	-	-	7.5	0	-	11.4
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0	-	-	0.8

Intersection	
Int Delay, s/veh	24.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	170	0	24	10	0	20	0	1035	0	0	185	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	15	15	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	170	0	24	10	0	20	0	1035	0	0	185	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1230	1220	200	1220	1220	1050	185	0	0	1035	0	0
Stage 1	185	185	-	1035	1035	-	-	-	-	-	-	-
Stage 2	1045	1035	-	185	185	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 154	180	841	157	180	276	1390	-	-	672	-	-
Stage 1	817	747	-	280	309	-	-	-	-	-	-	-
Stage 2	276	309	-	817	747	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 141	180	830	151	180	273	1373	-	-	664	-	-
Mov Cap-2 Maneuver	~ 141	180	-	151	180	-	-	-	-	-	-	-
Stage 1	817	747	-	280	309	-	-	-	-	-	-	-
Stage 2	253	309	-	783	747	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	179.3	24.4	0	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1373	-	-	141	830	215	664	-	-
HCM Lane V/C Ratio	-	-	-	1.206	0.029	0.14	-	-	-
HCM Control Delay (s)	0	-	-	203.3	9.5	24.4	0	-	-
HCM Lane LOS	A	-	-	F	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	10	0.1	0.5	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	176	30	91	220	130	60	630	85	90	380	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.94	0.97		0.94	1.00		0.95	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	70	176	24	91	220	113	60	630	80	90	380	45
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	296	37	132	259	124	77	758	96	99	785	93
Arrive On Green	0.32	0.30	0.30	0.32	0.30	0.30	0.04	0.47	0.47	0.06	0.48	0.48
Sat Flow, veh/h	263	982	121	276	861	413	1774	1609	204	1774	1626	193
Grp Volume(v), veh/h	270	0	0	424	0	0	60	0	710	90	0	425
Grp Sat Flow(s),veh/h/ln	1366	0	0	1549	0	0	1774	0	1814	1774	0	1819
Q Serve(g_s), s	0.0	0.0	0.0	8.6	0.0	0.0	3.0	0.0	30.6	4.5	0.0	14.2
Cycle Q Clear(g_c), s	14.4	0.0	0.0	23.0	0.0	0.0	3.0	0.0	30.6	4.5	0.0	14.2
Prop In Lane	0.26		0.09	0.21		0.27	1.00		0.11	1.00		0.11
Lane Grp Cap(c), veh/h	493	0	0	550	0	0	77	0	854	99	0	878
V/C Ratio(X)	0.55	0.00	0.00	0.77	0.00	0.00	0.78	0.00	0.83	0.91	0.00	0.48
Avail Cap(c_a), veh/h	524	0	0	582	0	0	158	0	854	99	0	878
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.57	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.1	0.0	0.0	29.6	0.0	0.0	42.6	0.0	20.7	42.3	0.0	15.7
Incr Delay (d2), s/veh	0.5	0.0	0.0	3.0	0.0	0.0	6.2	0.0	9.3	62.2	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	0.0	9.9	0.0	0.0	1.6	0.0	17.4	3.9	0.0	7.5
LnGrp Delay(d),s/veh	26.6	0.0	0.0	32.7	0.0	0.0	48.8	0.0	30.0	104.5	0.0	17.6
LnGrp LOS	C			C			D		C	F		B
Approach Vol, veh/h		270			424			770			515	
Approach Delay, s/veh		26.6			32.7			31.4			32.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		32.1	7.9	50.0		32.1	9.0	48.9
Change Period (Y+Rc), s		5.0	4.0	6.5		5.0	4.0	6.5
Max Green Setting (Gmax), s		29.0	8.0	37.5		29.0	5.0	40.5
Max Q Clear Time (g_c+I1), s		16.4	5.0	16.2		25.0	6.5	32.6
Green Ext Time (p_c), s		1.7	0.0	2.8		0.9	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	31.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	211	60	72	271	230	60	490	62	140	200	70
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.99	0.99		0.94	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1937	1900	1900	1937	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	90	211	51	72	271	199	60	490	49	140	200	42
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	204	403	86	146	348	236	170	1066	104	331	542	120
Arrive On Green	0.39	0.37	0.37	0.39	0.37	0.37	0.39	0.37	0.37	0.39	0.37	0.37
Sat Flow, veh/h	288	1090	234	157	941	637	208	2865	278	511	1458	323
Grp Volume(v), veh/h	352	0	0	542	0	0	313	0	286	171	0	211
Grp Sat Flow(s),veh/h/ln	1612	0	0	1735	0	0	1725	0	1626	667	0	1624
Q Serve(g_s), s	0.0	0.0	0.0	5.5	0.0	0.0	0.0	0.0	6.2	6.5	0.0	4.4
Cycle Q Clear(g_c), s	7.2	0.0	0.0	12.7	0.0	0.0	5.8	0.0	6.2	12.8	0.0	4.4
Prop In Lane	0.26		0.14	0.13		0.37	0.19		0.17	0.82		0.20
Lane Grp Cap(c), veh/h	728	0	0	767	0	0	771	0	605	404	0	604
V/C Ratio(X)	0.48	0.00	0.00	0.71	0.00	0.00	0.41	0.00	0.47	0.42	0.00	0.35
Avail Cap(c_a), veh/h	1141	0	0	1227	0	0	1365	0	1189	743	0	1188
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	0.0	0.0	13.1	0.0	0.0	10.9	0.0	11.1	14.6	0.0	10.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.2	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.0	6.0	0.0	0.0	2.9	0.0	2.8	1.9	0.0	2.0
LnGrp Delay(d),s/veh	11.5	0.0	0.0	13.5	0.0	0.0	11.0	0.0	11.3	14.9	0.0	10.7
LnGrp LOS	B			B			B		B	B		B
Approach Vol, veh/h		352			542			599			382	
Approach Delay, s/veh		11.5			13.5			11.2			12.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		23.3		23.2		23.3		23.2
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		30.0		34.0		30.0
Max Q Clear Time (g_c+I1), s		8.2		14.7		14.8		9.2
Green Ext Time (p_c), s		2.6		2.5		2.5		2.7

Intersection Summary		
HCM 2010 Ctrl Delay		12.2
HCM 2010 LOS		B

Intersection	
Int Delay, s/veh	14.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	50	363	30	60	513	30
Conflicting Peds, #/hr	0	7	7	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	363	30	60	513	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	50	0	170	57
Stage 1	-	-	-	-	50	-
Stage 2	-	-	-	-	120	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1557	-	820	1009
Stage 1	-	0	-	-	972	-
Stage 2	-	0	-	-	905	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1548	-	804	1003
Mov Cap-2 Maneuver	-	-	-	-	804	-
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	887	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	17.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	813	-	1548	-
HCM Lane V/C Ratio	0.668	-	0.019	-
HCM Control Delay (s)	17.9	-	7.4	0
HCM Lane LOS	C	-	A	A
HCM 95th %tile Q(veh)	5.2	-	0.1	-

Intersection	
Intersection Delay, s/veh	15.4
Intersection LOS	C

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	70	253	0	300	40	0	233	200
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	70	253	0	300	40	0	233	200
Number of Lanes	0	1	1	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	12.3	14.3	18.7
HCM LOS	B	B	C

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	54%
Vol Thru, %	88%	0%	0%	46%
Vol Right, %	12%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	340	70	253	433
LT Vol	0	70	0	233
Through Vol	300	0	0	200
RT Vol	40	0	253	0
Lane Flow Rate	340	70	253	433
Geometry Grp	2	7	7	2
Degree of Util (X)	0.517	0.137	0.411	0.662
Departure Headway (Hd)	5.473	7.071	5.85	5.505
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	656	506	615	654
Service Time	3.519	4.824	3.601	3.547
HCM Lane V/C Ratio	0.518	0.138	0.411	0.662
HCM Control Delay	14.3	11	12.7	18.7
HCM Lane LOS	B	B	B	C
HCM 95th-tile Q	3	0.5	2	5

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	273	10	70	303	10	30
Conflicting Peds, #/hr	0	9	9	0	0	8
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	273	10	70	303	10	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	291	0	578	159
Stage 1	-	-	-	-	286	-
Stage 2	-	-	-	-	292	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1268	-	446	858
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	732	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1258	-	415	846
Mov Cap-2 Maneuver	-	-	-	-	415	-
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	686	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	672	-	-	1258	-
HCM Lane V/C Ratio	0.06	-	-	0.056	-
HCM Control Delay (s)	10.7	-	-	8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	20	30	54	30	40	30	80	173	60	229	30
Conflicting Peds, #/hr	0	0	70	70	0	0	98	0	0	0	0	98
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	20	30	54	30	40	30	80	173	60	229	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	679	644	298	525	659	248	329	0	0	150	0	0
Stage 1	434	434	-	210	210	-	-	-	-	-	-	-
Stage 2	245	210	-	315	449	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.14	-	-	4.12	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.22	-	-	2.218	-	-
Pot Cap-1 Maneuver	351	391	699	449	383	790	1227	-	-	1431	-	-
Stage 1	571	580	-	791	728	-	-	-	-	-	-	-
Stage 2	758	728	-	671	571	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	250	320	604	331	314	683	1127	-	-	1314	-	-
Mov Cap-2 Maneuver	250	320	-	331	314	-	-	-	-	-	-	-
Stage 1	520	521	-	721	664	-	-	-	-	-	-	-
Stage 2	606	664	-	537	513	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.8	18.4	0.9	1.5
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1127	-	-	394	391	1314	-	-
HCM Lane V/C Ratio	0.027	-	-	0.152	0.317	0.046	-	-
HCM Control Delay (s)	8.3	0	-	15.8	18.4	7.9	-	-
HCM Lane LOS	A	A	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	1.3	0.1	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	62	191	864	104	20	189
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	191	864	104	20	189

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1145	918	0	0	968	0
Stage 1	916	-	-	-	-	-
Stage 2	229	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	221	329	-	-	712	-
Stage 1	390	-	-	-	-	-
Stage 2	809	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	214	328	-	-	711	-
Mov Cap-2 Maneuver	214	-	-	-	-	-
Stage 1	390	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	29.8	0	1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	214	328	711	-
HCM Lane V/C Ratio	-	-	0.29	0.582	0.028	-
HCM Control Delay (s)	-	-	28.5	30.2	10.2	0
HCM Lane LOS	-	-	D	D	B	A
HCM 95th %tile Q(veh)	-	-	1.2	3.5	0.1	-

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	84	864	77	30	221
Conflicting Peds, #/hr	0	2	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	84	864	77	30	221

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1186	907	0	0	943	0
Stage 1	905	-	-	-	-	-
Stage 2	281	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	208	334	-	-	727	-
Stage 1	395	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	198	333	-	-	726	-
Mov Cap-2 Maneuver	198	-	-	-	-	-
Stage 1	394	-	-	-	-	-
Stage 2	730	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.4	0	1.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	333	726	-
HCM Lane V/C Ratio	-	-	0.252	0.041	-
HCM Control Delay (s)	-	-	19.4	10.2	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	1	0.1	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	40	83	753	40	42	238
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	83	753	40	42	238

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1095	776	0	0	793	0
Stage 1	773	-	-	-	-	-
Stage 2	322	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	236	397	-	-	828	-
Stage 1	455	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	222	396	-	-	826	-
Mov Cap-2 Maneuver	222	-	-	-	-	-
Stage 1	455	-	-	-	-	-
Stage 2	690	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.5	0	1.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	316	826	-
HCM Lane V/C Ratio	-	-	0.389	0.051	-
HCM Control Delay (s)	-	-	23.5	9.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.8	0.2	-

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	70	723	20	30	258
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	70	723	20	30	258

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1051	733	0	0	743	0
Stage 1	733	-	-	-	-	-
Stage 2	318	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	251	421	-	-	864	-
Stage 1	475	-	-	-	-	-
Stage 2	738	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	241	421	-	-	864	-
Mov Cap-2 Maneuver	241	-	-	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	708	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.7	0	1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	344	864	-
HCM Lane V/C Ratio	-	-	0.291	0.035	-
HCM Control Delay (s)	-	-	19.7	9.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	270	563	80	149	754	189	170	450	163	204	860	190
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.98	1.00		0.95	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	270	563	70	149	754	106	170	450	133	204	860	174
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	289	1048	130	179	958	418	187	770	225	236	919	186
Arrive On Green	0.16	0.33	0.33	0.10	0.27	0.27	0.11	0.29	0.29	0.13	0.32	0.32
Sat Flow, veh/h	1774	3148	390	1774	3539	1545	1774	2668	780	1774	2902	587
Grp Volume(v), veh/h	270	316	317	149	754	106	170	297	286	204	524	510
Grp Sat Flow(s),veh/h/ln	1774	1770	1768	1774	1770	1545	1774	1770	1678	1774	1770	1719
Q Serve(g_s), s	16.7	16.1	16.2	9.1	21.9	6.0	10.5	15.9	16.2	12.5	31.9	32.0
Cycle Q Clear(g_c), s	16.7	16.1	16.2	9.1	21.9	6.0	10.5	15.9	16.2	12.5	31.9	32.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.46	1.00		0.34
Lane Grp Cap(c), veh/h	289	589	589	179	958	418	187	511	485	236	560	544
V/C Ratio(X)	0.93	0.54	0.54	0.83	0.79	0.25	0.91	0.58	0.59	0.86	0.94	0.94
Avail Cap(c_a), veh/h	289	589	589	265	1052	459	187	511	485	344	577	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.8	30.1	30.1	49.0	37.5	31.7	49.1	33.7	33.8	47.1	36.8	36.8
Incr Delay (d2), s/veh	35.6	1.0	1.0	13.3	3.7	0.3	41.1	1.7	1.9	14.2	22.6	23.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.0	8.0	8.1	5.1	11.2	2.6	7.3	8.0	7.8	7.1	19.1	18.6
LnGrp Delay(d),s/veh	81.5	31.0	31.1	62.2	41.2	32.0	90.2	35.4	35.7	61.3	59.4	59.9
LnGrp LOS	F	C	C	E	D	C	F	D	D	E	E	E
Approach Vol, veh/h		903			1009			753			1238	
Approach Delay, s/veh		46.1			43.4			47.9			59.9	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	39.6	21.6	34.5	18.3	36.6	14.7	41.4
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	11.7	36.2	18.1	33.0	21.5	26.4	16.6	34.5
Max Q Clear Time (g_c+I1), s	12.5	34.0	18.7	23.9	14.5	18.2	11.1	18.2
Green Ext Time (p_c), s	0.0	1.2	0.0	4.0	0.3	5.8	0.2	8.8

Intersection Summary	
HCM 2010 Ctrl Delay	50.1
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	860	30	10	1022	20	40	20	20	20	30	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	0.94		0.92	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	30	860	29	10	1022	19	40	20	8	20	30	8
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	93	2546	85	42	2763	51	135	62	19	85	111	24
Arrive On Green	0.80	0.80	0.80	0.80	0.80	0.80	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	72	3177	106	11	3447	64	773	574	180	385	1034	227
Grp Volume(v), veh/h	462	0	457	549	0	502	68	0	0	58	0	0
Grp Sat Flow(s),veh/h/ln	1686	0	1669	1841	0	1681	1526	0	0	1645	0	0
Q Serve(g_s), s	0.0	0.0	8.2	0.0	0.0	9.3	0.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.2	0.0	8.2	9.1	0.0	9.3	4.1	0.0	0.0	3.3	0.0	0.0
Prop In Lane	0.06		0.06	0.02		0.04	0.59		0.12	0.34		0.14
Lane Grp Cap(c), veh/h	1386	0	1338	1509	0	1348	216	0	0	221	0	0
V/C Ratio(X)	0.33	0.00	0.34	0.36	0.00	0.37	0.31	0.00	0.00	0.26	0.00	0.00
Avail Cap(c_a), veh/h	1386	0	1338	1509	0	1348	323	0	0	337	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.73	0.00	0.73	0.90	0.00	0.90	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.9	0.0	3.0	3.1	0.0	3.1	45.6	0.0	0.0	45.3	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.5	0.0	0.0	0.1	0.3	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	3.9	4.6	0.0	4.2	1.9	0.0	0.0	1.6	0.0	0.0
LnGrp Delay(d),s/veh	3.3	0.0	3.5	3.1	0.0	3.1	45.9	0.0	0.0	45.5	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		919			1051			68			58	
Approach Delay, s/veh		3.4			3.1			45.9			45.5	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		93.2		16.8		93.2		16.8
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		10.2		5.3		11.3		6.1
Green Ext Time (p_c), s		13.1		0.4		13.1		0.4

Intersection Summary		
HCM 2010 Ctrl Delay		5.8
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	820	70	30	952	30	80	40	40	30	50	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.93	0.89		0.86	0.91		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	820	65	30	952	28	80	40	28	30	50	17
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	2391	187	83	2493	73	150	69	39	93	139	40
Arrive On Green	0.51	0.51	0.51	0.77	0.77	0.77	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	40	3117	244	63	3250	95	702	483	276	355	981	284
Grp Volume(v), veh/h	472	0	433	516	0	494	148	0	0	97	0	0
Grp Sat Flow(s),veh/h/ln	1773	0	1628	1738	0	1669	1461	0	0	1620	0	0
Q Serve(g_s), s	0.0	0.0	17.3	0.0	0.0	10.8	4.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.3	0.0	17.3	9.8	0.0	10.8	10.2	0.0	0.0	5.6	0.0	0.0
Prop In Lane	0.04		0.15	0.06		0.06	0.54		0.19	0.31		0.18
Lane Grp Cap(c), veh/h	1394	0	1249	1368	0	1280	258	0	0	273	0	0
V/C Ratio(X)	0.34	0.00	0.35	0.38	0.00	0.39	0.57	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	1394	0	1249	1368	0	1280	349	0	0	374	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.00	0.94	0.91	0.00	0.91	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.2	0.0	10.4	4.1	0.0	4.2	44.6	0.0	0.0	42.9	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.7	0.1	0.0	0.1	0.7	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	0.0	8.0	5.0	0.0	5.0	4.3	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	10.8	0.0	11.2	4.2	0.0	4.3	45.3	0.0	0.0	43.2	0.0	0.0
LnGrp LOS	B		B	A		A	D			D		
Approach Vol, veh/h		905			1010			148			97	
Approach Delay, s/veh		11.0			4.2			45.3			43.2	
Approach LOS		B			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.4		20.6		89.4		20.6
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		77.0		23.0		77.0		23.0
Max Q Clear Time (g_c+I1), s		19.3		7.6		12.8		12.2
Green Ext Time (p_c), s		12.5		0.9		12.6		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		11.6
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	780	100	50	872	20	80	50	50	30	70	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.92	0.98		0.92	0.81		0.71	0.91		0.69
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	780	92	50	872	19	80	50	37	30	70	26
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	64	2269	265	138	2330	50	130	70	43	78	150	49
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	40	2992	349	134	3072	66	539	464	285	248	995	323
Grp Volume(v), veh/h	470	0	422	460	0	481	167	0	0	126	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1600	1595	0	1677	1288	0	0	1566	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	13.8	0.0	0.0	7.9	0.0	0.0
Prop In Lane	0.04		0.22	0.11		0.04	0.48		0.22	0.24		0.21
Lane Grp Cap(c), veh/h	1385	0	1213	1246	0	1272	243	0	0	277	0	0
V/C Ratio(X)	0.34	0.00	0.35	0.37	0.00	0.38	0.69	0.00	0.00	0.46	0.00	0.00
Avail Cap(c_a), veh/h	1385	0	1213	1246	0	1272	314	0	0	362	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.00	0.93	0.58	0.00	0.58	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	45.3	0.0	0.0	43.0	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.7	0.0	0.0	0.0	2.2	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.0	0.0	0.0	5.1	0.0	0.0	3.6	0.0	0.0
LnGrp Delay(d),s/veh	0.6	0.0	0.7	0.0	0.0	0.0	47.5	0.0	0.0	43.4	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		892			941			167			126	
Approach Delay, s/veh		0.7			0.0			47.5			43.4	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		88.4		21.6		88.4		21.6
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		77.0		23.0		77.0		23.0
Max Q Clear Time (g_c+I1), s		2.0		9.9		2.0		15.8
Green Ext Time (p_c), s		12.0		1.2		12.0		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		6.6
HCM 2010 LOS		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	150	600	140	135	772	153	110	361	67	153	333	110
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.96	1.00		0.95	1.00		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1937	1900	1863	1937	1900
Adj Flow Rate, veh/h	150	600	123	135	772	139	110	361	61	153	333	99
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	177	1024	209	162	1029	185	136	404	68	181	387	115
Arrive On Green	0.13	0.47	0.47	0.12	0.46	0.46	0.08	0.25	0.25	0.10	0.28	0.28
Sat Flow, veh/h	1774	2886	590	1774	2975	536	1774	1603	271	1774	1396	415
Grp Volume(v), veh/h	150	367	356	135	459	452	110	0	422	153	0	432
Grp Sat Flow(s),veh/h/ln	1774	1770	1706	1774	1770	1741	1774	0	1874	1774	0	1811
Q Serve(g_s), s	9.1	16.6	16.8	8.2	23.5	23.5	6.7	0.0	23.9	9.3	0.0	24.9
Cycle Q Clear(g_c), s	9.1	16.6	16.8	8.2	23.5	23.5	6.7	0.0	23.9	9.3	0.0	24.9
Prop In Lane	1.00		0.35	1.00		0.31	1.00		0.14	1.00		0.23
Lane Grp Cap(c), veh/h	177	628	605	162	612	602	136	0	472	181	0	503
V/C Ratio(X)	0.85	0.58	0.59	0.83	0.75	0.75	0.81	0.00	0.89	0.84	0.00	0.86
Avail Cap(c_a), veh/h	194	628	605	177	612	602	145	0	477	194	0	510
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	0.73	0.73	0.73	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.9	23.1	23.2	47.5	25.8	25.8	50.0	0.0	39.7	48.5	0.0	37.7
Incr Delay (d2), s/veh	22.7	3.7	3.8	18.4	6.1	6.2	24.4	0.0	18.3	24.5	0.0	13.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	8.7	8.5	4.9	12.5	12.3	4.2	0.0	14.7	5.8	0.0	14.3
LnGrp Delay(d),s/veh	69.5	26.8	27.0	65.9	31.9	32.0	74.4	0.0	58.0	73.1	0.0	50.7
LnGrp LOS	E	C	C	E	C	C	E		E	E		D
Approach Vol, veh/h		873			1046			532			585	
Approach Delay, s/veh		34.2			36.3			61.4			56.6	
Approach LOS		C			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	46.0	16.2	32.7	16.0	45.1	13.4	35.5
Change Period (Y+Rc), s	5.0	7.0	5.0	5.0	5.0	7.0	5.0	5.0
Max Green Setting (Gmax), s	11.0	37.0	12.0	28.0	12.0	36.0	9.0	31.0
Max Q Clear Time (g_c+I1), s	10.2	18.8	11.3	25.9	11.1	25.5	8.7	26.9
Green Ext Time (p_c), s	0.0	4.1	0.0	0.6	0.0	3.5	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.0
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	760	50	42	630	111	220	390	62	133	130	140
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	80	760	46	42	630	99	220	390	56	133	130	103
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	277	1344	81	82	876	137	251	424	61	161	207	164
Arrive On Green	0.31	0.79	0.79	0.02	0.09	0.09	0.14	0.27	0.27	0.09	0.22	0.22
Sat Flow, veh/h	1774	3390	205	1774	3061	480	1774	1591	228	1774	958	759
Grp Volume(v), veh/h	80	397	409	42	364	365	220	0	446	133	0	233
Grp Sat Flow(s),veh/h/ln	1774	1770	1826	1774	1770	1771	1774	0	1819	1774	0	1716
Q Serve(g_s), s	3.7	9.2	9.3	2.6	22.0	22.0	13.4	0.0	26.2	8.1	0.0	13.5
Cycle Q Clear(g_c), s	3.7	9.2	9.3	2.6	22.0	22.0	13.4	0.0	26.2	8.1	0.0	13.5
Prop In Lane	1.00		0.11	1.00		0.27	1.00		0.13	1.00		0.44
Lane Grp Cap(c), veh/h	277	702	724	82	507	507	251	0	485	161	0	371
V/C Ratio(X)	0.29	0.57	0.57	0.51	0.72	0.72	0.88	0.00	0.92	0.83	0.00	0.63
Avail Cap(c_a), veh/h	277	702	724	115	507	507	314	0	587	202	0	445
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.2	7.8	7.8	52.9	45.5	45.5	46.3	0.0	39.2	49.2	0.0	39.1
Incr Delay (d2), s/veh	0.2	2.5	2.4	1.9	8.5	8.6	17.5	0.0	16.3	16.4	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.7	4.8	1.3	12.0	12.0	7.8	0.0	15.3	4.7	0.0	6.5
LnGrp Delay(d),s/veh	33.4	10.3	10.2	54.8	54.0	54.1	63.8	0.0	55.4	65.5	0.0	40.1
LnGrp LOS	C	B	B	D	D	D	E		E	E		D
Approach Vol, veh/h		886			771			666			366	
Approach Delay, s/veh		12.3			54.1			58.2			49.4	
Approach LOS		B			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	37.0	15.5	34.8	10.6	49.1	21.0	29.3
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	8.5	31.5	12.5	35.5	7.1	32.9	19.5	28.5
Max Q Clear Time (g_c+I1), s	15.7	24.0	10.1	28.2	4.6	11.3	15.4	15.5
Green Ext Time (p_c), s	0.8	1.2	0.1	1.1	0.0	2.0	0.2	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	40.7
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	935	10	20	733	10	10	0	20	30	0	40
Conflicting Peds, #/hr	5	0	5	5	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	935	10	20	733	10	10	0	20	30	0	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	743	0	0	945	0	0	1347	1723	478	1246	1723	377
Stage 1	-	-	-	-	-	-	940	940	-	778	778	-
Stage 2	-	-	-	-	-	-	407	783	-	468	945	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	860	-	-	722	-	-	110	88	534	130	88	621
Stage 1	-	-	-	-	-	-	283	340	-	355	405	-
Stage 2	-	-	-	-	-	-	592	403	-	545	339	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	856	-	-	719	-	-	100	86	532	122	86	618
Mov Cap-2 Maneuver	-	-	-	-	-	-	100	86	-	122	86	-
Stage 1	-	-	-	-	-	-	283	340	-	355	394	-
Stage 2	-	-	-	-	-	-	536	392	-	522	339	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	24.1	28.1
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	218	856	-	-	719	-	-	225
HCM Lane V/C Ratio	0.138	-	-	-	0.028	-	-	0.311
HCM Control Delay (s)	24.1	0	-	-	10.2	-	-	28.1
HCM Lane LOS	C	A	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0.5	0	-	-	0.1	-	-	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	935	20	10	723	30	10	10	30	270	10	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	30	935	19	10	723	28	10	10	8	270	10	26
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	492	2429	49	336	2378	92	170	169	118	357	11	28
Arrive On Green	0.23	0.23	0.23	0.68	0.68	0.68	0.22	0.23	0.23	0.22	0.23	0.23
Sat Flow, veh/h	708	3547	72	586	3474	134	538	722	504	1267	47	122
Grp Volume(v), veh/h	30	466	488	10	368	383	28	0	0	306	0	0
Grp Sat Flow(s),veh/h/ln	708	1770	1850	586	1770	1839	1764	0	0	1436	0	0
Q Serve(g_s), s	3.8	24.6	24.6	1.0	9.1	9.1	0.0	0.0	0.0	21.7	0.0	0.0
Cycle Q Clear(g_c), s	12.9	24.6	24.6	25.6	9.1	9.1	1.4	0.0	0.0	23.1	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.07	0.36		0.29	0.88		0.08
Lane Grp Cap(c), veh/h	492	1212	1267	336	1212	1259	440	0	0	384	0	0
V/C Ratio(X)	0.06	0.38	0.38	0.03	0.30	0.30	0.06	0.00	0.00	0.80	0.00	0.00
Avail Cap(c_a), veh/h	492	1212	1267	336	1212	1259	574	0	0	510	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.48	0.48	0.48	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.1	22.9	22.9	16.2	6.9	6.9	33.0	0.0	0.0	41.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.9	0.9	0.1	0.3	0.3	0.0	0.0	0.0	4.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	12.4	12.9	0.2	4.5	4.7	0.7	0.0	0.0	9.8	0.0	0.0
LnGrp Delay(d),s/veh	22.4	23.9	23.8	16.3	7.2	7.2	33.0	0.0	0.0	46.1	0.0	0.0
LnGrp LOS	C	C	C	B	A	A	C			D		
Approach Vol, veh/h		984			761			28			306	
Approach Delay, s/veh		23.8			7.3			33.0			46.1	
Approach LOS		C			A			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		80.3		29.7		80.3		29.7
Change Period (Y+Rc), s		5.0		4.0		5.0		* 4
Max Green Setting (Gmax), s		66.0		35.0		43.0		* 36
Max Q Clear Time (g_c+I1), s		26.6		3.4		27.6		25.1
Green Ext Time (p_c), s		4.9		0.8		4.3		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	21.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	100	1165	0	20	803	430	10	120	30	90	0	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	0.94		0.95	0.95		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	100	1165	0	20	803	377	10	120	23	90	0	0
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	2	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	121	2599	0	44	1598	747	41	192	35	369	245	0
Arrive On Green	0.05	0.49	0.00	0.02	0.69	0.69	0.12	0.13	0.13	0.13	0.00	0.00
Sat Flow, veh/h	1774	3632	0	1774	2312	1081	50	1460	267	2353	1863	0
Grp Volume(v), veh/h	100	1165	0	20	614	566	153	0	0	90	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	0	1774	1770	1624	1777	0	0	1176	1863	0
Q Serve(g_s), s	6.1	23.6	0.0	1.2	18.0	18.2	1.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.1	23.6	0.0	1.2	18.0	18.2	9.0	0.0	0.0	6.2	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.67	0.07		0.15	1.00		0.00
Lane Grp Cap(c), veh/h	121	2599	0	44	1223	1122	252	0	0	369	245	0
V/C Ratio(X)	0.83	0.45	0.00	0.45	0.50	0.50	0.61	0.00	0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h	121	2599	0	98	1223	1122	349	0	0	648	466	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	51.8	13.4	0.0	52.9	8.0	8.1	45.4	0.0	0.0	44.2	0.0	0.0
Incr Delay (d2), s/veh	33.3	0.5	0.0	7.0	1.5	1.6	2.3	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	11.7	0.0	0.7	9.2	8.5	4.7	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	85.1	13.9	0.0	59.9	9.5	9.7	47.8	0.0	0.0	44.5	0.0	0.0
LnGrp LOS	F	B		E	A	A	D			D		
Approach Vol, veh/h		1265			1200			153			90	
Approach Delay, s/veh		19.6			10.4			47.8			44.5	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.2	85.8		18.0	11.0	81.0		18.0
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5
Max Green Setting (Gmax), s	5.1	40.4		27.5	7.5	39.0		20.5
Max Q Clear Time (g_c+I1), s	13.2	25.6		8.2	8.1	20.2		11.0
Green Ext Time (p_c), s	0.0	10.3		1.0	0.0	12.2		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	17.9
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	54.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	50	220	1255	30	130	1203
Conflicting Peds, #/hr	2	2	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	220	1255	30	130	1203

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2134	648	0	0	1287	0
Stage 1	1272	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 42	413	-	-	535	-
Stage 1	227	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 32	411	-	-	534	-
Mov Cap-2 Maneuver	~ 32	-	-	-	-	-
Stage 1	227	-	-	-	-	-
Stage 2	282	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 573.4	0	1.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	129	534	-
HCM Lane V/C Ratio	-	-	2.093	0.243	-
HCM Control Delay (s)	-	-	$ 573.4	13.9	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	22.2	0.9	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	0	0	0	0	1065	530	450	1233	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	4	4	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	1065	530	450	1233	100

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	2716	3248	667	1333	0	-	1065	0	0
Stage 1	2183	2183	-	-	-	-	-	-	-
Stage 2	533	1065	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	17	9	401	513	-	0	650	-	-
Stage 1	72	83	-	-	-	0	-	-	-
Stage 2	553	297	-	-	-	0	-	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	5	0	401	513	-	-	648	-	-
Mov Cap-2 Maneuver	18	0	-	-	-	-	-	-	-
Stage 1	22	0	-	-	-	-	-	-	-
Stage 2	553	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	5.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	513	-	-	648	-	-
HCM Lane V/C Ratio	-	-	-	0.694	-	-
HCM Control Delay (s)	0	-	0	22.2	-	-
HCM Lane LOS	A	-	A	C	-	-
HCM 95th %tile Q(veh)	0	-	-	5.6	-	-

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **2040 Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 38 **I-580 EB Off-Ramp-98th Avenue/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn	10	11	110.0%	2.9	7	17	0.3	59.4	13.5	46.1	90.8	E
	Second Left												
	Left Turn	80	80	100.4%	6.8	72	93	0.0	58.9	5.7	49.2	66.6	E
	Through												
	Right Turn	975	967	99.1%	24.3	909	992	0.3	5.3	2.1	3.0	10.0	A
	Second Right												
	Subtotal	1,065	1,058	99.3%	25.9	1,003	1,092	0.2	10.0	2.0	8.2	14.2	A
SB	U Turn												
	Second Left												
	Left Turn	155	149	96.1%	7.4	139	164	0.5	47.0	9.1	35.5	64.4	D
	Through	820	811	98.9%	27.8	775	852	0.3	45.3	8.2	35.9	58.0	D
	Right Turn	40	41	101.8%	7.9	26	52	0.1	36.2	10.1	25.0	53.6	D
	Second Right												
	Subtotal	1,015	1,001	98.6%	29.6	964	1,038	0.5	45.2	8.4	35.3	58.7	D
EB	U Turn												
	Second Left												
	Left Turn												
	Through	90	87	96.2%	9.7	79	111	0.4	46.7	3.6	40.2	51.8	D
	Right Turn	220	223	101.4%	14.6	204	245	0.2	23.5	3.0	19.4	30.3	C
	Second Right												
	Subtotal	310	310	99.9%	20.4	284	356	0.0	30.0	2.6	27.3	37.0	C
WB	U Turn												
	Second Left												
	Left Turn	733	519	70.9%	15.3	496	545	8.5	38.7	2.6	34.5	42.4	D
	Through	220	151	68.5%	11.5	125	167	5.1	25.7	3.5	21.5	32.2	C
	Right Turn												
	Second Right												
	Subtotal	953	670	70.3%	18.6	640	702	9.9	35.8	2.1	32.7	39.8	D
Total		3,343	3,038	90.9%	40.3	2,976	3,107	5.4	29.3	3.4	24.7	34.7	C

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **2040 Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 39 **I-580 Ramps/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	400	403	100.6%	15.1	381	433	0.1	40.6	4.3	35.8	49.1	D
	Through	10	11	109.0%	4.3	4	17	0.3	43.6	8.8	31.1	58.8	D
	Right Turn	460	471	102.3%	26.4	428	530	0.5	42.2	8.0	34.3	58.2	D
	Second Right												
	Subtotal	870	884	101.6%	35.3	819	949	0.5	41.5	6.0	35.7	54.3	D
SB	U Turn												
	Second Left												
	Left Turn												
	Through												
	Right Turn												
	Second Right												
	Subtotal												
EB	U Turn												
	Second Left												
	Left Turn	570	556	97.5%	20.7	512	583	0.6	58.1	2.7	54.7	63.5	E
	Through	650	639	98.4%	24.4	609	683	0.4	28.8	2.0	25.7	32.6	C
	Right Turn												
	Second Right												
	Subtotal	1,220	1,195	98.0%	17.9	1,172	1,226	0.7	42.4	2.1	39.3	45.7	D
WB	U Turn												
	Second Left												
	Left Turn												
	Through	553	264	47.7%	11.2	241	278	14.3	33.9	2.0	31.3	37.4	C
	Right Turn	183	88	47.8%	11.6	61	98	8.2	23.7	2.8	19.2	28.3	C
	Second Right												
	Subtotal	736	351	47.7%	10.9	339	369	16.5	31.4	1.5	28.9	34.2	C
Total		2,826	2,430	86.0%	42.0	2,354	2,515	7.7	40.5	2.3	36.9	45.1	D

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **2040 Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 40 **Mountain Boulevard-Oakland Zoo Driveway/Golf Links Road** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	10	11	106.0%	2.6	6	15	0.2	77.3	17.8	56.2	114.5	F
	Through	10	10	97.0%	3.4	6	17	0.1	29.2	8.6	17.8	41.6	D
	Right Turn												
	Second Right												
	Subtotal	20	20	101.5%	5.5	15	32	0.1	54.8	10.4	40.0	75.5	F
SB	U Turn												
	Second Left												
	Left Turn	22	14	64.1%	2.6	10	18	1.9	447.5	40.7	383.9	510.7	F
	Through	10	6	63.0%	2.4	3	10	1.3	445.8	83.1	339.5	599.0	F
	Right Turn	286	211	73.8%	10.4	195	228	4.8	459.3	35.0	413.1	505.0	F
	Second Right												
	Subtotal	318	231	72.8%	10.3	217	247	5.2	458.6	34.9	409.4	508.0	F
EB	U Turn	40	40	100.8%	5.6	31	48	0.0	10.4	2.3	7.1	14.4	B
	Second Left												
	Left Turn	670	673	100.4%	29.8	629	707	0.1	3.8	0.7	2.8	5.0	A
	Through	340	339	99.6%	23.3	293	378	0.1	2.4	0.3	1.9	2.8	A
	Right Turn	60	58	96.2%	5.8	46	64	0.3	1.4	0.3	0.8	1.9	A
	Second Right												
	Subtotal	1,110	1,109	99.9%	45.5	1,033	1,183	0.0	3.5	0.6	2.6	4.5	A
WB	U Turn												
	Second Left												
	Left Turn	10	2	21.0%	1.1	1	4	3.2	532.9	209.0	73.9	804.3	F
	Through	400	92	23.0%	7.3	80	100	19.6	585.2	46.5	527.1	659.7	F
	Right Turn	43	9	21.6%	4.1	6	16	6.6	573.4	79.1	409.5	708.6	F
	Second Right												
	Subtotal	453	104	22.8%	9.8	89	117	21.0	584.2	47.3	529.0	661.2	F
Total		1,901	1,465	77.0%	49.8	1,388	1,550	10.6	116.8	5.6	105.5	123.2	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	150	517	150	69	856	169	240	640	123	123	460	270
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	150	517	64	69	856	155	240	640	110	123	460	119
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	1273	568	88	925	167	266	912	156	224	1013	443
Arrive On Green	0.10	0.36	0.36	0.05	0.31	0.31	0.15	0.30	0.30	0.13	0.29	0.29
Sat Flow, veh/h	1774	3539	1579	1774	2982	540	1774	3022	519	1774	3539	1549
Grp Volume(v), veh/h	150	517	64	69	508	503	240	374	376	123	460	119
Grp Sat Flow(s),veh/h/ln	1774	1770	1579	1774	1770	1752	1774	1770	1771	1774	1770	1549
Q Serve(g_s), s	10.0	13.1	3.2	4.6	33.3	33.3	16.0	22.5	22.6	7.8	12.8	7.1
Cycle Q Clear(g_c), s	10.0	13.1	3.2	4.6	33.3	33.3	16.0	22.5	22.6	7.8	12.8	7.1
Prop In Lane	1.00		1.00	1.00		0.31	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	176	1273	568	88	549	543	266	534	534	224	1013	443
V/C Ratio(X)	0.85	0.41	0.11	0.78	0.93	0.93	0.90	0.70	0.70	0.55	0.45	0.27
Avail Cap(c_a), veh/h	192	1273	568	133	565	559	281	534	534	224	1013	443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.2	28.8	25.6	56.4	40.1	40.1	50.1	37.1	37.1	49.2	35.1	33.1
Incr Delay (d2), s/veh	27.1	0.2	0.1	15.4	21.1	21.3	28.7	7.5	7.5	2.8	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	6.4	1.4	2.6	19.4	19.3	9.9	12.1	12.2	4.0	6.5	3.2
LnGrp Delay(d),s/veh	80.2	29.0	25.7	71.8	61.2	61.4	78.9	44.6	44.7	52.0	36.6	34.6
LnGrp LOS	F	C	C	E	E	E	E	D	D	D	D	C
Approach Vol, veh/h		731			1080			990			702	
Approach Delay, s/veh		39.2			61.9			52.9			39.0	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.2	41.2	10.0	48.7	22.0	39.3	15.9	42.7
Change Period (Y+Rc), s	5.0	* 5	4.0	5.5	4.0	5.0	4.0	5.5
Max Green Setting (Gmax), s	14.3	* 36	9.0	42.3	19.0	31.2	13.0	38.3
Max Q Clear Time (g_c+I1), s	19.8	24.6	6.6	15.1	18.0	14.8	12.0	35.3
Green Ext Time (p_c), s	1.5	3.7	0.0	12.7	0.1	3.5	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	50.1
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	146	106	835	3	87	134
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	146	75	835	3	87	134
Adj No. of Lanes	1	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	212	189	1015	4	112	1304
Arrive On Green	0.12	0.12	0.55	0.55	0.06	0.70
Sat Flow, veh/h	1774	1583	1855	7	1774	1863
Grp Volume(v), veh/h	146	75	0	838	87	134
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1862	1774	1863
Q Serve(g_s), s	4.4	2.4	0.0	20.5	2.7	1.3
Cycle Q Clear(g_c), s	4.4	2.4	0.0	20.5	2.7	1.3
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	212	189	0	1019	112	1304
V/C Ratio(X)	0.69	0.40	0.00	0.82	0.78	0.10
Avail Cap(c_a), veh/h	544	486	0	1680	256	2118
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	22.6	0.0	10.3	25.6	2.7
Incr Delay (d2), s/veh	4.0	1.4	0.0	1.7	11.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	1.1	0.0	10.7	1.6	0.6
LnGrp Delay(d),s/veh	27.4	23.9	0.0	12.1	36.7	2.7
LnGrp LOS	C	C		B	D	A
Approach Vol, veh/h	221		838			221
Approach Delay, s/veh	26.2		12.1			16.1
Approach LOS	C		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.5	35.3				43.8		11.6
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	3.5	50.0				63.0		17.0
Max Q Clear Time (g_c+I1), s	4.7	22.5				3.3		6.4
Green Ext Time (p_c), s	0.0	7.8				8.8		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	4	834	12	0	280
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	834	12	0	280

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1120	840	0	0	846	0
Stage 1	840	-	-	-	-	-
Stage 2	280	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	228	365	-	-	791	-
Stage 1	424	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	228	365	-	-	791	-
Mov Cap-2 Maneuver	228	-	-	-	-	-
Stage 1	424	-	-	-	-	-
Stage 2	767	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	365	791	-
HCM Lane V/C Ratio	-	-	0.011	-	-
HCM Control Delay (s)	-	-	15	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	166	3	0	337	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	166	3	0	337	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	169	0	337	85
Stage 1	-	-	-	-	168	-
Stage 2	-	-	-	-	169	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1406	-	633	957
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	843	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1406	-	633	957
Mov Cap-2 Maneuver	-	-	-	-	633	-
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	843	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	957	-	-	1406	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	8.8	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	82.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	957	10	10	372	0	10	0	10	220	120	740
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	957	10	10	372	0	10	0	10	220	120	740

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	374	0	0	969	0	0	1418	1358	489	875	1363	377
Stage 1	-	-	-	-	-	-	964	964	-	394	394	-
Stage 2	-	-	-	-	-	-	454	394	-	481	969	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.218	-	-	2.22	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1184	-	-	707	-	-	105	148	526	256	147	~ 669
Stage 1	-	-	-	-	-	-	275	333	-	630	604	-
Stage 2	-	-	-	-	-	-	585	604	-	536	331	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1181	-	-	705	-	-	-	145	524	247	144	~ 666
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	145	-	247	144	-
Stage 1	-	-	-	-	-	-	275	332	-	629	594	-
Stage 2	-	-	-	-	-	-	-	594	-	524	330	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3		186.2
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1181	-	-	705	-	-	197	666
HCM Lane V/C Ratio	-	-	-	-	0.014	-	-	1.726	1.111
HCM Control Delay (s)	-	0	-	-	10.2	-	-	$ 388.8	93.1
HCM Lane LOS	-	A	-	-	B	-	-	F	F
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	23.3	21.9

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	61.9
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	610	497	60	0	0	0	0	0	30	90	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	610	497	60	0	0	0	0	0	30	90	40
Number of Lanes	0	1	1	0	0	0	0	0	0	0	1	0

Approach	EB	NB
Opposing Approach		SB
Opposing Lanes	0	2
Conflicting Approach Left	SB	EB
Conflicting Lanes Left	2	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	68.8	14.2
HCM LOS	F	B

Lane	NBLn1	EBLn1	EBLn2	SBLn1	SBLn2
Vol Left, %	19%	100%	0%	100%	0%
Vol Thru, %	56%	0%	89%	0%	28%
Vol Right, %	25%	0%	11%	0%	72%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	160	610	557	540	492
LT Vol	30	610	0	540	0
Through Vol	90	0	497	0	140
RT Vol	40	0	60	0	352
Lane Flow Rate	160	610	557	540	492
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.334	1	1	1	0.939
Departure Headway (Hd)	7.509	7.878	7.304	7.867	6.869
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	482	464	501	464	526
Service Time	5.515	5.578	5.004	5.624	4.625
HCM Lane V/C Ratio	0.332	1.315	1.112	1.164	0.935
HCM Control Delay	14.2	70.1	67.3	70.3	51.7
HCM Lane LOS	B	F	F	F	F
HCM 95th-tile Q	1.5	13.1	13.6	13.1	11.7

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	540	140	352
Peak Hour Factor	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	540	140	352
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	
Conflicting Lanes Left	0
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	61.4
HCM LOS	F

Lane

Intersection	
Int Delay, s/veh	1689.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	0	700	322	100	20	690	10	0	0	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	300	125	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	0	700	322	100	20	690	10	0	0	10	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1465	1405	15	1755	1410	10	20	0	0	10	0	0
Stage 1	15	15	-	1390	1390	-	-	-	-	-	-	-
Stage 2	1450	1390	-	365	20	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	106	139	1065	~ 67	138	1071	1596	-	-	1610	-	-
Stage 1	1005	883	-	~ 176	209	-	-	-	-	-	-	-
Stage 2	163	209	-	654	879	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	79	1065	~ 15	~ 78	1071	1596	-	-	1610	-	-
Mov Cap-2 Maneuver	-	79	-	~ 15	~ 78	-	-	-	-	-	-	-
Stage 1	571	883	-	~ 100	119	-	-	-	-	-	-	-
Stage 2	14	119	-	~ 224	879	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s		$ 7142.4	8.8	0
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1596	-	-	-	15	92	1610	-	-
HCM Lane V/C Ratio	0.432	-	-	-	21.467	1.304	-	-	-
HCM Control Delay (s)	9	-	-	-	$ 9700.2	278.9	0	-	-
HCM Lane LOS	A	-	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	2.2	-	-	-	41.3	8.7	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	190	669	200	98	495	82	290	750	97	165	400	190
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	190	669	102	98	495	77	290	750	91	165	400	0
Adj No. of Lanes	1	1	1	1	1	0	0	2	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	620	484	59	455	71	214	585	74	408	428	0
Arrive On Green	0.08	0.33	0.33	0.03	0.29	0.29	0.25	0.24	0.24	0.23	0.23	0.00
Sat Flow, veh/h	1774	1863	1455	1774	1564	243	884	2419	305	1774	1863	0
Grp Volume(v), veh/h	190	669	102	98	0	572	597	0	534	165	400	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1455	1774	0	1807	1819	0	1789	1774	1863	0
Q Serve(g_s), s	9.0	39.9	6.0	4.0	0.0	34.9	29.0	0.0	29.0	9.5	25.3	0.0
Cycle Q Clear(g_c), s	9.0	39.9	6.0	4.0	0.0	34.9	29.0	0.0	29.0	9.5	25.3	0.0
Prop In Lane	1.00		1.00	1.00		0.13	0.49		0.17	1.00		0.00
Lane Grp Cap(c), veh/h	133	620	484	59	0	526	439	0	432	408	428	0
V/C Ratio(X)	1.43	1.08	0.21	1.66	0.00	1.09	1.36	0.00	1.24	0.40	0.93	0.00
Avail Cap(c_a), veh/h	133	620	484	59	0	526	439	0	432	429	450	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.81	0.00	0.81	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.5	40.0	28.7	58.0	0.0	42.5	45.3	0.0	45.5	39.2	45.3	0.0
Incr Delay (d2), s/veh	230.3	59.5	1.0	348.3	0.0	61.4	175.1	0.0	124.7	0.2	25.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	30.7	2.6	7.7	0.0	26.4	35.9	0.0	29.3	4.7	16.0	0.0
LnGrp Delay(d),s/veh	285.8	99.5	29.7	406.3	0.0	103.9	220.4	0.0	170.2	39.5	70.9	0.0
LnGrp LOS	F	F	C	F		F	F		F	D	E	
Approach Vol, veh/h		961			670			1131			565	
Approach Delay, s/veh		128.9			148.1			196.7			61.7	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.0	45.4		32.6	13.0	40.4		34.0
Change Period (Y+Rc), s	4.0	5.5		5.0	4.0	5.5		5.0
Max Green Setting (Gmax), s	4.0	38.5		29.0	9.0	33.5		29.0
Max Q Clear Time (g_c+I1), s	6.0	41.9		27.3	11.0	36.9		31.0
Green Ext Time (p_c), s	0.0	0.0		0.3	0.0	0.0		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		144.4
HCM 2010 LOS		F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Volume (veh/h)	20	881	30	60	605	30	10	20	40	20	30	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.98		0.98	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	881	29	60	605	28	10	20	5	20	30	5
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	134	1116	36	182	996	44	201	116	26	225	107	16
Arrive On Green	0.67	0.63	0.63	0.67	0.63	0.63	0.14	0.11	0.11	0.14	0.11	0.11
Sat Flow, veh/h	15	1761	57	77	1571	69	389	1043	239	521	965	149
Grp Volume(v), veh/h	930	0	0	693	0	0	35	0	0	55	0	0
Grp Sat Flow(s),veh/h/ln	1832	0	0	1718	0	0	1671	0	0	1635	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	10.3	0.0	0.0	6.2	0.0	0.0	0.5	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.02		0.03	0.09		0.04	0.29		0.14	0.36		0.09
Lane Grp Cap(c), veh/h	1349	0	0	1281	0	0	399	0	0	404	0	0
V/C Ratio(X)	0.69	0.00	0.00	0.54	0.00	0.00	0.09	0.00	0.00	0.14	0.00	0.00
Avail Cap(c_a), veh/h	3577	0	0	3227	0	0	1332	0	0	1321	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.8	0.0	0.0	3.1	0.0	0.0	11.7	0.0	0.0	11.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	0.0	2.7	0.0	0.0	0.2	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	4.1	0.0	0.0	3.2	0.0	0.0	11.7	0.0	0.0	11.9	0.0	0.0
LnGrp LOS	A			A			B			B		
Approach Vol, veh/h		930			693			35			55	
Approach Delay, s/veh		4.1			3.2			11.7			11.9	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		23.1		6.3		23.1		6.3
Change Period (Y+Rc), s		4.5		3.0		4.5		3.0
Max Green Setting (Gmax), s		55.0		20.0		55.0		20.0
Max Q Clear Time (g_c+I1), s		12.3		2.8		8.2		2.5
Green Ext Time (p_c), s		6.3		0.1		6.3		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		4.1
HCM 2010 LOS		A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	831	60	70	655	30	20
Number	6	16	5	2	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1900
Adj Flow Rate, veh/h	831	57	70	655	30	1
Adj No. of Lanes	1	0	1	1	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	994	68	419	1393	78	3
Arrive On Green	0.58	0.58	0.07	0.75	0.05	0.05
Sat Flow, veh/h	1721	118	1774	1863	1658	55
Grp Volume(v), veh/h	0	888	70	655	32	0
Grp Sat Flow(s),veh/h/ln	0	1839	1774	1863	1769	0
Q Serve(g_s), s	0.0	15.4	0.5	5.3	0.7	0.0
Cycle Q Clear(g_c), s	0.0	15.4	0.5	5.3	0.7	0.0
Prop In Lane		0.06	1.00		0.94	0.03
Lane Grp Cap(c), veh/h	0	1062	419	1393	83	0
V/C Ratio(X)	0.00	0.84	0.17	0.47	0.38	0.00
Avail Cap(c_a), veh/h	0	3106	571	3624	724	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.7	6.2	1.9	18.1	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.1	0.1	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.8	0.4	2.6	0.4	0.0
LnGrp Delay(d),s/veh	0.0	7.4	6.3	2.0	19.1	0.0
LnGrp LOS		A	A	A	B	
Approach Vol, veh/h	888			725	32	
Approach Delay, s/veh	7.4			2.4	19.1	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		33.2		5.8	6.7	26.6		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		76.0		16.0	6.0	66.0		
Max Q Clear Time (g_c+I1), s		7.3		2.7	2.5	17.4		
Green Ext Time (p_c), s		5.2		0.0	0.0	5.1		

Intersection Summary	
HCM 2010 Ctrl Delay	5.5
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	901	10	10	285	0	20	0	20	137	10	420
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	0	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	0	901	10	10	285	0	20	0	0	137	10	113
Adj No. of Lanes	1	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	4	1076	12	88	1060	0	61	0	0	301	22	187
Arrive On Green	0.00	0.59	0.59	0.59	0.59	0.00	0.03	0.00	0.00	0.16	0.18	0.18
Sat Flow, veh/h	1774	1838	20	17	1811	0	1774	0	0	1659	121	1575
Grp Volume(v), veh/h	0	0	911	295	0	0	20	0	0	147	0	113
Grp Sat Flow(s),veh/h/ln	1774	0	1858	1828	0	0	1774	0	0	1780	0	1575
Q Serve(g_s), s	0.0	0.0	19.1	0.0	0.0	0.0	0.5	0.0	0.0	3.6	0.0	6.3
Cycle Q Clear(g_c), s	0.0	0.0	19.1	3.7	0.0	0.0	0.5	0.0	0.0	3.6	0.0	6.3
Prop In Lane	1.00		0.01	0.03		0.00	1.00		0.00	0.93		1.00
Lane Grp Cap(c), veh/h	4	0	1088	1148	0	0	61	0	0	323	0	187
V/C Ratio(X)	0.00	0.00	0.84	0.26	0.00	0.00	0.33	0.00	0.00	0.45	0.00	0.61
Avail Cap(c_a), veh/h	520	0	1284	1405	0	0	446	0	0	708	0	527
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	8.1	4.9	0.0	0.0	22.5	0.0	0.0	17.9	0.0	58.3
Incr Delay (d2), s/veh	0.0	0.0	4.8	0.2	0.0	0.0	1.2	0.0	0.0	0.4	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	11.1	1.9	0.0	0.0	0.3	0.0	0.0	1.8	0.0	0.1
LnGrp Delay(d),s/veh	0.0	0.0	12.9	5.0	0.0	0.0	23.7	0.0	0.0	18.2	0.0	59.4
LnGrp LOS			B	A			C			B		E
Approach Vol, veh/h		911			295			20			260	
Approach Delay, s/veh		12.9			5.0			23.7			36.1	
Approach LOS		B			A			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		31.5		11.7	0.0	31.5		4.6
Change Period (Y+Rc), s		3.5		3.0	3.0	3.5		3.0
Max Green Setting (Gmax), s		33.0		19.0	14.0	35.0		12.0
Max Q Clear Time (g_c+I1), s		21.1		8.3	0.0	5.7		2.5
Green Ext Time (p_c), s		6.9		0.6	0.0	11.5		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		15.5
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	640	80	338	30	30	30	265	43	40	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.99	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863			
Adj Flow Rate, veh/h	640	80	221	30	30	4	265	43	9			
Adj No. of Lanes	1	1	0	0	1	1	1	1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Cap, veh/h	767	273	753	185	136	215	344	361	299			
Arrive On Green	0.43	0.63	0.63	0.15	0.14	0.14	0.19	0.19	0.19			
Sat Flow, veh/h	1774	430	1187	499	988	1560	1774	1863	1543			
Grp Volume(v), veh/h	640	0	301	60	0	4	265	43	9			
Grp Sat Flow(s),veh/h/ln	1774	0	1617	1487	0	1560	1774	1863	1543			
Q Serve(g_s), s	14.9	0.0	3.9	0.0	0.0	0.1	6.6	0.9	0.2			
Cycle Q Clear(g_c), s	14.9	0.0	3.9	1.3	0.0	0.1	6.6	0.9	0.2			
Prop In Lane	1.00		0.73	0.50		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	767	0	1026	337	0	215	344	361	299			
V/C Ratio(X)	0.83	0.00	0.29	0.18	0.00	0.02	0.77	0.12	0.03			
Avail Cap(c_a), veh/h	1485	0	1026	673	0	603	876	919	761			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	11.8	0.0	3.8	17.8	0.0	17.4	17.8	15.5	15.2			
Incr Delay (d2), s/veh	2.5	0.0	0.2	0.1	0.0	0.0	1.4	0.1	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.6	0.0	1.7	0.7	0.0	0.0	3.4	0.5	0.2			
LnGrp Delay(d),s/veh	14.2	0.0	4.0	17.9	0.0	17.4	19.2	15.6	15.2			
LnGrp LOS	B		A	B		B	B	B	B			
Approach Vol, veh/h		941			64			317				
Approach Delay, s/veh		11.0			17.8			18.6				
Approach LOS		B			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		34.1		12.5	23.1	10.9		
Change Period (Y+Rc), s		* 4.5		3.5	3.0	4.5		
Max Green Setting (Gmax), s		* 23		23.0	39.0	18.0		
Max Q Clear Time (g_c+I1), s		5.9		8.6	16.9	3.3		
Green Ext Time (p_c), s		2.0		0.6	3.2	0.3		

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	20	328	10	20	348
Conflicting Peds, #/hr	0	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	20	328	10	20	348

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	721	338	0	0	338	0
Stage 1	333	-	-	-	-	-
Stage 2	388	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	394	704	-	-	1221	-
Stage 1	726	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	385	701	-	-	1216	-
Mov Cap-2 Maneuver	385	-	-	-	-	-
Stage 1	726	-	-	-	-	-
Stage 2	669	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	550	1216	-
HCM Lane V/C Ratio	-	-	0.055	0.016	-
HCM Control Delay (s)	-	-	11.9	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	10	10	10	484	328	10	0	358	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	10	10	10	484	328	10	0	358	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1659	1659	338	358	0	0	338	0	0
Stage 1	1301	1301	-	-	-	-	-	-	-
Stage 2	358	358	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	107	98	704	1201	-	-	1221	-	-
Stage 1	255	231	-	-	-	-	-	-	-
Stage 2	707	628	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	63	0	701	1196	-	-	1216	-	-
Mov Cap-2 Maneuver	63	0	-	-	-	-	-	-	-
Stage 1	152	0	-	-	-	-	-	-	-
Stage 2	704	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	46.5	5.9	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1196	-	-	116	1216	-	-
HCM Lane V/C Ratio	0.405	-	-	0.259	-	-	-
HCM Control Delay (s)	10	-	-	46.5	0	-	-
HCM Lane LOS	B	-	-	E	A	-	-
HCM 95th %tile Q(veh)	2	-	-	1	0	-	-

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	60	137	0	10	30	0	125	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	60	137	0	10	30	0	125	20
Number of Lanes	0	1	0	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.1	7.3	8.6
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	30%	86%
Vol Thru, %	25%	0%	14%
Vol Right, %	75%	70%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	40	197	145
LT Vol	0	60	125
Through Vol	10	0	20
RT Vol	30	137	0
Lane Flow Rate	40	197	145
Geometry Grp	1	1	1
Degree of Util (X)	0.045	0.219	0.181
Departure Headway (Hd)	4.069	4.011	4.485
Convergence, Y/N	Yes	Yes	Yes
Cap	883	900	787
Service Time	2.081	2.012	2.581
HCM Lane V/C Ratio	0.045	0.219	0.184
HCM Control Delay	7.3	8.1	8.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.8	0.7

Intersection	
Intersection Delay, s/veh	40.5
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	0	95	120	0	393	137	0	0	0	0	0	0	453	290	90
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	95	120	0	393	137	0	0	0	0	0	0	453	290	90
Number of Lanes	0	0	1	0	0	1	1	0	0	0	0	0	0	0	2	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	15.3	31.8	52.5
HCM LOS	C	D	F

Lane	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	76%	0%
Vol Thru, %	44%	0%	100%	24%	62%
Vol Right, %	56%	0%	0%	0%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	215	393	137	598	235
LT Vol	0	393	0	453	0
Through Vol	95	0	137	145	145
RT Vol	120	0	0	0	90
Lane Flow Rate	215	393	137	598	235
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.426	0.835	0.268	1	0.434
Departure Headway (Hd)	7.133	7.648	7.166	7.309	6.65
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	507	476	504	502	543
Service Time	5.143	5.365	4.866	5.033	4.374
HCM Lane V/C Ratio	0.424	0.826	0.272	1.191	0.433
HCM Control Delay	15.3	38.5	12.5	67.5	14.4
HCM Lane LOS	C	E	B	F	B
HCM 95th-tile Q	2.1	8.2	1.1	13.6	2.2

Intersection	
Intersection Delay, s/veh	70.9
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	90	248	210	0	35	233	233	0	147	499	293	0	127	91	150
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	90	248	210	0	35	233	233	0	147	499	293	0	127	91	150
Number of Lanes	0	0	1	0	0	0	2	0	0	0	2	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	79.5	42.8	77.4	79.6
HCM LOS	F	E	F	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	37%	0%	16%	23%	0%	35%
Vol Thru, %	63%	46%	45%	77%	33%	25%
Vol Right, %	0%	54%	38%	0%	67%	41%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	397	543	548	152	350	368
LT Vol	147	0	90	35	0	127
Through Vol	250	250	248	117	117	91
RT Vol	0	293	210	0	233	150
Lane Flow Rate	396	542	548	152	350	368
Geometry Grp	7	7	6	7	7	6
Degree of Util (X)	1	1	1	0.411	0.891	1
Departure Headway (Hd)	9.777	9.214	9.862	9.759	9.177	9.79
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	373	401	373	368	395	368
Service Time	7.477	6.914	7.862	7.547	6.965	7.884
HCM Lane V/C Ratio	1.062	1.352	1.469	0.413	0.886	1
HCM Control Delay	78.8	76.3	79.5	19.2	53.1	79.6
HCM Lane LOS	F	F	F	C	F	F
HCM 95th-tile Q	11.8	12.1	11.7	2	9.1	11.7

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	50	408	120	6	18	368	10	0	63	0	13	0	10	0	30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	50	408	120	6	18	368	10	0	63	0	13	0	10	0	30
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	10.9	10.8	10.9	9.6
HCM LOS	B	B	B	A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	83%	100%	0%	0%	100%	0%	0%	25%
Vol Thru, %	0%	0%	100%	53%	0%	100%	92%	0%
Vol Right, %	17%	0%	0%	47%	0%	0%	8%	75%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	76	50	272	256	24	245	133	40
LT Vol	63	50	0	0	24	0	0	10
Through Vol	0	0	272	136	0	245	123	0
RT Vol	13	0	0	120	0	0	10	30
Lane Flow Rate	76	50	272	256	24	245	133	40
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.148	0.081	0.402	0.354	0.04	0.373	0.2	0.071
Departure Headway (Hd)	7.004	5.818	5.314	4.984	6.084	5.579	5.526	6.412
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	515	610	669	714	592	650	654	562
Service Time	4.705	3.609	3.105	2.775	3.784	3.279	3.226	4.116
HCM Lane V/C Ratio	0.148	0.082	0.407	0.359	0.041	0.377	0.203	0.071
HCM Control Delay	10.9	9.1	11.7	10.5	9	11.6	9.6	9.6
HCM Lane LOS	B	A	B	B	A	B	A	A
HCM 95th-tile Q	0.5	0.3	1.9	1.6	0.1	1.7	0.7	0.2

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	194	233	10	10	186	20	10	10	10	30	10	186
Conflicting Peds, #/hr	5	0	0	0	0	5	3	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	194	233	10	10	186	20	10	10	10	30	10	186

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	209	0	0	246	0	0	750	858	130	732	853	111
Stage 1	-	-	-	-	-	-	629	629	-	219	219	-
Stage 2	-	-	-	-	-	-	121	229	-	513	634	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1359	-	-	1317	-	-	300	293	896	309	295	921
Stage 1	-	-	-	-	-	-	437	474	-	763	721	-
Stage 2	-	-	-	-	-	-	870	713	-	512	471	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1353	-	-	1312	-	-	204	247	890	260	249	915
Mov Cap-2 Maneuver	-	-	-	-	-	-	204	247	-	260	249	-
Stage 1	-	-	-	-	-	-	373	405	-	652	713	-
Stage 2	-	-	-	-	-	-	674	705	-	421	402	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.6	0.4	18.4	13.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	298	1353	-	-	1312	-	-	630
HCM Lane V/C Ratio	0.101	0.143	-	-	0.008	-	-	0.359
HCM Control Delay (s)	18.4	8.1	-	-	7.8	0	-	13.9
HCM Lane LOS	C	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0	-	-	1.6

Intersection	
Int Delay, s/veh	114

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	468	0	86	10	0	30	0	441	0	0	336	0
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	11	11	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	468	0	86	10	0	30	0	441	0	0	336	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	796	781	349	781	781	454	338	0	0	443	0	0
Stage 1	338	338	-	443	443	-	-	-	-	-	-	-
Stage 2	458	443	-	338	338	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 305	326	694	312	326	606	1221	-	-	1117	-	-
Stage 1	676	641	-	594	576	-	-	-	-	-	-	-
Stage 2	583	576	-	676	641	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 287	325	686	270	325	599	1210	-	-	1107	-	-
Mov Cap-2 Maneuver	~ 287	325	-	270	325	-	-	-	-	-	-	-
Stage 1	675	640	-	593	575	-	-	-	-	-	-	-
Stage 2	549	575	-	586	640	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	281.1	13.6	0	0
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1210	-	-	287	686	459	1107	-	-
HCM Lane V/C Ratio	-	-	-	1.631	0.125	0.087	-	-	-
HCM Control Delay (s)	0	-	-	$ 330.7	11	13.6	0	-	-
HCM Lane LOS	A	-	-	F	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	28.7	0.4	0.3	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	167	50	101	194	70	50	500	85	70	710	90
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.91	0.97		0.93	1.00		0.96	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	70	167	41	101	194	60	50	500	79	70	710	85
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	129	274	61	152	247	71	70	770	122	90	817	98
Arrive On Green	0.31	0.28	0.28	0.31	0.28	0.28	0.04	0.49	0.49	0.05	0.50	0.50
Sat Flow, veh/h	278	967	215	355	869	249	1774	1561	247	1774	1619	194
Grp Volume(v), veh/h	278	0	0	355	0	0	50	0	579	70	0	795
Grp Sat Flow(s),veh/h/ln	1460	0	0	1474	0	0	1774	0	1808	1774	0	1813
Q Serve(g_s), s	0.0	0.0	0.0	5.7	0.0	0.0	2.5	0.0	21.5	3.5	0.0	34.8
Cycle Q Clear(g_c), s	14.5	0.0	0.0	20.2	0.0	0.0	2.5	0.0	21.5	3.5	0.0	34.8
Prop In Lane	0.25		0.15	0.28		0.17	1.00		0.14	1.00		0.11
Lane Grp Cap(c), veh/h	497	0	0	502	0	0	70	0	892	90	0	914
V/C Ratio(X)	0.56	0.00	0.00	0.71	0.00	0.00	0.71	0.00	0.65	0.78	0.00	0.87
Avail Cap(c_a), veh/h	556	0	0	561	0	0	99	0	892	118	0	914
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.63	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.6	0.0	0.0	29.9	0.0	0.0	42.7	0.0	17.0	42.2	0.0	19.7
Incr Delay (d2), s/veh	0.4	0.0	0.0	1.7	0.0	0.0	5.7	0.0	3.6	15.3	0.0	11.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	0.0	8.1	0.0	0.0	1.3	0.0	11.5	2.1	0.0	20.0
LnGrp Delay(d),s/veh	28.0	0.0	0.0	31.6	0.0	0.0	48.4	0.0	20.6	57.5	0.0	30.7
LnGrp LOS	C			C			D		C	E		C
Approach Vol, veh/h		278			355			629			865	
Approach Delay, s/veh		28.0			31.6			22.8			32.9	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		30.5	7.6	51.9		30.5	8.6	50.9
Change Period (Y+Rc), s		5.0	4.0	6.5		5.0	4.0	6.5
Max Green Setting (Gmax), s		29.0	5.0	40.5		29.0	6.0	39.5
Max Q Clear Time (g_c+I1), s		16.5	4.5	36.8		22.2	5.5	23.5
Green Ext Time (p_c), s		1.5	0.0	1.6		1.2	0.0	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	29.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	202	50	67	215	150	40	300	66	250	500	130
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.98	0.99		0.91	0.97		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1937	1900	1900	1937	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	60	202	40	67	215	122	40	300	45	250	500	112
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	384	69	148	299	155	165	1094	168	409	748	176
Arrive On Green	0.32	0.30	0.30	0.32	0.30	0.30	0.47	0.45	0.45	0.47	0.45	0.45
Sat Flow, veh/h	235	1300	234	202	1014	526	162	2416	371	633	1651	389
Grp Volume(v), veh/h	302	0	0	404	0	0	192	0	193	401	0	461
Grp Sat Flow(s),veh/h/ln	1770	0	0	1741	0	0	1362	0	1586	1074	0	1599
Q Serve(g_s), s	0.0	0.0	0.0	3.2	0.0	0.0	0.5	0.0	3.6	12.7	0.0	10.5
Cycle Q Clear(g_c), s	6.4	0.0	0.0	9.6	0.0	0.0	11.0	0.0	3.6	16.3	0.0	10.5
Prop In Lane	0.20		0.13	0.17		0.30	0.21		0.23	0.62		0.24
Lane Grp Cap(c), veh/h	650	0	0	638	0	0	737	0	718	632	0	724
V/C Ratio(X)	0.46	0.00	0.00	0.63	0.00	0.00	0.26	0.00	0.27	0.64	0.00	0.64
Avail Cap(c_a), veh/h	1196	0	0	1193	0	0	1118	0	1132	947	0	1142
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	0.0	15.0	0.0	0.0	8.0	0.0	8.1	12.2	0.0	10.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.1	0.4	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.0	4.6	0.0	0.0	1.4	0.0	1.6	4.4	0.0	4.7
LnGrp Delay(d),s/veh	14.2	0.0	0.0	15.4	0.0	0.0	8.1	0.0	8.2	12.6	0.0	10.4
LnGrp LOS	B			B			A		A	B		B
Approach Vol, veh/h		302			404			385			862	
Approach Delay, s/veh		14.2			15.4			8.1			11.4	
Approach LOS		B			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		27.6		20.0		27.6		20.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		30.0		34.0		30.0
Max Q Clear Time (g_c+I1), s		13.0		11.6		18.3		8.4
Green Ext Time (p_c), s		3.5		1.9		3.3		1.9

Intersection Summary		
HCM 2010 Ctrl Delay		12.0
HCM 2010 LOS		B

Intersection	
Int Delay, s/veh	10.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	90	428	30	70	362	40
Conflicting Peds, #/hr	0	5	5	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	428	30	70	362	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	93	0	223	98
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	130	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1501	-	765	958
Stage 1	-	0	-	-	931	-
Stage 2	-	0	-	-	896	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1495	-	747	952
Mov Cap-2 Maneuver	-	-	-	-	747	-
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	877	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	14.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	763	-	1495	-
HCM Lane V/C Ratio	0.527	-	0.02	-
HCM Control Delay (s)	14.8	-	7.5	0
HCM Lane LOS	B	-	A	A
HCM 95th %tile Q(veh)	3.1	-	0.1	-

Intersection	
Intersection Delay, s/veh	13.5
Intersection LOS	B

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Vol, veh/h	0	30	182	0	230	30	0	118	350
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	30	182	0	230	30	0	118	350
Number of Lanes	0	1	1	0	1	0	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10.4	11	16.2
HCM LOS	B	B	C

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	25%
Vol Thru, %	88%	0%	0%	75%
Vol Right, %	12%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	260	30	182	468
LT Vol	0	30	0	118
Through Vol	230	0	0	350
RT Vol	30	0	182	0
Lane Flow Rate	260	30	182	468
Geometry Grp	2	7	7	2
Degree of Util (X)	0.362	0.057	0.284	0.634
Departure Headway (Hd)	5.118	6.84	5.621	4.877
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	707	527	642	730
Service Time	3.118	4.54	3.321	2.972
HCM Lane V/C Ratio	0.368	0.057	0.283	0.641
HCM Control Delay	11	10	10.5	16.2
HCM Lane LOS	B	A	B	C
HCM 95th-tile Q	1.7	0.2	1.2	4.6

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	148	10	40	192	20	10
Conflicting Peds, #/hr	0	5	5	0	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	148	10	40	192	20	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	160	0	331	86
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	176	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1417	-	638	956
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	837	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1411	-	616	950
Mov Cap-2 Maneuver	-	-	-	-	616	-
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	810	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	698	-	-	1411	-
HCM Lane V/C Ratio	0.043	-	-	0.028	-
HCM Control Delay (s)	10.4	-	-	7.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	40	10	48	10	10	10	30	118	20	174	40
Conflicting Peds, #/hr	2	0	0	0	0	2	19	0	3	3	0	19
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	40	10	48	10	10	10	30	118	20	174	40

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	298	288	128	201	308	51	216	0	0	32	0	0
Stage 1	236	236	-	52	52	-	-	-	-	-	-	-
Stage 2	62	52	-	149	256	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.14	-	-	4.12	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.22	-	-	2.218	-	-
Pot Cap-1 Maneuver	643	621	899	748	605	1017	1351	-	-	1580	-	-
Stage 1	747	709	-	960	851	-	-	-	-	-	-	-
Stage 2	949	851	-	839	695	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	608	606	883	679	590	999	1330	-	-	1555	-	-
Mov Cap-2 Maneuver	608	606	-	679	590	-	-	-	-	-	-	-
Stage 1	740	699	-	951	843	-	-	-	-	-	-	-
Stage 2	906	843	-	760	685	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	10.7	0.5	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1330	-	-	640	696	1555	-	-
HCM Lane V/C Ratio	0.008	-	-	0.094	0.098	0.013	-	-
HCM Control Delay (s)	7.7	0	-	11.2	10.7	7.3	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	63	115	316	38	30	372
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	115	316	38	30	372

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	767	335	0	0	354	0
Stage 1	335	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	370	707	-	-	1205	-
Stage 1	725	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	359	707	-	-	1205	-
Mov Cap-2 Maneuver	359	-	-	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	635	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	359	707	1205	-
HCM Lane V/C Ratio	-	-	0.175	0.163	0.025	-
HCM Control Delay (s)	-	-	17.2	11.1	8.1	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.6	0.1	-

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	169	185	106	0	425
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	169	185	106	0	425

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	663	238	0	0	291	0
Stage 1	238	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	426	801	-	-	1271	-
Stage 1	802	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	426	801	-	-	1271	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	802	-	-	-	-	-
Stage 2	659	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	801	1271	-
HCM Lane V/C Ratio	-	-	0.211	-	-
HCM Control Delay (s)	-	-	10.7	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0	-

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	78	238	70	89	232
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	78	238	70	89	232

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	683	273	0	0	308	0
Stage 1	273	-	-	-	-	-
Stage 2	410	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	415	766	-	-	1253	-
Stage 1	773	-	-	-	-	-
Stage 2	670	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	381	766	-	-	1253	-
Mov Cap-2 Maneuver	381	-	-	-	-	-
Stage 1	773	-	-	-	-	-
Stage 2	615	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	2.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	598	1253	-
HCM Lane V/C Ratio	-	-	0.181	0.071	-
HCM Control Delay (s)	-	-	12.3	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.2	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	21	287	10	30	232
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	21	287	10	30	232

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	584	292	0	0	297	0
Stage 1	292	-	-	-	-	-
Stage 2	292	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	474	747	-	-	1264	-
Stage 1	758	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	461	747	-	-	1264	-
Mov Cap-2 Maneuver	461	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	622	1264	-
HCM Lane V/C Ratio	-	-	0.05	0.024	-
HCM Control Delay (s)	-	-	11.1	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	300	871	290	229	538	198	170	730	231	281	600	180
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.95	1.00		0.89	1.00		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	300	871	261	229	538	89	170	730	205	281	600	156
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	840	251	230	1016	433	198	701	197	261	816	211
Arrive On Green	0.16	0.32	0.32	0.13	0.29	0.29	0.11	0.26	0.26	0.15	0.30	0.30
Sat Flow, veh/h	1774	2625	785	1774	3539	1509	1774	2652	745	1774	2725	706
Grp Volume(v), veh/h	300	587	545	229	538	89	170	487	448	281	389	367
Grp Sat Flow(s),veh/h/ln	1774	1770	1641	1774	1770	1509	1774	1770	1627	1774	1770	1661
Q Serve(g_s), s	18.7	36.8	36.8	14.8	14.7	5.1	10.8	30.4	30.4	16.9	22.7	22.9
Cycle Q Clear(g_c), s	18.7	36.8	36.8	14.8	14.7	5.1	10.8	30.4	30.4	16.9	22.7	22.9
Prop In Lane	1.00		0.48	1.00		1.00	1.00		0.46	1.00		0.43
Lane Grp Cap(c), veh/h	288	566	525	230	1016	433	198	468	430	261	530	497
V/C Ratio(X)	1.04	1.04	1.04	1.00	0.53	0.21	0.86	1.04	1.04	1.08	0.73	0.74
Avail Cap(c_a), veh/h	288	566	525	230	1016	433	231	468	430	261	530	497
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.2	39.1	39.1	50.0	34.5	31.1	50.2	42.3	42.3	49.1	36.2	36.2
Incr Delay (d2), s/veh	63.8	47.4	49.8	58.2	0.5	0.2	23.3	52.8	54.6	78.0	5.2	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.2	25.4	23.9	11.0	7.2	2.2	6.6	21.7	20.1	13.9	11.9	11.3
LnGrp Delay(d),s/veh	111.9	86.5	88.9	108.3	35.0	31.3	73.5	95.1	96.9	127.0	41.4	41.9
LnGrp LOS	F	F	F	F	C	C	E	F	F	F	D	D
Approach Vol, veh/h		1432			856			1105			1037	
Approach Delay, s/veh		92.7			54.2			92.5			64.8	
Approach LOS		F			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.4	38.9	22.2	37.5	20.4	34.9	18.4	41.3
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	15.0	32.3	18.7	33.0	16.9	30.4	14.9	36.8
Max Q Clear Time (g_c+I1), s	12.8	24.9	20.7	16.7	18.9	32.4	16.8	38.8
Green Ext Time (p_c), s	0.1	5.5	0.0	10.5	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	78.7
HCM 2010 LOS	E

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	1273	40	10	915	20	20	10	10	30	20	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.94	1.00		0.94	0.96		0.93	0.95		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	50	1273	39	10	915	19	20	10	1	30	20	8
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	105	2610	80	44	2811	58	130	56	4	103	61	18
Arrive On Green	0.82	0.82	0.82	0.82	0.82	0.82	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	85	3169	97	13	3413	70	886	650	51	628	717	215
Grp Volume(v), veh/h	688	0	674	491	0	453	31	0	0	58	0	0
Grp Sat Flow(s),veh/h/ln	1681	0	1670	1819	0	1677	1587	0	0	1560	0	0
Q Serve(g_s), s	0.0	0.0	13.1	0.0	0.0	7.2	0.0	0.0	0.0	1.9	0.0	0.0
Cycle Q Clear(g_c), s	11.4	0.0	13.1	7.0	0.0	7.2	1.8	0.0	0.0	3.7	0.0	0.0
Prop In Lane	0.07		0.06	0.02		0.04	0.65		0.03	0.52		0.14
Lane Grp Cap(c), veh/h	1419	0	1375	1531	0	1381	190	0	0	183	0	0
V/C Ratio(X)	0.48	0.00	0.49	0.32	0.00	0.33	0.16	0.00	0.00	0.32	0.00	0.00
Avail Cap(c_a), veh/h	1419	0	1375	1531	0	1381	330	0	0	328	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	0.91	0.00	0.91	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.7	0.0	2.9	2.3	0.0	2.3	46.8	0.0	0.0	47.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	6.0	3.6	0.0	3.3	0.9	0.0	0.0	1.7	0.0	0.0
LnGrp Delay(d),s/veh	2.8	0.0	3.0	2.4	0.0	2.4	46.9	0.0	0.0	47.9	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1362			944			31			58	
Approach Delay, s/veh		2.9			2.4			46.9			47.9	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		95.6		14.4		95.6		14.4
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		15.1		5.7		9.2		3.8
Green Ext Time (p_c), s		18.7		0.2		18.9		0.2

Intersection Summary		
HCM 2010 Ctrl Delay		4.4
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	1203	50	40	835	50	60	30	40	20	30	60
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	0.99		0.92	0.85		0.80	0.87		0.80
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	30	1203	48	40	835	47	60	30	25	20	30	19
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	69	2498	99	111	2246	125	139	67	43	87	117	61
Arrive On Green	1.00	1.00	1.00	0.77	0.77	0.77	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	45	3258	129	99	2930	163	627	468	304	314	819	430
Grp Volume(v), veh/h	663	0	618	446	0	476	115	0	0	69	0	0
Grp Sat Flow(s),veh/h/ln	1773	0	1659	1541	0	1650	1399	0	0	1563	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	10.4	3.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	8.1	0.0	10.4	7.9	0.0	0.0	4.1	0.0	0.0
Prop In Lane	0.05		0.08	0.09		0.10	0.52		0.22	0.29		0.28
Lane Grp Cap(c), veh/h	1394	0	1272	1217	0	1265	249	0	0	265	0	0
V/C Ratio(X)	0.48	0.00	0.49	0.37	0.00	0.38	0.46	0.00	0.00	0.26	0.00	0.00
Avail Cap(c_a), veh/h	1394	0	1272	1217	0	1265	300	0	0	321	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.00	0.83	0.85	0.00	0.85	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.9	0.0	4.2	43.6	0.0	0.0	42.2	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	1.1	0.1	0.0	0.1	0.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.4	4.1	0.0	4.6	3.3	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	1.0	0.0	1.1	4.0	0.0	4.3	44.1	0.0	0.0	42.4	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1281			922			115			69	
Approach Delay, s/veh		1.0			4.1			44.1			42.4	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.3		20.7		89.3		20.7
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		2.0		6.1		12.4		9.9
Green Ext Time (p_c), s		17.9		0.6		17.6		0.5

Intersection Summary		
HCM 2010 Ctrl Delay		5.5
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	1183	40	80	845	80	50	30	40	10	30	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.95	0.95		0.93	0.96		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	1183	38	80	845	76	50	30	22	10	30	3
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	55	2660	85	194	1972	175	117	67	37	66	160	14
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	26	3344	107	196	2479	220	605	589	328	226	1405	122
Grp Volume(v), veh/h	646	0	595	435	0	566	102	0	0	43	0	0
Grp Sat Flow(s),veh/h/ln	1807	0	1669	1253	0	1642	1522	0	0	1754	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0	2.3	0.0	0.0
Prop In Lane	0.03		0.06	0.18		0.13	0.49		0.22	0.23		0.07
Lane Grp Cap(c), veh/h	1471	0	1328	1035	0	1306	222	0	0	240	0	0
V/C Ratio(X)	0.44	0.00	0.45	0.42	0.00	0.43	0.46	0.00	0.00	0.18	0.00	0.00
Avail Cap(c_a), veh/h	1471	0	1328	1035	0	1306	322	0	0	353	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.00	0.83	0.55	0.00	0.55	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	46.1	0.0	0.0	44.3	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.9	0.1	0.0	0.0	0.6	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.0	0.0	0.0	3.0	0.0	0.0	1.2	0.0	0.0
LnGrp Delay(d),s/veh	0.8	0.0	0.9	0.1	0.0	0.0	46.6	0.0	0.0	44.4	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1241			1001			102			43	
Approach Delay, s/veh		0.8			0.1			46.6			44.4	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		92.5		17.5		92.5		17.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		80.0		20.0		80.0		20.0
Max Q Clear Time (g_c+I1), s		2.0		4.3		2.0		8.8
Green Ext Time (p_c), s		19.5		0.5		19.5		0.4

Intersection Summary		
HCM 2010 Ctrl Delay		3.3
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	150	923	140	95	795	188	80	332	91	147	371	130
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.95	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1937	1900	1863	1937	1900
Adj Flow Rate, veh/h	150	923	129	95	795	170	80	332	82	147	371	118
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	1185	166	360	1446	309	102	365	90	175	403	128
Arrive On Green	0.03	0.13	0.13	0.27	0.67	0.67	0.06	0.25	0.25	0.10	0.29	0.29
Sat Flow, veh/h	1774	3103	434	1774	2883	616	1774	1485	367	1774	1404	447
Grp Volume(v), veh/h	150	526	526	95	488	477	80	0	414	147	0	489
Grp Sat Flow(s),veh/h/ln	1774	1770	1767	1774	1770	1730	1774	0	1852	1774	0	1851
Q Serve(g_s), s	9.2	31.7	31.7	4.6	16.0	16.0	4.9	0.0	23.9	9.0	0.0	28.2
Cycle Q Clear(g_c), s	9.2	31.7	31.7	4.6	16.0	16.0	4.9	0.0	23.9	9.0	0.0	28.2
Prop In Lane	1.00		0.25	1.00		0.36	1.00		0.20	1.00		0.24
Lane Grp Cap(c), veh/h	180	676	675	360	887	867	102	0	455	175	0	531
V/C Ratio(X)	0.83	0.78	0.78	0.26	0.55	0.55	0.79	0.00	0.91	0.84	0.00	0.92
Avail Cap(c_a), veh/h	194	676	675	360	887	867	113	0	471	177	0	538
HCM Platoon Ratio	0.33	0.33	0.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	0.53	0.53	0.53	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.2	43.6	43.6	33.7	11.8	11.8	51.2	0.0	40.3	48.7	0.0	38.0
Incr Delay (d2), s/veh	20.2	7.6	7.6	0.1	1.3	1.3	24.3	0.0	20.7	27.1	0.0	20.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	17.0	17.0	2.3	8.0	7.8	3.1	0.0	14.8	5.7	0.0	17.5
LnGrp Delay(d),s/veh	72.5	51.2	51.2	33.8	13.1	13.1	75.5	0.0	61.0	75.8	0.0	58.8
LnGrp LOS	E	D	D	C	B	B	E		E	E		E
Approach Vol, veh/h		1202			1060			494			636	
Approach Delay, s/veh		53.8			15.0			63.3			62.7	
Approach LOS		D			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.4	49.0	15.8	32.0	16.2	62.3	11.3	36.6
Change Period (Y+Rc), s	7.0	* 7	5.0	5.0	5.0	7.0	5.0	5.0
Max Green Setting (Gmax), s	7.8	* 42	11.0	28.0	12.0	37.0	7.0	32.0
Max Q Clear Time (g_c+I1), s	11.6	33.7	11.0	25.9	11.2	18.0	6.9	30.2
Green Ext Time (p_c), s	0.0	2.0	0.0	0.6	0.0	2.6	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	44.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	901	150	48	788	137	210	280	47	136	300	80
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	90	901	139	48	788	124	210	280	41	136	300	71
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	1177	182	87	938	148	240	437	64	164	337	80
Arrive On Green	0.25	0.77	0.77	0.02	0.10	0.10	0.14	0.28	0.28	0.09	0.23	0.23
Sat Flow, veh/h	1774	3069	473	1774	3060	482	1774	1588	232	1774	1448	343
Grp Volume(v), veh/h	90	519	521	48	456	456	210	0	321	136	0	371
Grp Sat Flow(s),veh/h/ln	1774	1770	1773	1774	1770	1772	1774	0	1820	1774	0	1790
Q Serve(g_s), s	4.6	18.2	18.2	3.0	27.8	27.8	12.8	0.0	17.1	8.3	0.0	22.1
Cycle Q Clear(g_c), s	4.6	18.2	18.2	3.0	27.8	27.8	12.8	0.0	17.1	8.3	0.0	22.1
Prop In Lane	1.00		0.27	1.00		0.27	1.00		0.13	1.00		0.19
Lane Grp Cap(c), veh/h	223	678	680	87	542	543	240	0	501	164	0	416
V/C Ratio(X)	0.40	0.77	0.77	0.55	0.84	0.84	0.88	0.00	0.64	0.83	0.00	0.89
Avail Cap(c_a), veh/h	223	678	680	115	542	543	282	0	556	190	0	454
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.56	0.56	0.56	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.7	10.0	10.0	52.9	46.8	46.8	46.7	0.0	35.1	49.1	0.0	40.9
Incr Delay (d2), s/veh	0.2	4.6	4.6	2.0	14.5	14.5	20.5	0.0	1.4	20.1	0.0	17.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	9.2	9.2	1.5	15.9	15.9	7.6	0.0	8.8	5.0	0.0	12.9
LnGrp Delay(d),s/veh	37.9	14.7	14.7	54.9	61.3	61.3	67.1	0.0	36.5	69.2	0.0	58.2
LnGrp LOS	D	B	B	D	E	E	E		D	E		E
Approach Vol, veh/h		1130			960			531			507	
Approach Delay, s/veh		16.5			61.0			48.6			61.2	
Approach LOS		B			E			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	39.2	15.7	35.8	10.9	47.7	20.4	31.1
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	3.9	33.7	11.8	33.6	7.1	35.5	17.5	27.9
Max Q Clear Time (g_c+I1), s	6.6	29.8	10.3	19.1	5.0	20.2	14.8	24.1
Green Ext Time (p_c), s	0.9	1.1	0.0	1.5	0.0	2.7	0.1	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	42.9
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1074	10	10	973	20	0	0	20	20	0	10
Conflicting Peds, #/hr	3	0	2	2	0	3	2	0	3	3	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1074	10	10	973	20	0	0	20	20	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	996	0	0	1087	0	0	1592	2098	548	1546	2093	503
Stage 1	-	-	-	-	-	-	1082	1082	-	1006	1006	-
Stage 2	-	-	-	-	-	-	510	1016	-	540	1087	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	690	-	-	638	-	-	72	51	480	78	52	514
Stage 1	-	-	-	-	-	-	232	292	-	258	317	-
Stage 2	-	-	-	-	-	-	514	314	-	494	290	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	688	-	-	636	-	-	69	50	478	73	51	511
Mov Cap-2 Maneuver	-	-	-	-	-	-	69	50	-	73	51	-
Stage 1	-	-	-	-	-	-	231	291	-	257	311	-
Stage 2	-	-	-	-	-	-	495	308	-	472	289	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	12.9	54.4
HCM LOS			B	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	478	688	-	-	636	-	-	102
HCM Lane V/C Ratio	0.042	-	-	-	0.016	-	-	0.294
HCM Control Delay (s)	12.9	0	-	-	10.8	-	-	54.4
HCM Lane LOS	B	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	1084	10	20	983	20	10	0	20	110	10	10
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	1084	10	20	983	19	10	0	3	110	10	7
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	517	2896	27	436	2863	55	191	8	42	203	13	9
Arrive On Green	0.81	0.81	0.81	1.00	1.00	1.00	0.10	0.00	0.11	0.10	0.11	0.11
Sat Flow, veh/h	560	3593	33	513	3552	69	1184	73	377	1264	115	80
Grp Volume(v), veh/h	20	534	560	20	490	512	13	0	0	127	0	0
Grp Sat Flow(s),veh/h/ln	560	1770	1857	513	1770	1851	1634	0	0	1459	0	0
Q Serve(g_s), s	0.8	9.2	9.2	0.5	0.0	0.0	0.0	0.0	0.0	8.6	0.0	0.0
Cycle Q Clear(g_c), s	0.8	9.2	9.2	9.7	0.0	0.0	0.7	0.0	0.0	9.4	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.04	0.77		0.23	0.87		0.06
Lane Grp Cap(c), veh/h	517	1426	1497	436	1426	1492	226	0	0	211	0	0
V/C Ratio(X)	0.04	0.37	0.37	0.05	0.34	0.34	0.06	0.00	0.00	0.60	0.00	0.00
Avail Cap(c_a), veh/h	517	1426	1497	436	1426	1492	442	0	0	429	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.1	3.0	3.0	0.5	0.0	0.0	44.0	0.0	0.0	47.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.8	0.7	0.2	0.6	0.5	0.0	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.7	5.0	0.1	0.2	0.2	0.4	0.0	0.0	3.9	0.0	0.0
LnGrp Delay(d),s/veh	2.3	3.7	3.7	0.7	0.6	0.5	44.1	0.0	0.0	48.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D			D		
Approach Vol, veh/h		1114			1022			13			127	
Approach Delay, s/veh		3.7			0.6			44.1			48.9	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		93.7		16.3		93.7		16.3
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0
Max Green Setting (Gmax), s		72.0		29.0		72.0		29.0
Max Q Clear Time (g_c+I1), s		11.2		2.7		11.7		11.4
Green Ext Time (p_c), s		6.8		0.3		6.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.0
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	1184	10	30	1073	150	0	10	30	120	0	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	0.95		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	30	1184	10	30	1073	145	0	10	1	120	0	0
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	2	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	2734	23	58	2383	321	0	163	16	375	182	0
Arrive On Green	0.07	1.00	1.00	0.03	0.76	0.76	0.00	0.10	0.10	0.10	0.00	0.00
Sat Flow, veh/h	1774	3597	30	1774	3134	423	0	1661	166	2645	1863	0
Grp Volume(v), veh/h	30	583	611	30	605	613	0	0	11	120	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1857	1774	1770	1787	0	0	1827	1323	1863	0
Q Serve(g_s), s	1.8	0.0	0.0	1.8	13.7	13.8	0.0	0.0	0.6	4.7	0.0	0.0
Cycle Q Clear(g_c), s	1.8	0.0	0.0	1.8	13.7	13.8	0.0	0.0	0.6	5.3	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.24	0.00		0.09	1.00		0.00
Lane Grp Cap(c), veh/h	58	1345	1412	58	1345	1359	0	0	179	375	182	0
V/C Ratio(X)	0.52	0.43	0.43	0.52	0.45	0.45	0.00	0.00	0.06	0.32	0.00	0.00
Avail Cap(c_a), veh/h	202	1345	1412	202	1345	1359	0	0	191	778	466	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	50.6	0.0	0.0	52.3	4.8	4.8	0.0	0.0	45.0	47.5	0.0	0.0
Incr Delay (d2), s/veh	6.4	0.9	0.9	6.9	1.1	1.1	0.0	0.0	0.1	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.4	0.4	1.0	7.0	7.0	0.0	0.0	0.3	1.8	0.0	0.0
LnGrp Delay(d),s/veh	57.0	0.9	0.9	59.3	5.9	5.9	0.0	0.0	45.2	47.9	0.0	0.0
LnGrp LOS	E	A	A	E	A	A			D	D		
Approach Vol, veh/h		1224			1248			11			120	
Approach Delay, s/veh		2.3			7.2			45.2			47.9	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.1	88.6		14.3	7.1	88.6		14.3
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5
Max Green Setting (Gmax), s	12.5	43.0		27.5	12.5	43.0		11.5
Max Q Clear Time (g_c+I1), s	3.8	2.0		7.3	3.8	15.8		2.6
Green Ext Time (p_c), s	0.0	17.7		0.5	0.0	14.7		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	6.9
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	70	1304	30	60	1223
Conflicting Peds, #/hr	2	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	70	1304	30	60	1223

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2053	669	0	0	1336	0
Stage 1	1321	-	-	-	-	-
Stage 2	732	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	48	400	-	-	512	-
Stage 1	214	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	42	399	-	-	512	-
Mov Cap-2 Maneuver	42	-	-	-	-	-
Stage 1	214	-	-	-	-	-
Stage 2	386	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	70.2	0	0.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	138	512	-
HCM Lane V/C Ratio	-	-	0.652	0.117	-
HCM Control Delay (s)	-	-	70.2	13	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	3.5	0.4	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	0	0	0	0	1004	370	395	1283	0
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	1004	370	395	1283	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	2577	3079	646	1285	0	-	1004	0	0
Stage 1	2075	2075	-	-	-	-	-	-	-
Stage 2	502	1004	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	21	12	414	536	-	0	686	-	-
Stage 1	82	94	-	-	-	0	-	-	-
Stage 2	573	318	-	-	-	0	-	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	9	0	413	535	-	-	685	-	-
Mov Cap-2 Maneuver	29	0	-	-	-	-	-	-	-
Stage 1	35	0	-	-	-	-	-	-	-
Stage 2	572	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	4
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	535	-	-	685	-	-
HCM Lane V/C Ratio	-	-	-	0.577	-	-
HCM Control Delay (s)	0	-	0	17.2	-	-
HCM Lane LOS	A	-	A	C	-	-
HCM 95th %tile Q(veh)	0	-	-	3.7	-	-

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **2040 Plus Project**
Volume and Delay by Movement **PM Peak Hour**

Intersection 38 **I-580 EB Off-Ramp-98th Avenue/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn	10	10	97.0%	2.8	4	14	0.1	55.8	10.3	37.2	71.3	E
	Second Left												
	Left Turn	70	74	106.0%	10.4	59	88	0.5	59.8	6.3	50.6	71.6	E
	Through												
	Right Turn	924	926	100.2%	25.8	896	969	0.1	11.5	3.0	5.9	16.9	B
	Second Right												
	Subtotal	1,004	1,010	100.6%	31.4	970	1,061	0.2	15.5	3.4	9.3	21.8	B
SB	U Turn												
	Second Left												
	Left Turn	156	160	102.6%	6.9	149	173	0.3	64.2	11.4	47.6	80.0	E
	Through	760	770	101.3%	27.3	721	808	0.4	64.1	12.3	44.2	79.4	E
	Right Turn	40	40	100.5%	5.6	31	46	0.0	49.6	11.5	33.4	65.8	D
	Second Right												
	Subtotal	956	970	101.5%	29.6	920	1,019	0.5	63.6	12.0	44.3	78.7	E
EB	U Turn												
	Second Left												
	Left Turn												
	Through	130	110	84.7%	13.2	89	127	1.8	265.3	49.8	171.6	316.2	F
	Right Turn	180	146	81.3%	14.0	121	166	2.6	187.5	43.3	117.7	240.7	F
	Second Right												
	Subtotal	310	256	82.7%	25.3	213	293	3.2	221.0	46.1	139.8	269.6	F
WB	U Turn												
	Second Left												
	Left Turn	728	551	75.7%	25.3	520	606	7.0	50.1	1.1	48.6	52.2	D
	Through	240	180	74.8%	10.6	159	190	4.2	27.4	2.0	24.1	30.0	C
	Right Turn												
	Second Right												
	Subtotal	968	731	75.5%	20.5	707	765	8.1	44.6	1.0	43.2	46.4	D
Total		3,238	2,967	91.6%	29.6	2,924	3,014	4.9	56.2	3.5	50.5	63.3	E

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **2040 Plus Project**
Volume and Delay by Movement **PM Peak Hour**

Intersection 39 **I-580 Ramps/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	520	520	100.1%	17.4	499	550	0.0	40.2	4.4	33.7	48.2	D
	Through	10	12	119.0%	3.5	7	18	0.6	42.4	8.3	31.6	57.7	D
	Right Turn	327	329	100.5%	18.9	304	363	0.1	21.1	2.2	17.2	24.4	C
	Second Right												
	Subtotal	857	861	100.4%	22.9	831	903	0.1	33.0	3.5	28.1	39.8	C
SB	U Turn												
	Second Left												
	Left Turn												
	Through												
	Right Turn												
	Second Right												
	Subtotal												
EB	U Turn												
	Second Left												
	Left Turn	780	756	96.9%	18.1	711	775	0.9	58.4	2.7	52.0	61.6	E
	Through	430	421	97.9%	23.9	381	451	0.4	25.0	2.4	21.9	28.8	C
	Right Turn												
	Second Right												
	Subtotal	1,210	1,177	97.2%	21.7	1,149	1,216	1.0	46.5	1.8	42.4	48.6	D
WB	U Turn												
	Second Left												
	Left Turn												
	Through	448	226	50.4%	6.0	218	237	12.1	51.5	0.9	49.7	52.9	D
	Right Turn	154	74	48.2%	6.6	63	84	7.5	35.8	4.0	27.3	40.3	D
	Second Right												
	Subtotal	602	300	49.8%	3.3	293	305	14.2	47.7	0.6	46.8	48.6	D
Total		2,669	2,337	87.6%	33.7	2,282	2,378	6.6	41.7	1.7	37.8	43.9	D

SimTraffic Post-Processor **Oak Knoll EIR**
Average Results from 10 Runs **2040 Plus Project**
Volume and Delay by Movement **PM Peak Hour**

Intersection 40 **Mountain Boulevard-Oakland Zoo Driveway/Golf Links Road** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Std. Dev.	Minimum	Maximum	GEH	Total Delay (sec/veh) Average	Std. Dev.	Minimum	Maximum	LOS
NB	U Turn												
	Second Left												
	Left Turn	30	30	100.3%	4.9	22	37	0.0	74.4	15.8	48.2	96.5	F
	Through	10	12	119.0%	3.7	6	17	0.6	13.6	1.9	10.4	17.6	B
	Right Turn	10	12	124.0%	2.6	8	17	0.7	4.2	1.0	2.9	6.5	A
	Second Right												
	Subtotal	50	54	108.8%	6.9	42	65	0.6	45.3	10.4	30.4	61.1	E
SB	U Turn												
	Second Left												
	Left Turn	30	20	66.0%	4.9	15	29	2.0	646.6	63.7	564.6	771.0	F
	Through	10	6	58.0%	1.8	2	8	1.5	661.3	168.9	388.1	939.2	F
	Right Turn	212	131	61.8%	8.7	119	148	6.2	637.2	40.5	567.5	694.8	F
	Second Right												
	Subtotal	252	157	62.2%	7.6	148	168	6.7	639.9	36.9	574.9	688.6	F
EB	U Turn	40	40	99.0%	5.3	30	49	0.1	19.3	2.6	13.8	22.3	C
	Second Left												
	Left Turn	277	286	103.4%	19.4	261	314	0.6	6.5	1.5	4.8	8.7	A
	Through	430	411	95.6%	21.5	377	448	0.9	2.5	0.4	1.9	3.1	A
	Right Turn	10	13	129.0%	3.1	9	18	0.9	1.3	0.9	0.6	3.4	A
	Second Right												
	Subtotal	757	750	99.0%	31.1	702	814	0.3	4.9	1.0	3.5	6.3	A
WB	U Turn												
	Second Left												
	Left Turn	10	4	37.0%	1.9	0	6	2.4	514.8	225.8	0.0	781.5	F
	Through	320	99	30.8%	10.5	78	115	15.3	558.1	57.1	488.3	688.6	F
	Right Turn	20	7	33.5%	1.8	4	10	3.6	521.3	71.1	399.8	594.2	F
	Second Right												
	Subtotal	350	109	31.2%	11.2	87	127	15.9	557.2	56.7	490.1	689.6	F
Total		1,409	1,070	75.9%	31.0	1,034	1,144	9.6	155.6	4.7	149.5	162.4	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	210	841	250	118	814	126	270	660	191	219	1000	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	210	841	157	118	814	116	270	660	170	219	1000	56
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	1116	487	143	843	120	281	813	209	278	1056	472
Arrive On Green	0.13	0.32	0.32	0.08	0.27	0.27	0.16	0.29	0.29	0.16	0.30	0.30
Sat Flow, veh/h	1774	3539	1546	1774	3111	443	1774	2787	717	1774	3539	1583
Grp Volume(v), veh/h	210	841	157	118	463	467	270	419	411	219	1000	56
Grp Sat Flow(s),veh/h/ln	1774	1770	1546	1774	1770	1785	1774	1770	1734	1774	1770	1583
Q Serve(g_s), s	14.1	25.6	9.3	7.9	31.0	31.0	18.1	26.4	26.4	14.3	33.2	3.1
Cycle Q Clear(g_c), s	14.1	25.6	9.3	7.9	31.0	31.0	18.1	26.4	26.4	14.3	33.2	3.1
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	222	1116	487	143	479	483	281	516	506	278	1056	472
V/C Ratio(X)	0.95	0.75	0.32	0.83	0.97	0.97	0.96	0.81	0.81	0.79	0.95	0.12
Avail Cap(c_a), veh/h	222	1116	487	148	479	483	281	516	506	281	1056	472
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	36.9	31.3	54.3	43.2	43.2	50.1	39.4	39.5	48.7	41.2	30.6
Incr Delay (d2), s/veh	45.6	3.0	0.4	29.5	32.4	32.3	43.0	13.0	13.3	13.8	16.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	13.0	4.0	5.0	19.5	19.6	12.2	14.8	14.6	8.1	18.5	1.4
LnGrp Delay(d),s/veh	97.7	39.9	31.7	83.9	75.6	75.5	93.2	52.5	52.8	62.4	57.7	30.7
LnGrp LOS	F	D	C	F	E	E	F	D	D	E	E	C
Approach Vol, veh/h		1208			1048			1100			1275	
Approach Delay, s/veh		48.9			76.5			62.6			57.3	
Approach LOS		D			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.8	40.0	13.7	43.3	23.0	40.8	19.0	38.0
Change Period (Y+Rc), s	5.0	* 5	4.0	5.5	4.0	5.0	4.0	5.5
Max Green Setting (Gmax), s	18.8	* 35	10.0	37.5	19.0	35.0	15.0	32.5
Max Q Clear Time (g_c+I1), s	16.3	28.4	9.9	27.6	20.1	35.2	16.1	33.0
Green Ext Time (p_c), s	1.8	2.9	0.0	7.5	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	60.7
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	164	30	261	14	268	157
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	164	22	261	12	268	157
Adj No. of Lanes	1	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	233	208	444	20	359	1102
Arrive On Green	0.13	0.13	0.25	0.25	0.20	0.59
Sat Flow, veh/h	1774	1583	1767	81	1774	1863
Grp Volume(v), veh/h	164	22	0	273	268	157
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1848	1774	1863
Q Serve(g_s), s	3.2	0.4	0.0	4.7	5.1	1.4
Cycle Q Clear(g_c), s	3.2	0.4	0.0	4.7	5.1	1.4
Prop In Lane	1.00	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	233	208	0	464	359	1102
V/C Ratio(X)	0.70	0.11	0.00	0.59	0.75	0.14
Avail Cap(c_a), veh/h	981	876	0	1432	1325	3092
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.0	13.8	0.0	11.9	13.5	3.3
Incr Delay (d2), s/veh	3.8	0.2	0.0	1.2	3.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.2	0.0	2.5	2.8	0.7
LnGrp Delay(d),s/veh	18.8	14.0	0.0	13.1	16.6	3.3
LnGrp LOS	B	B		B	B	A
Approach Vol, veh/h	186		273			425
Approach Delay, s/veh	18.3		13.1			11.7
Approach LOS	B		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.3	14.1				26.4		9.8
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	27.0	28.0				60.0		20.0
Max Q Clear Time (g_c+I1), s	7.1	6.7				3.4		5.2
Green Ext Time (p_c), s	0.7	2.4				2.7		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	13.5
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	2	273	43	0	321
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	273	43	0	321

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	616	295	0	0	316	0
Stage 1	295	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	454	744	-	-	1244	-
Stage 1	755	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	454	744	-	-	1244	-
Mov Cap-2 Maneuver	454	-	-	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	735	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	744	1244	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Control Delay (s)	-	-	9.9	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	267	6	0	216	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	267	6	0	216	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	273	0	378	137
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	108	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1287	-	597	886
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	904	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1287	-	597	886
Mov Cap-2 Maneuver	-	-	-	-	597	-
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	904	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	886	-	-	1287	-
HCM Lane V/C Ratio	0.008	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	650	405	40	0	0	0	60	190	40	90	30	193
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900				1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	650	405	37				60	190	0	90	30	26
Adj No. of Lanes	1	1	0				0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2				2	2	2	2	2	2
Cap, veh/h	1068	1013	93				69	219	0	132	69	60
Arrive On Green	0.60	0.60	0.60				0.16	0.16	0.00	0.07	0.07	0.07
Sat Flow, veh/h	1774	1682	154				442	1399	0	1774	922	799
Grp Volume(v), veh/h	650	0	442				250	0	0	90	0	56
Grp Sat Flow(s),veh/h/ln	1774	0	1836				1841	0	0	1774	0	1722
Q Serve(g_s), s	20.7	0.0	11.4				11.9	0.0	0.0	4.5	0.0	2.8
Cycle Q Clear(g_c), s	20.7	0.0	11.4				11.9	0.0	0.0	4.5	0.0	2.8
Prop In Lane	1.00		0.08				0.24		0.00	1.00		0.46
Lane Grp Cap(c), veh/h	1068	0	1105				288	0	0	132	0	128
V/C Ratio(X)	0.61	0.00	0.40				0.87	0.00	0.00	0.68	0.00	0.44
Avail Cap(c_a), veh/h	1068	0	1105				327	0	0	473	0	459
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	0.00	0.00	0.69	0.00	0.69
Uniform Delay (d), s/veh	11.2	0.0	9.4				37.0	0.0	0.0	40.6	0.0	39.8
Incr Delay (d2), s/veh	2.6	0.0	1.1				19.4	0.0	0.0	4.2	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	0.0	6.0				7.6	0.0	0.0	2.3	0.0	1.4
LnGrp Delay(d),s/veh	13.8	0.0	10.5				56.5	0.0	0.0	44.8	0.0	41.5
LnGrp LOS	B		B				E			D		D
Approach Vol, veh/h		1092						250			146	
Approach Delay, s/veh		12.5						56.5			43.5	
Approach LOS		B						E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		19.1		59.2		11.7		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		16.0		35.0		24.0		
Max Q Clear Time (g_c+I1), s		13.9		22.7		6.5		
Green Ext Time (p_c), s		0.2		4.1		0.4		

Intersection Summary	
HCM 2010 Ctrl Delay	22.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	100	203	40	10	820	20	0	0	10	10
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	0	0	7	203	40	2	820	20	0	0	10	6
Adj No. of Lanes	0	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	11	243	241	12	1035	1284	0	0	753	452
Arrive On Green	0.00	0.00	0.01	0.14	0.14	0.14	0.69	0.69	0.00	0.00	0.69	0.69
Sat Flow, veh/h	0	0	1583	1774	1759	88	1392	1863	0	0	1092	655
Grp Volume(v), veh/h	0	0	7	203	0	42	820	20	0	0	0	16
Grp Sat Flow(s),veh/h/ln	0	0	1583	1774	0	1847	1392	1863	0	0	0	1747
Q Serve(g_s), s	0.0	0.0	0.4	10.0	0.0	1.8	40.5	0.3	0.0	0.0	0.0	0.3
Cycle Q Clear(g_c), s	0.0	0.0	0.4	10.0	0.0	1.8	40.8	0.3	0.0	0.0	0.0	0.3
Prop In Lane	0.00		1.00	1.00		0.05	1.00		0.00	0.00		0.37
Lane Grp Cap(c), veh/h	0	0	11	243	0	253	1035	1284	0	0	0	1204
V/C Ratio(X)	0.00	0.00	0.62	0.84	0.00	0.17	0.79	0.02	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	0	0	281	315	0	328	1035	1284	0	0	0	1204
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.56	0.56	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	44.6	37.8	0.0	34.3	10.8	4.4	0.0	0.0	0.0	4.4
Incr Delay (d2), s/veh	0.0	0.0	44.5	13.9	0.0	0.3	3.6	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.3	5.8	0.0	0.9	16.3	0.2	0.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh	0.0	0.0	89.1	51.8	0.0	34.6	14.4	4.4	0.0	0.0	0.0	4.4
LnGrp LOS			F	D		C	B	A				A
Approach Vol, veh/h		7			245			840			16	
Approach Delay, s/veh		89.1			48.8			14.1			4.4	
Approach LOS		F			D			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		17.3		67.0		5.6		67.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		16.0		43.0		16.0		43.0
Max Q Clear Time (g_c+I1), s		12.0		42.8		2.4		2.3
Green Ext Time (p_c), s		0.3		0.1		0.0		4.8

Intersection Summary		
HCM 2010 Ctrl Delay		22.1
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	142	130	418	61	0	0	0	0	234	220	40
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00				1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	142	130	418	61	0				234	220	40
Adj No. of Lanes	0	1	0	1	1	0				0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	163	149	467	944	0				618	634	116
Arrive On Green	0.00	0.19	0.19	0.26	0.51	0.00				0.38	0.38	0.38
Sat Flow, veh/h	0	867	794	1774	1863	0				1618	1659	305
Grp Volume(v), veh/h	0	0	272	418	61	0				258	0	236
Grp Sat Flow(s),veh/h/ln	0	0	1661	1774	1863	0				1782	0	1799
Q Serve(g_s), s	0.0	0.0	14.3	20.4	1.5	0.0				9.4	0.0	8.4
Cycle Q Clear(g_c), s	0.0	0.0	14.3	20.4	1.5	0.0				9.4	0.0	8.4
Prop In Lane	0.00		0.48	1.00		0.00				0.91		0.17
Lane Grp Cap(c), veh/h	0	0	312	467	944	0				681	0	688
V/C Ratio(X)	0.00	0.00	0.87	0.90	0.06	0.00				0.38	0.00	0.34
Avail Cap(c_a), veh/h	0	0	387	631	1200	0				681	0	688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.56	0.56	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	35.5	32.0	11.3	0.0				20.1	0.0	19.8
Incr Delay (d2), s/veh	0.0	0.0	16.2	7.6	0.0	0.0				1.6	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	8.0	11.0	0.8	0.0				4.9	0.0	4.4
LnGrp Delay(d),s/veh	0.0	0.0	51.7	39.5	11.3	0.0				21.7	0.0	21.1
LnGrp LOS			D	D	B					C		C
Approach Vol, veh/h		272			479						494	
Approach Delay, s/veh		51.7			35.9						21.4	
Approach LOS		D			D						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			28.7	21.9		39.4		50.6
Change Period (Y+Rc), s			5.0	5.0		5.0		5.0
Max Green Setting (Gmax), s			32.0	21.0		22.0		58.0
Max Q Clear Time (g_c+I1), s			22.4	16.3		11.4		3.5
Green Ext Time (p_c), s			1.2	0.6		1.5		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	150	113	113	37	267	386	72	983	170	45	35	140
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1900	1863	1900	1863	1937	1900
Adj Flow Rate, veh/h	150	113	64	37	267	236	72	983	158	45	35	62
Adj No. of Lanes	0	2	0	0	1	1	0	2	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	434	349	201	45	322	311	101	995	158	80	219	387
Arrive On Green	0.28	0.28	0.28	0.20	0.20	0.20	0.12	0.12	0.12	0.36	0.36	0.36
Sat Flow, veh/h	1551	1247	717	225	1626	1574	160	2799	445	491	615	1089
Grp Volume(v), veh/h	173	0	154	304	0	236	640	0	573	45	0	97
Grp Sat Flow(s),veh/h/ln	1785	0	1730	1851	0	1574	1790	0	1613	491	0	1703
Q Serve(g_s), s	6.9	0.0	6.3	14.2	0.0	12.7	25.7	0.0	31.9	0.1	0.0	3.5
Cycle Q Clear(g_c), s	6.9	0.0	6.3	14.2	0.0	12.7	32.0	0.0	31.9	32.0	0.0	3.5
Prop In Lane	0.87		0.41	0.12		1.00	0.11		0.28	1.00		0.64
Lane Grp Cap(c), veh/h	500	0	484	366	0	311	681	0	574	80	0	606
V/C Ratio(X)	0.35	0.00	0.32	0.83	0.00	0.76	0.94	0.00	1.00	0.56	0.00	0.16
Avail Cap(c_a), veh/h	500	0	484	473	0	402	681	0	574	80	0	606
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.00	0.55	1.00	0.00	1.00	0.59	0.00	0.59	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.8	0.0	25.6	34.7	0.0	34.1	39.7	0.0	39.7	45.0	0.0	19.8
Incr Delay (d2), s/veh	1.0	0.0	0.9	9.4	0.0	6.1	14.4	0.0	28.4	8.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	3.2	8.2	0.0	6.0	18.7	0.0	18.8	1.3	0.0	1.7
LnGrp Delay(d),s/veh	26.9	0.0	26.6	44.1	0.0	40.1	54.0	0.0	68.1	53.5	0.0	19.9
LnGrp LOS	C		C	D		D	D		E	D		B
Approach Vol, veh/h		327			540			1213			142	
Approach Delay, s/veh		26.7			42.3			60.7			30.6	
Approach LOS		C			D			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.0		30.2		37.0		22.8
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		32.0		20.0		32.0		23.0
Max Q Clear Time (g_c+I1), s		34.0		8.9		34.0		16.2
Green Ext Time (p_c), s		0.0		0.9		0.0		1.3

Intersection Summary		
HCM 2010 Ctrl Delay		49.3
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	170	0	24	10	0	20	0	1035	0	0	185	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	0	1863	0	0	1863	0
Adj Flow Rate, veh/h	170	0	0	10	0	0	0	1035	0	0	185	0
Adj No. of Lanes	2	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0	0	2	0
Cap, veh/h	248	130	0	17	0	0	0	1404	0	0	1404	0
Arrive On Green	0.07	0.00	0.00	0.01	0.00	0.00	0.00	0.75	0.00	0.00	0.75	0.00
Sat Flow, veh/h	3548	1863	0	1774	0	0	0	1863	0	0	1863	0
Grp Volume(v), veh/h	170	0	0	10	0	0	0	1035	0	0	185	0
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	0	0	1863	0	0	1863	0
Q Serve(g_s), s	4.2	0.0	0.0	0.5	0.0	0.0	0.0	27.7	0.0	0.0	2.4	0.0
Cycle Q Clear(g_c), s	4.2	0.0	0.0	0.5	0.0	0.0	0.0	27.7	0.0	0.0	2.4	0.0
Prop In Lane	1.00		0.00	1.00		0.00	0.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	248	130	0	17	0	0	0	1404	0	0	1404	0
V/C Ratio(X)	0.69	0.00	0.00	0.57	0.00	0.00	0.00	0.74	0.00	0.00	0.13	0.00
Avail Cap(c_a), veh/h	355	186	0	79	0	0	0	1404	0	0	1404	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.99	0.00
Uniform Delay (d), s/veh	40.9	0.0	0.0	44.4	0.0	0.0	0.0	6.1	0.0	0.0	3.0	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	26.4	0.0	0.0	0.0	3.5	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	0.4	0.0	0.0	0.0	15.2	0.0	0.0	1.3	0.0
LnGrp Delay(d),s/veh	44.2	0.0	0.0	70.7	0.0	0.0	0.0	9.6	0.0	0.0	3.2	0.0
LnGrp LOS	D			E				A			A	
Approach Vol, veh/h		170			10			1035			185	
Approach Delay, s/veh		44.2			70.7			9.6			3.2	
Approach LOS		D			E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		72.8		11.3		72.8		5.9
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		62.0		9.0		62.0		4.0
Max Q Clear Time (g_c+I1), s		29.7		6.2		4.4		2.5
Green Ext Time (p_c), s		7.6		0.2		8.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection 38 **I-580 EB Off-Ramp-98th Avenue/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	90	93	103.8%	60.7	11.8	E
	Through						
	Right Turn	975	968	99.3%	4.3	1.3	A
	Subtotal	1,065	1,062	99.7%	9.6	3.2	A
SB	Left Turn	155	150	96.6%	36.2	5.9	D
	Through	820	803	97.9%	34.4	4.5	C
	Right Turn	40	39	97.3%	17.3	7.4	B
	Subtotal	1,015	991	97.6%	33.9	4.7	C
EB	Left Turn						
	Through	90	93	103.1%	46.0	7.5	D
	Right Turn	220	223	101.3%	21.1	7.1	C
	Subtotal	310	316	101.8%	28.3	6.0	C
WB	Left Turn	733	514	70.1%	40.8	1.6	D
	Through	220	156	71.1%	45.4	4.6	D
	Right Turn						
	Subtotal	953	670	70.3%	41.9	2.0	D
Total		3,343	3,038	90.9%	26.8	2.4	C

Intersection 39 **I-580 Ramps/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	400	397	99.3%	31.9	2.1	C
	Through	10	11	108.0%	33.7	10.3	C
	Right Turn	460	455	98.9%	39.4	24.1	D
	Subtotal	870	863	99.2%	36.2	13.4	D
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	610	604	99.1%	48.9	6.6	D
	Through	610	617	101.1%	20.6	2.7	C
	Right Turn						
	Subtotal	1,220	1,221	100.1%	34.6	3.2	C
WB	Left Turn						
	Through	553	264	47.7%	41.9	3.8	D
	Right Turn	143	69	48.5%	29.8	8.6	C
	Subtotal	696	333	47.8%	39.6	3.7	D
Total		2,786	2,417	86.8%	35.9	5.3	D

Intersection 40 **Mountain Boulevard-Oakland Zoo Driveway/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	2	22.0%	746.8	101.9	F
	Through	10	10	102.0%	26.1	20.5	C
	Right Turn						
	Subtotal	20	12	62.0%	193.1	227.3	F
SB	Left Turn	22	10	46.4%	240.8	102.0	F
	Through	10	5	45.0%	245.7	120.5	F
	Right Turn	286	147	51.5%	268.3	38.6	F
	Subtotal	318	162	50.9%	265.1	35.9	F
EB	Left Turn	670	672	100.3%	15.3	1.2	B
	Through	340	344	101.2%	14.3	1.4	B
	Right Turn	60	59	98.3%	12.0	6.3	B
	Subtotal	1,070	1,075	100.5%	14.8	1.2	B
WB	Left Turn	10	5	46.0%	413.8	165.5	F
	Through	400	182	45.4%	427.9	16.3	F
	Right Turn	43	22	51.4%	414.1	56.5	F
	Subtotal	453	208	46.0%	426.2	18.4	F
Total		1,861	1,458	78.3%	103.9	4.5	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	610	497	60	0	0	0	30	90	40	540	140	352
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900				1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	610	497	55				30	90	0	540	140	121
Adj No. of Lanes	1	1	0				0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2				2	2	2	2	2	2
Cap, veh/h	787	730	81				41	123	0	532	276	238
Arrive On Green	0.44	0.44	0.44				0.09	0.09	0.00	0.30	0.30	0.30
Sat Flow, veh/h	1774	1644	182				460	1380	0	1774	920	795
Grp Volume(v), veh/h	610	0	552				120	0	0	540	0	261
Grp Sat Flow(s),veh/h/ln	1774	0	1826				1840	0	0	1774	0	1715
Q Serve(g_s), s	26.2	0.0	21.7				5.7	0.0	0.0	27.0	0.0	11.3
Cycle Q Clear(g_c), s	26.2	0.0	21.7				5.7	0.0	0.0	27.0	0.0	11.3
Prop In Lane	1.00		0.10				0.25		0.00	1.00		0.46
Lane Grp Cap(c), veh/h	787	0	810				165	0	0	532	0	514
V/C Ratio(X)	0.77	0.00	0.68				0.73	0.00	0.00	1.01	0.00	0.51
Avail Cap(c_a), veh/h	787	0	810				327	0	0	532	0	514
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	0.00	0.00	0.17	0.00	0.17
Uniform Delay (d), s/veh	21.2	0.0	19.9				39.9	0.0	0.0	31.5	0.0	26.0
Incr Delay (d2), s/veh	7.3	0.0	4.6				6.1	0.0	0.0	19.8	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.3	0.0	11.9				3.2	0.0	0.0	16.1	0.0	5.4
LnGrp Delay(d),s/veh	28.5	0.0	24.5				46.0	0.0	0.0	51.3	0.0	26.1
LnGrp LOS	C		C				D			F		C
Approach Vol, veh/h		1162						120			801	
Approach Delay, s/veh		26.6						46.0			43.1	
Approach LOS		C						D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		13.1		44.9		32.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		16.0		32.0		27.0		
Max Q Clear Time (g_c+I1), s		7.7		28.2		29.0		
Green Ext Time (p_c), s		0.2		2.0		0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	34.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	700	322	100	20	690	10	0	0	10	10
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	10	0	86	322	100	12	690	10	0	0	10	5
Adj No. of Lanes	0	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	13	0	108	315	290	35	883	1080	0	0	680	340
Arrive On Green	0.08	0.00	0.08	0.18	0.18	0.18	0.58	0.58	0.00	0.00	0.58	0.58
Sat Flow, veh/h	167	0	1434	1774	1632	196	1393	1863	0	0	1173	586
Grp Volume(v), veh/h	96	0	0	322	0	112	690	10	0	0	0	15
Grp Sat Flow(s),veh/h/ln	1601	0	0	1774	0	1828	1393	1863	0	0	0	1759
Q Serve(g_s), s	5.3	0.0	0.0	16.0	0.0	4.8	37.4	0.2	0.0	0.0	0.0	0.3
Cycle Q Clear(g_c), s	5.3	0.0	0.0	16.0	0.0	4.8	37.8	0.2	0.0	0.0	0.0	0.3
Prop In Lane	0.10		0.90	1.00		0.11	1.00		0.00	0.00		0.33
Lane Grp Cap(c), veh/h	121	0	0	315	0	325	883	1080	0	0	0	1020
V/C Ratio(X)	0.79	0.00	0.00	1.02	0.00	0.34	0.78	0.01	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	285	0	0	315	0	325	883	1080	0	0	0	1020
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.32	0.32	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	40.9	0.0	0.0	37.0	0.0	32.4	16.0	8.0	0.0	0.0	0.0	8.0
Incr Delay (d2), s/veh	11.0	0.0	0.0	56.1	0.0	0.6	2.3	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	12.7	0.0	2.5	14.7	0.1	0.0	0.0	0.0	0.2
LnGrp Delay(d),s/veh	51.9	0.0	0.0	93.2	0.0	33.0	18.3	8.0	0.0	0.0	0.0	8.0
LnGrp LOS	D			F		C	B	A				A
Approach Vol, veh/h		96			434			700			15	
Approach Delay, s/veh		51.9			77.7			18.2			8.0	
Approach LOS		D			E			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		21.0		57.2		11.8		57.2
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		16.0		43.0		16.0		43.0
Max Q Clear Time (g_c+I1), s		18.0		39.8		7.3		2.3
Green Ext Time (p_c), s		0.0		1.1		0.2		3.7

Intersection Summary		
HCM 2010 Ctrl Delay		41.4
HCM 2010 LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	95	120	393	137	0	0	0	0	453	290	90
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	95	68	393	137	0				453	290	79
Adj No. of Lanes	0	1	0	1	1	0				0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	131	94	436	805	0				811	645	176
Arrive On Green	0.00	0.13	0.13	0.25	0.43	0.00				0.46	0.46	0.46
Sat Flow, veh/h	0	1003	718	1774	1863	0				1774	1411	384
Grp Volume(v), veh/h	0	0	163	393	137	0				453	0	369
Grp Sat Flow(s),veh/h/ln	0	0	1720	1774	1863	0				1774	0	1795
Q Serve(g_s), s	0.0	0.0	8.2	19.3	4.1	0.0				16.8	0.0	12.6
Cycle Q Clear(g_c), s	0.0	0.0	8.2	19.3	4.1	0.0				16.8	0.0	12.6
Prop In Lane	0.00		0.42	1.00		0.00				1.00		0.21
Lane Grp Cap(c), veh/h	0	0	224	436	805	0				811	0	820
V/C Ratio(X)	0.00	0.00	0.73	0.90	0.17	0.00				0.56	0.00	0.45
Avail Cap(c_a), veh/h	0	0	306	532	993	0				811	0	820
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.61	0.61	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	37.6	32.9	15.7	0.0				17.8	0.0	16.7
Incr Delay (d2), s/veh	0.0	0.0	5.5	10.8	0.1	0.0				2.8	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	4.2	10.7	2.1	0.0				8.8	0.0	6.7
LnGrp Delay(d),s/veh	0.0	0.0	43.1	43.7	15.7	0.0				20.6	0.0	18.5
LnGrp LOS			D	D	B					C		B
Approach Vol, veh/h		163			530						822	
Approach Delay, s/veh		43.1			36.4						19.6	
Approach LOS		D			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			27.1	16.7		46.1		43.9
Change Period (Y+Rc), s			5.0	5.0		5.0		5.0
Max Green Setting (Gmax), s			27.0	16.0		32.0		48.0
Max Q Clear Time (g_c+I1), s			21.3	10.2		18.8		6.1
Green Ext Time (p_c), s			0.8	0.6		3.0		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	248	210	35	233	233	147	499	293	127	91	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1900	1863	1900	1863	1937	1900
Adj Flow Rate, veh/h	90	248	111	35	233	47	147	499	236	127	91	84
Adj No. of Lanes	0	2	0	0	1	1	0	2	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	166	469	219	43	288	275	230	693	348	185	381	352
Arrive On Green	0.08	0.08	0.08	0.18	0.18	0.18	0.14	0.14	0.14	0.41	0.41	0.41
Sat Flow, veh/h	681	1930	902	242	1609	1537	431	1684	848	719	927	856
Grp Volume(v), veh/h	242	0	207	268	0	47	456	0	426	127	0	175
Grp Sat Flow(s),veh/h/ln	1829	0	1684	1851	0	1537	1433	0	1530	719	0	1783
Q Serve(g_s), s	11.4	0.0	10.6	12.5	0.0	2.3	22.9	0.0	23.9	13.1	0.0	5.8
Cycle Q Clear(g_c), s	11.4	0.0	10.6	12.5	0.0	2.3	28.6	0.0	23.9	37.0	0.0	5.8
Prop In Lane	0.37		0.54	0.13		1.00	0.32		0.55	1.00		0.48
Lane Grp Cap(c), veh/h	445	0	409	331	0	275	642	0	629	185	0	733
V/C Ratio(X)	0.54	0.00	0.51	0.81	0.00	0.17	0.71	0.00	0.68	0.69	0.00	0.24
Avail Cap(c_a), veh/h	445	0	409	473	0	393	642	0	629	185	0	733
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.61	0.00	0.61	1.00	0.00	1.00	0.83	0.00	0.83	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.6	0.0	36.2	35.5	0.0	31.3	36.7	0.0	33.2	39.6	0.0	17.3
Incr Delay (d2), s/veh	2.9	0.0	2.7	6.8	0.0	0.3	3.1	0.0	2.4	10.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	5.3	7.0	0.0	1.0	11.6	0.0	10.5	3.7	0.0	2.9
LnGrp Delay(d),s/veh	39.5	0.0	38.9	42.3	0.0	31.6	39.7	0.0	35.6	49.7	0.0	17.5
LnGrp LOS	D		D	D		C	D		D	D		B
Approach Vol, veh/h		449			315			882			302	
Approach Delay, s/veh		39.2			40.7			37.8			31.0	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		42.0		26.9		42.0		21.1
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		37.0		15.0		37.0		23.0
Max Q Clear Time (g_c+I1), s		30.6		13.4		39.0		14.5
Green Ext Time (p_c), s		3.1		0.3		0.0		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		37.5
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	468	0	86	10	0	30	0	441	0	0	336	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	0	1863	0	0	1863	0
Adj Flow Rate, veh/h	487	0	0	10	0	0	0	441	0	0	336	0
Adj No. of Lanes	2	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0	0	2	0
Cap, veh/h	626	329	0	17	0	0	0	1205	0	0	1205	0
Arrive On Green	0.18	0.00	0.00	0.01	0.00	0.00	0.00	0.65	0.00	0.00	0.65	0.00
Sat Flow, veh/h	3548	1863	0	1774	0	0	0	1863	0	0	1863	0
Grp Volume(v), veh/h	487	0	0	10	0	0	0	441	0	0	336	0
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	0	0	1863	0	0	1863	0
Q Serve(g_s), s	11.8	0.0	0.0	0.5	0.0	0.0	0.0	9.9	0.0	0.0	7.0	0.0
Cycle Q Clear(g_c), s	11.8	0.0	0.0	0.5	0.0	0.0	0.0	9.9	0.0	0.0	7.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	0.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	626	329	0	17	0	0	0	1205	0	0	1205	0
V/C Ratio(X)	0.78	0.00	0.00	0.57	0.00	0.00	0.00	0.37	0.00	0.00	0.28	0.00
Avail Cap(c_a), veh/h	1222	642	0	315	0	0	0	1205	0	0	1205	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.97	0.00
Uniform Delay (d), s/veh	35.4	0.0	0.0	44.4	0.0	0.0	0.0	7.3	0.0	0.0	6.8	0.0
Incr Delay (d2), s/veh	2.1	0.0	0.0	26.4	0.0	0.0	0.0	0.9	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	0.0	0.0	0.4	0.0	0.0	0.0	5.3	0.0	0.0	3.7	0.0
LnGrp Delay(d),s/veh	37.5	0.0	0.0	70.7	0.0	0.0	0.0	8.2	0.0	0.0	7.4	0.0
LnGrp LOS	D			E				A			A	
Approach Vol, veh/h		487			10			441			336	
Approach Delay, s/veh		37.5			70.7			8.2			7.4	
Approach LOS		D			E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		63.2		20.9		63.2		5.9
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		28.0		31.0		28.0		16.0
Max Q Clear Time (g_c+I1), s		11.9		13.8		9.0		2.5
Green Ext Time (p_c), s		2.9		2.1		3.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.7
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection 38 **I-580 EB Off-Ramp-98th Avenue/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	80	77	96.0%	65.8	19.7	E
	Through						
	Right Turn	924	923	99.9%	6.2	1.9	A
	Subtotal	1,004	1,000	99.6%	11.0	3.7	B
SB	Left Turn	156	147	93.9%	40.1	10.0	D
	Through	760	763	100.4%	39.7	5.1	D
	Right Turn	40	45	112.0%	19.9	5.3	B
	Subtotal	956	954	99.8%	38.9	5.8	D
EB	Left Turn						
	Through	130	127	97.6%	48.1	4.7	D
	Right Turn	180	183	101.7%	21.0	4.5	C
	Subtotal	310	310	100.0%	32.8	2.6	C
WB	Left Turn	728	548	75.3%	49.2	2.4	D
	Through	240	189	78.7%	51.7	5.2	D
	Right Turn						
	Subtotal	968	737	76.1%	49.9	2.8	D
Total		3,238	3,001	92.7%	31.6	2.2	C

Intersection 39 **I-580 Ramps/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	520	521	100.3%	35.1	6.1	D
	Through	10	9	91.0%	34.5	16.8	C
	Right Turn	327	322	98.6%	23.4	11.9	C
	Subtotal	857	853	99.5%	30.9	7.8	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	820	808	98.6%	49.5	6.1	D
	Through	390	390	99.9%	26.7	6.2	C
	Right Turn						
	Subtotal	1,210	1,198	99.0%	41.9	4.5	D
WB	Left Turn						
	Through	448	209	46.7%	54.4	2.8	D
	Right Turn	114	50	43.6%	51.9	7.9	D
	Subtotal	562	259	46.0%	53.7	2.1	D
Total		2,629	2,310	87.9%	39.1	4.0	D

Intersection 40 **Mountain Boulevard-Oakland Zoo Driveway/Golf Links Road** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	2	6.0%	748.2	35.6	F
	Through	10	7	67.0%	40.5	18.5	D
	Right Turn	10	7	67.0%	6.9	6.6	A
	Subtotal	50	15	30.4%	90.9	123.9	F
SB	Left Turn	30	19	61.7%	623.1	79.6	F
	Through	10	6	61.0%	583.6	129.5	F
	Right Turn	212	121	57.2%	626.6	51.1	F
	Subtotal	252	146	57.9%	627.3	53.3	F
EB	Left Turn	277	270	97.5%	23.7	2.0	C
	Through	430	429	99.8%	23.5	1.2	C
	Right Turn	10	11	109.0%	21.4	18.6	C
	Subtotal	717	710	99.0%	23.6	1.0	C
WB	Left Turn	10	5	45.0%	432.2	230.7	F
	Through	320	141	44.0%	527.0	21.7	F
	Right Turn	20	9	46.0%	506.0	91.2	F
	Subtotal	350	155	44.2%	524.0	21.2	F
Total		1,369	1,026	74.9%	188.1	13.4	F

Signal Warrant Worksheets

FEHR PEERS

FEHR PEERS

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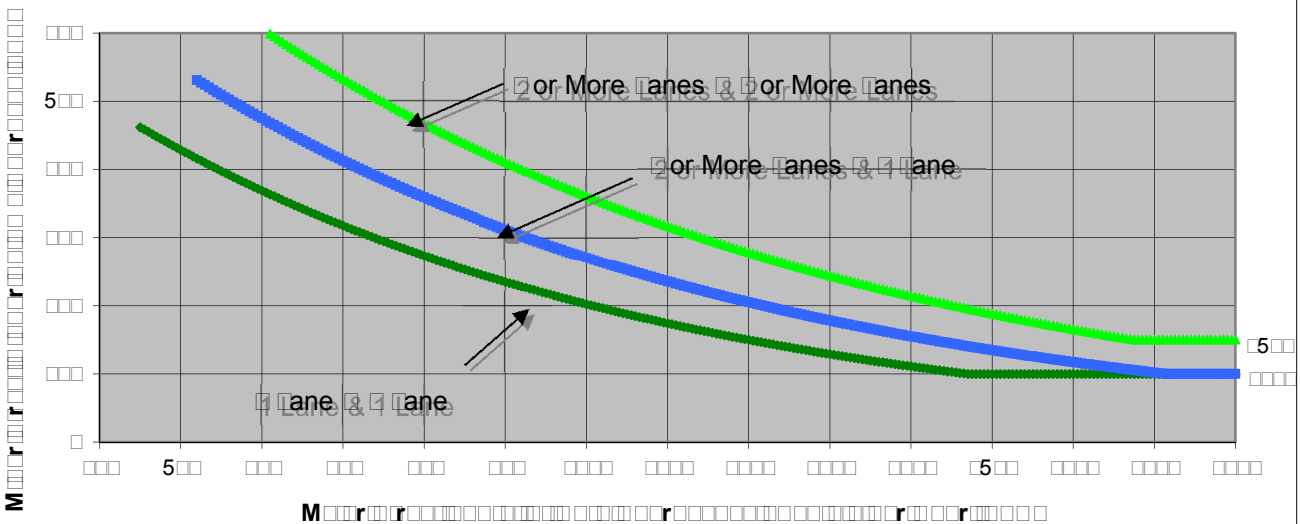
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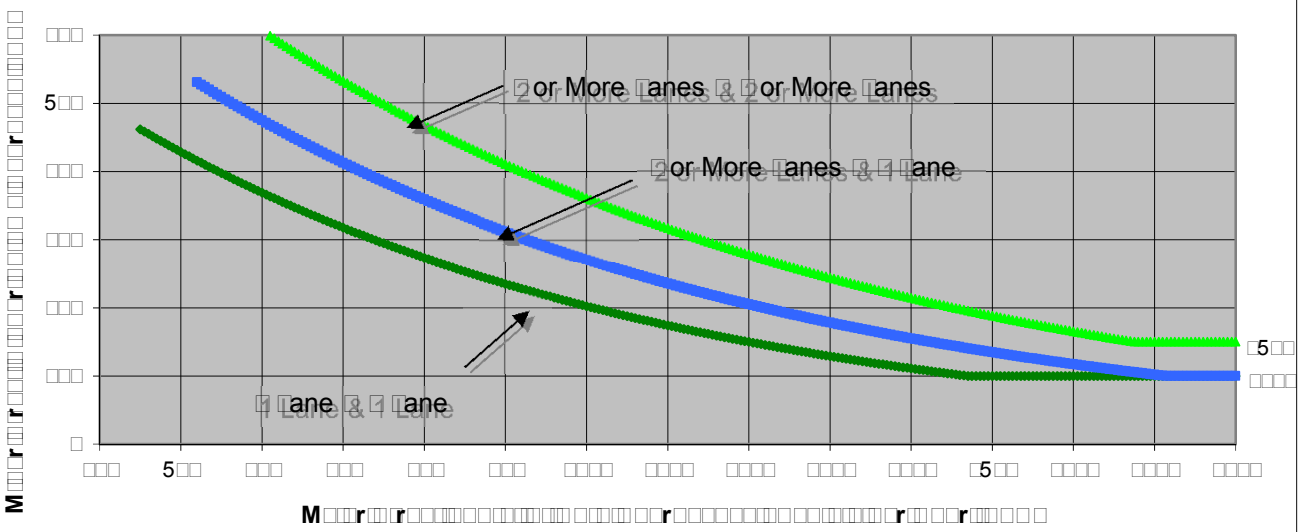

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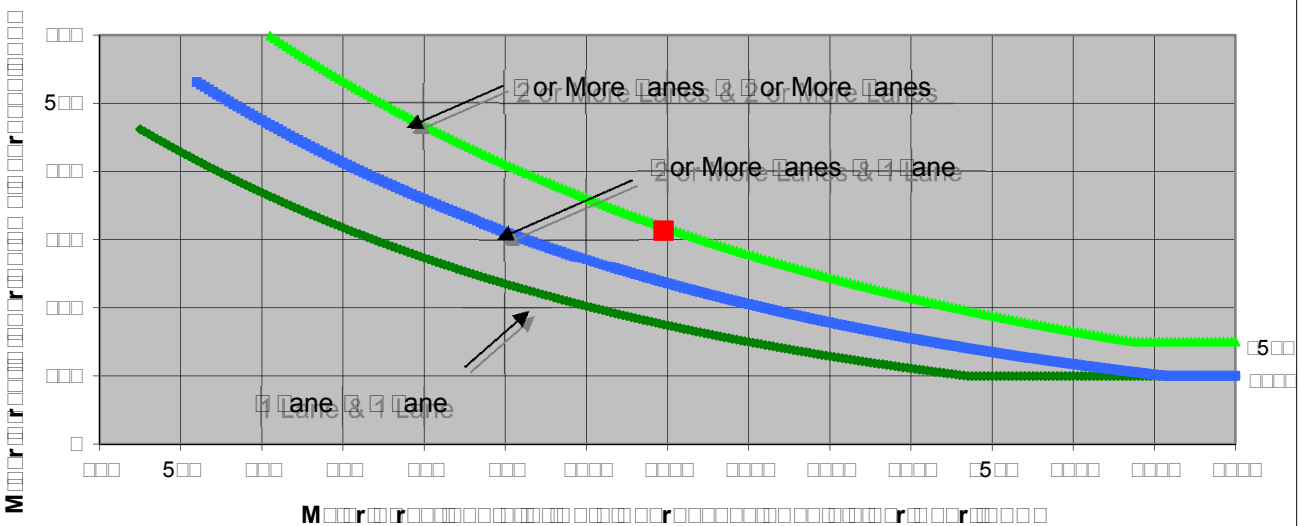

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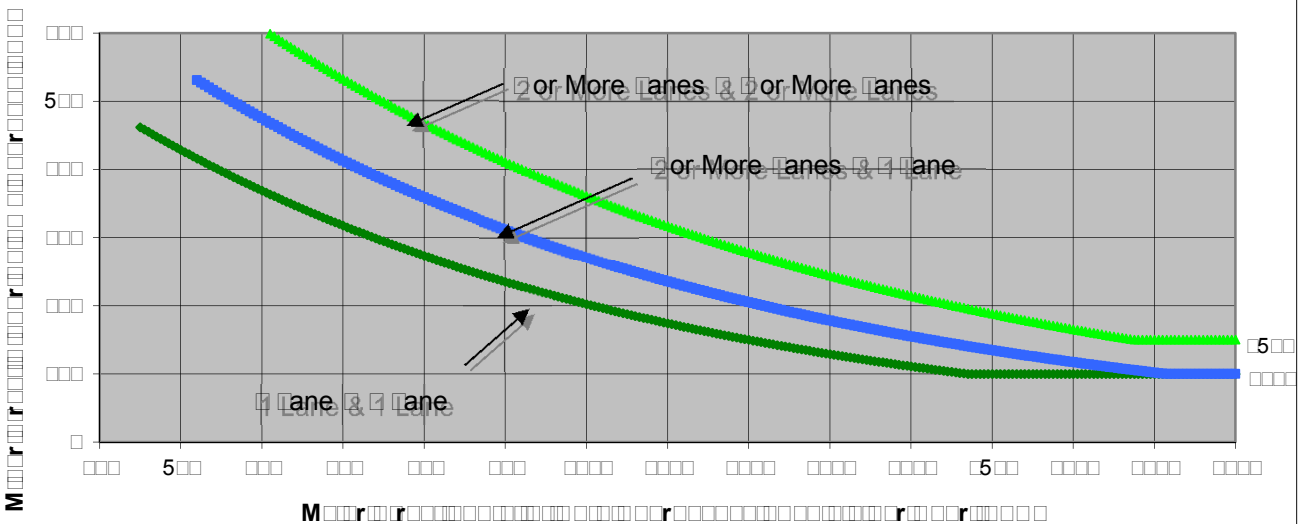

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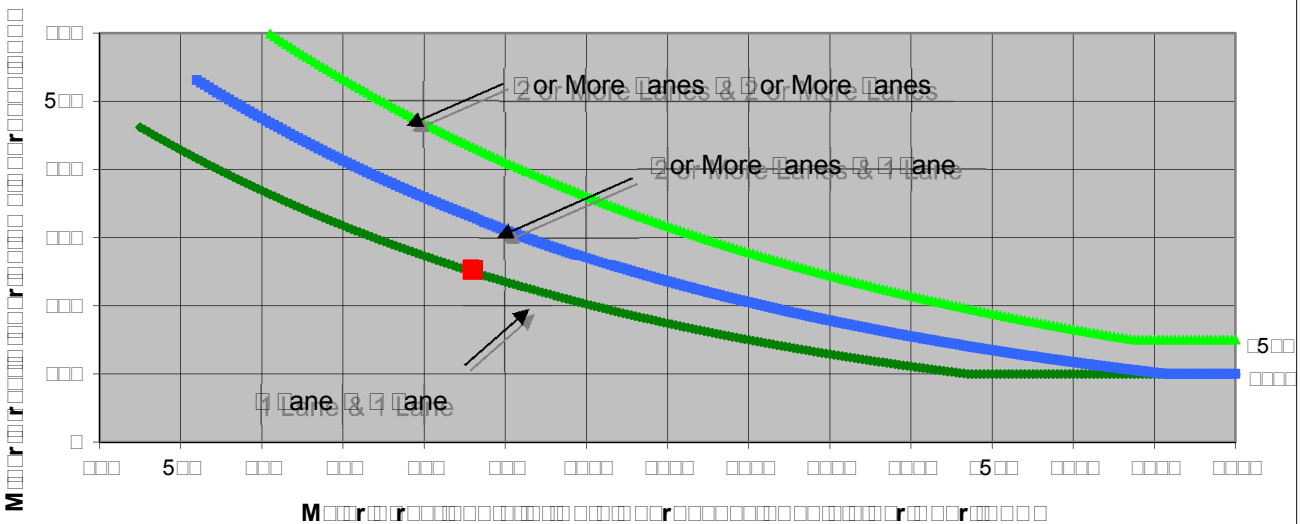
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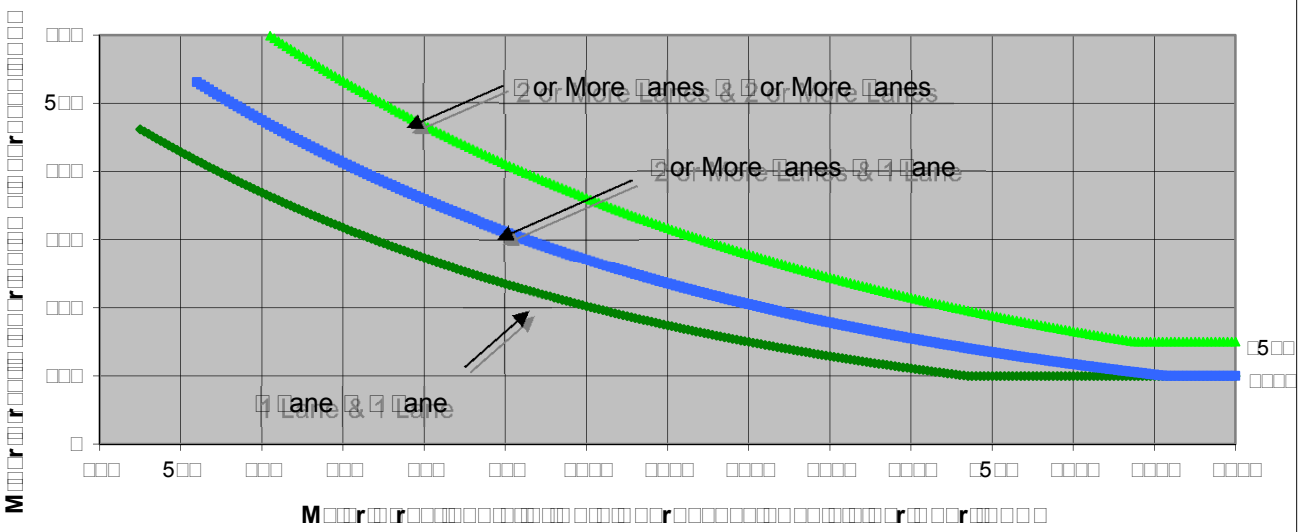
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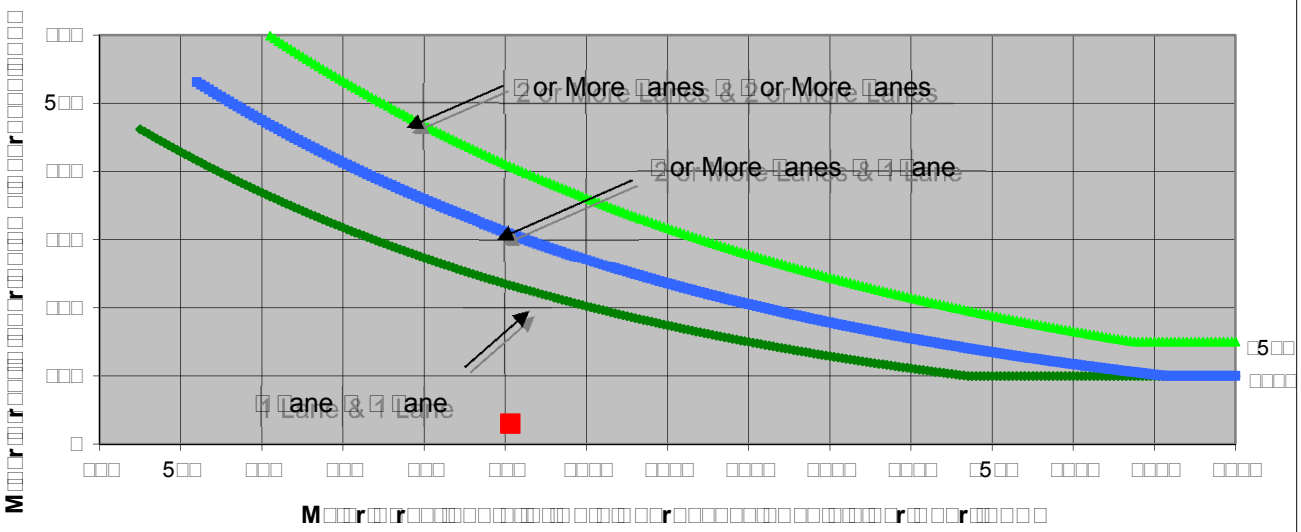

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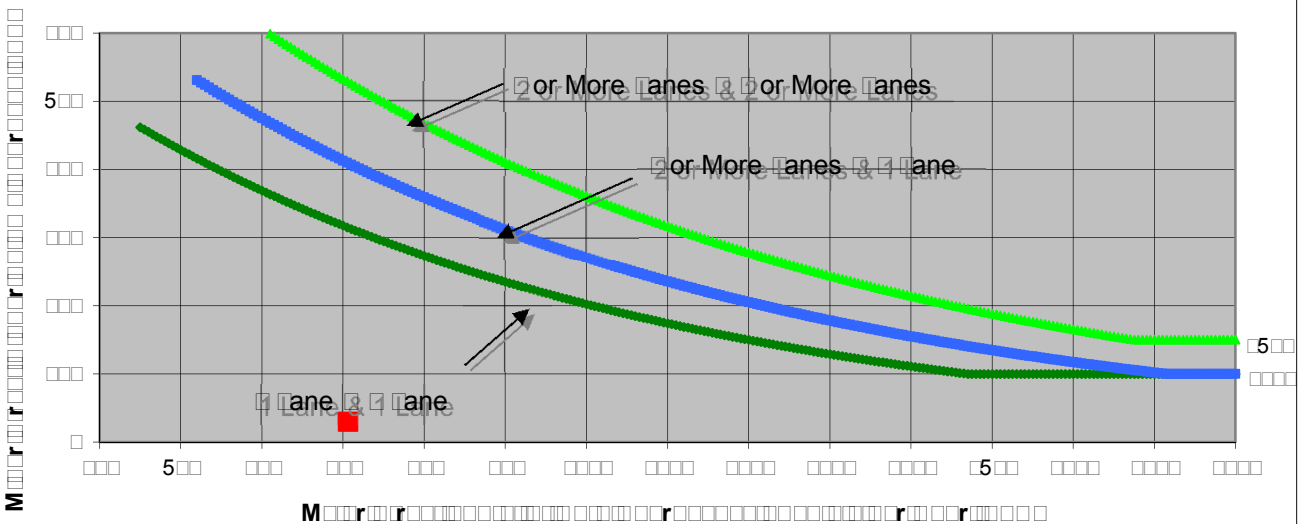

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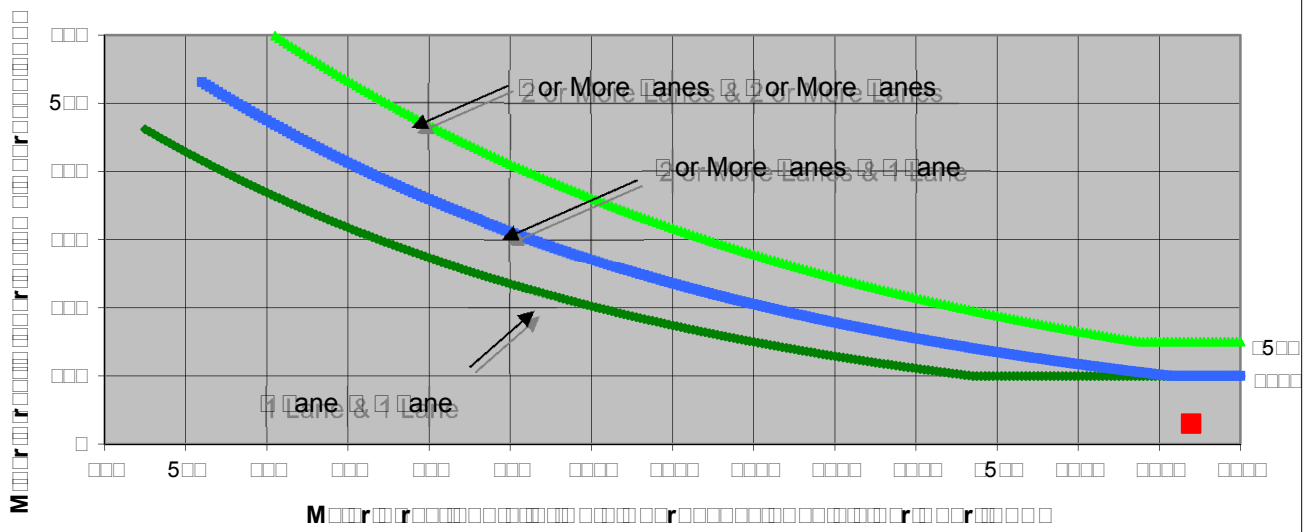
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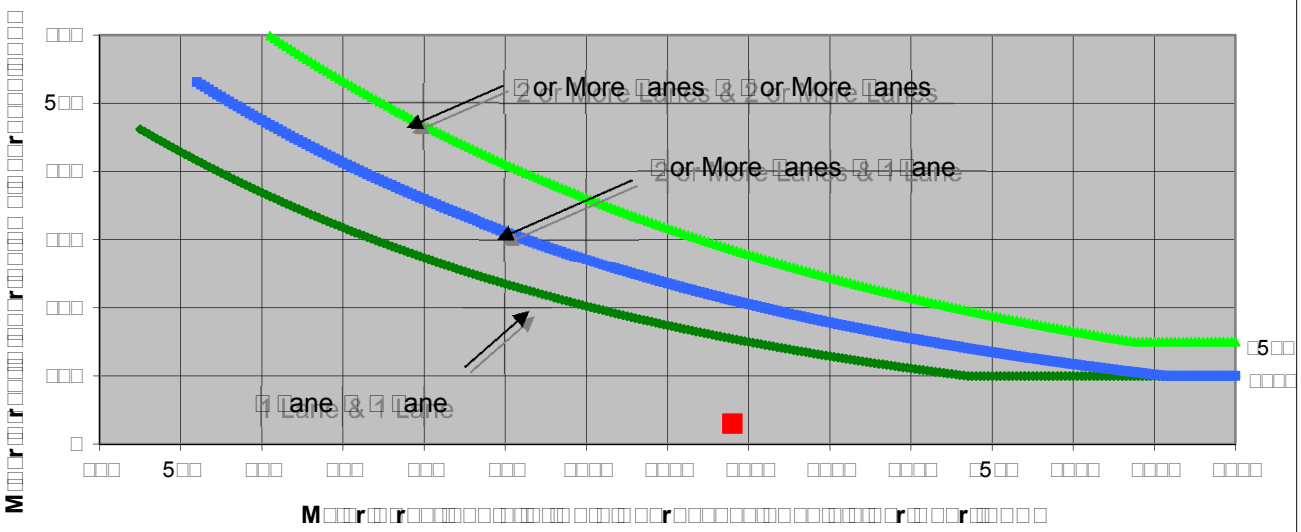

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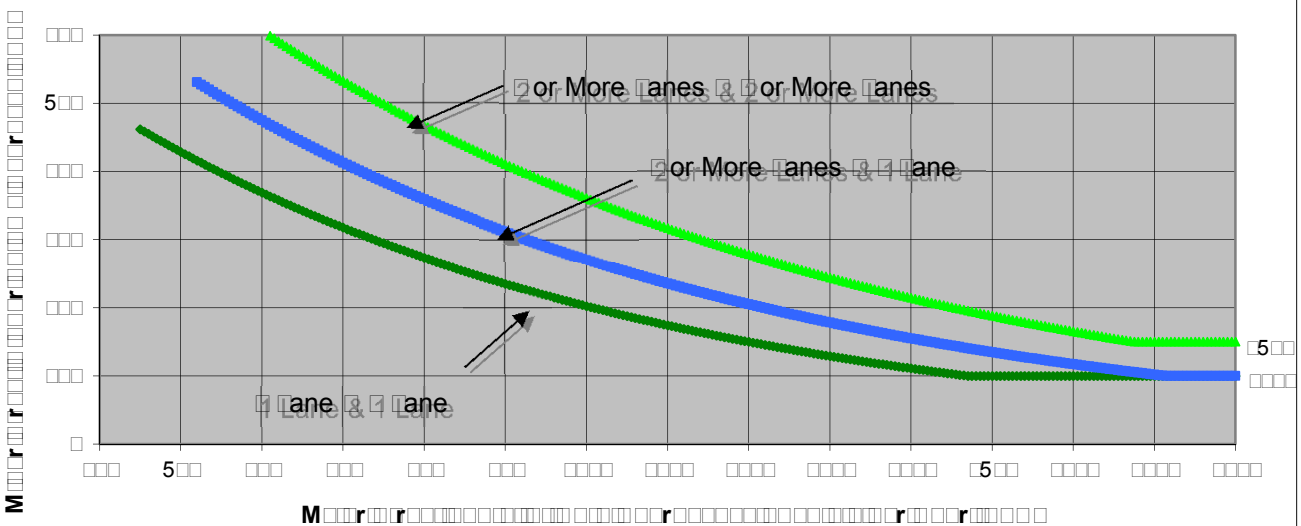

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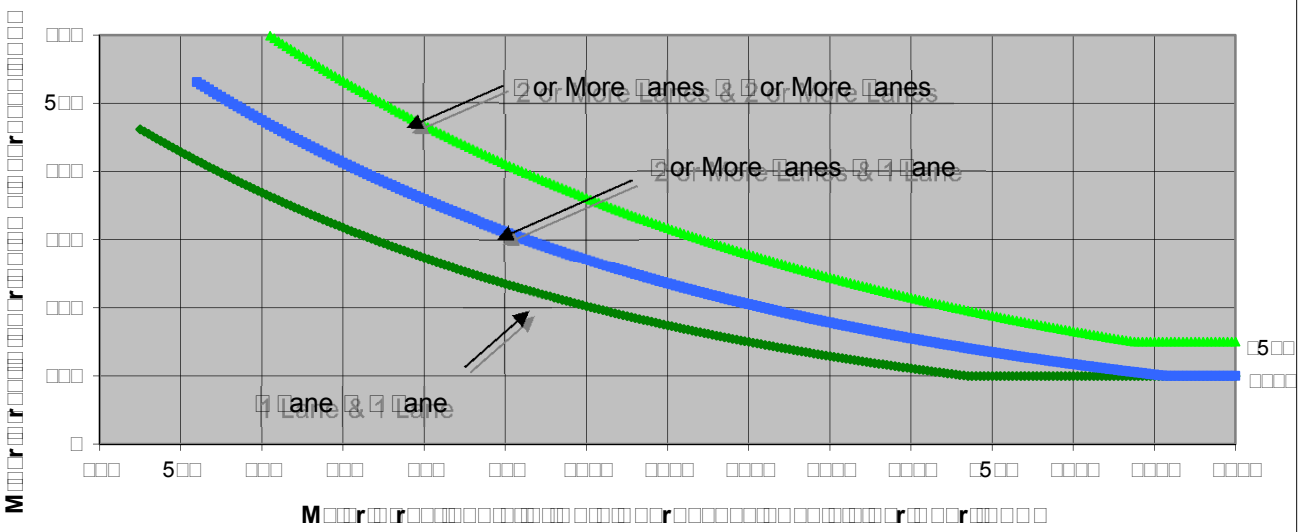

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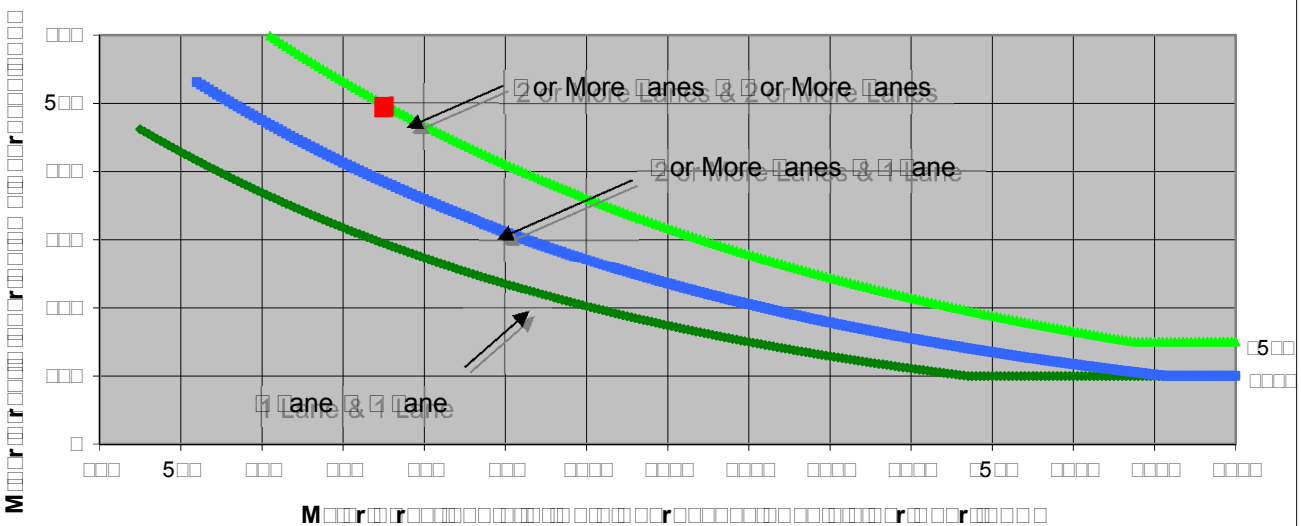
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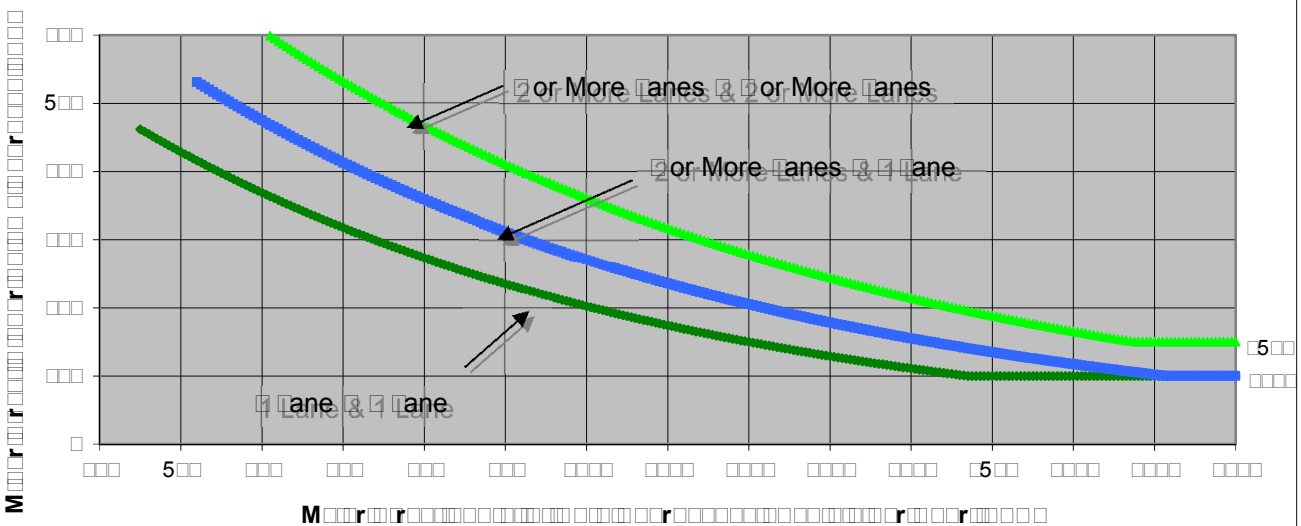
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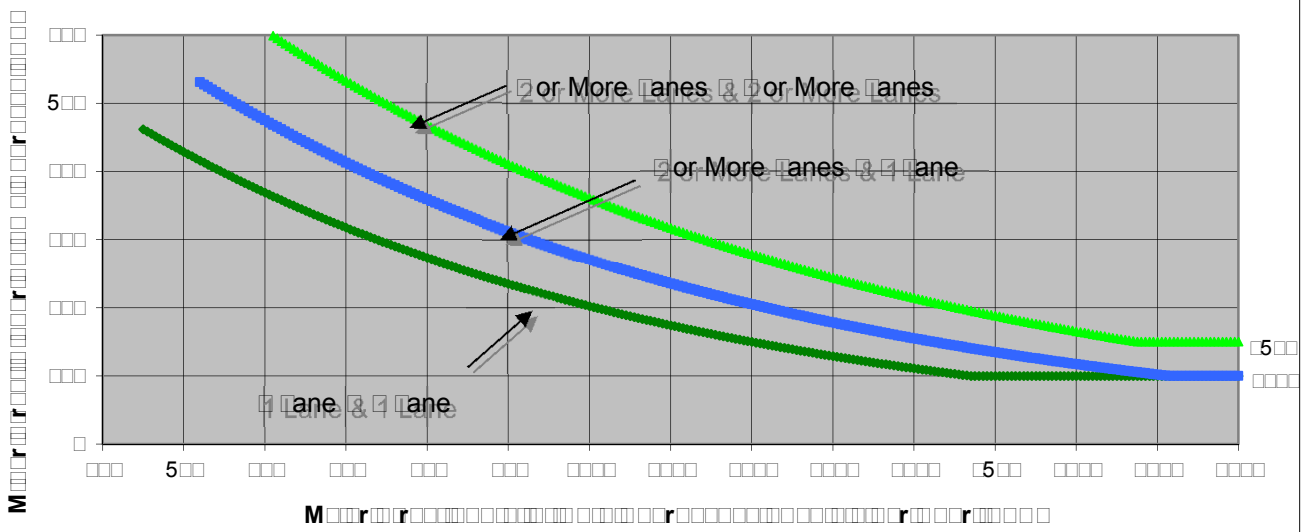

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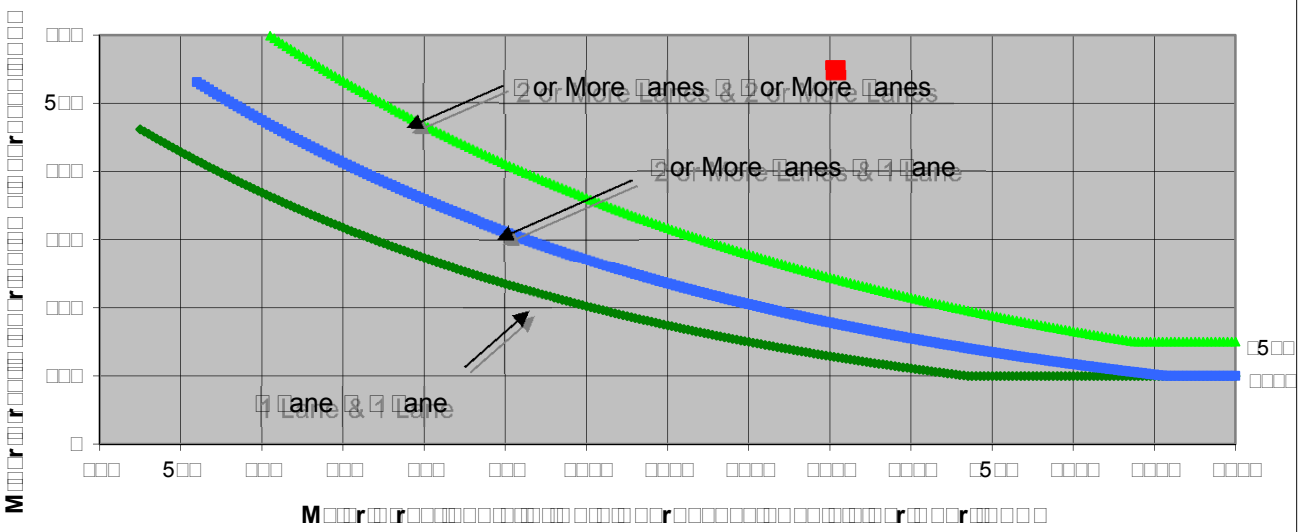
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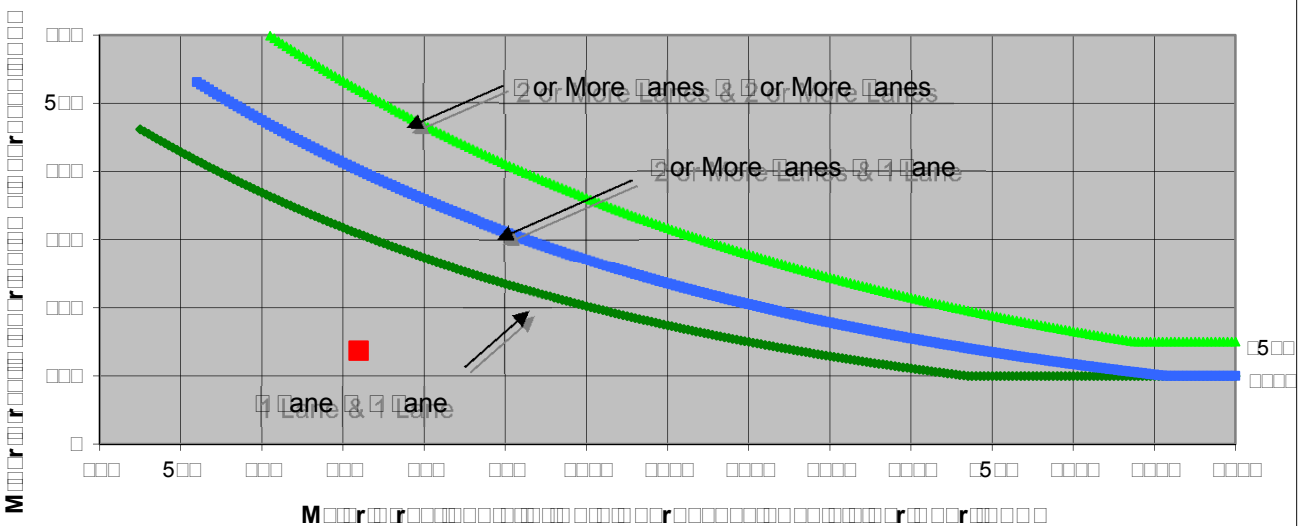

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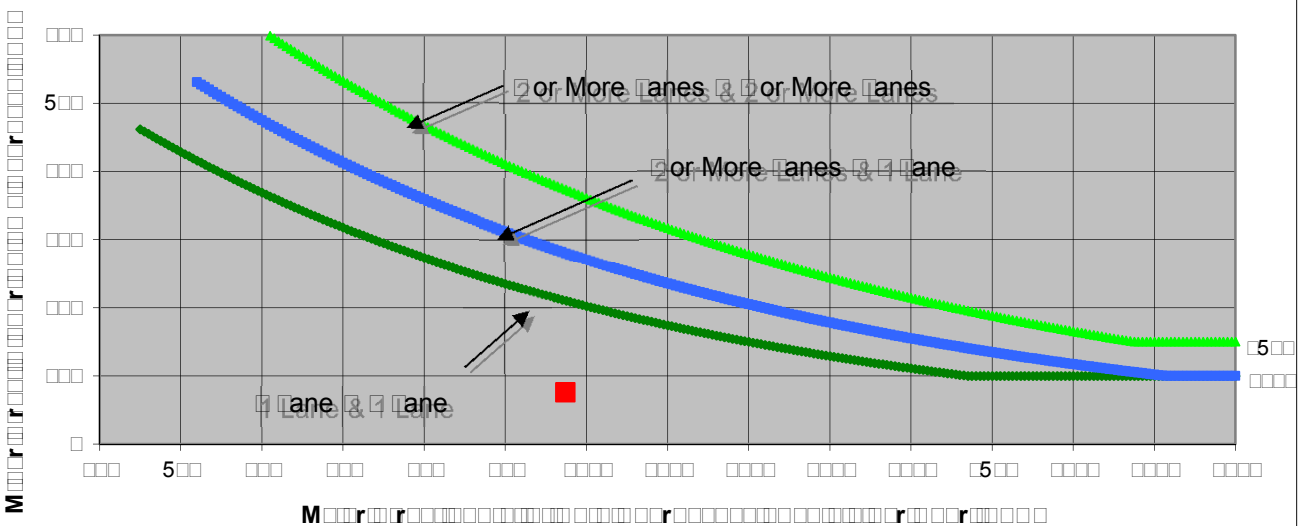
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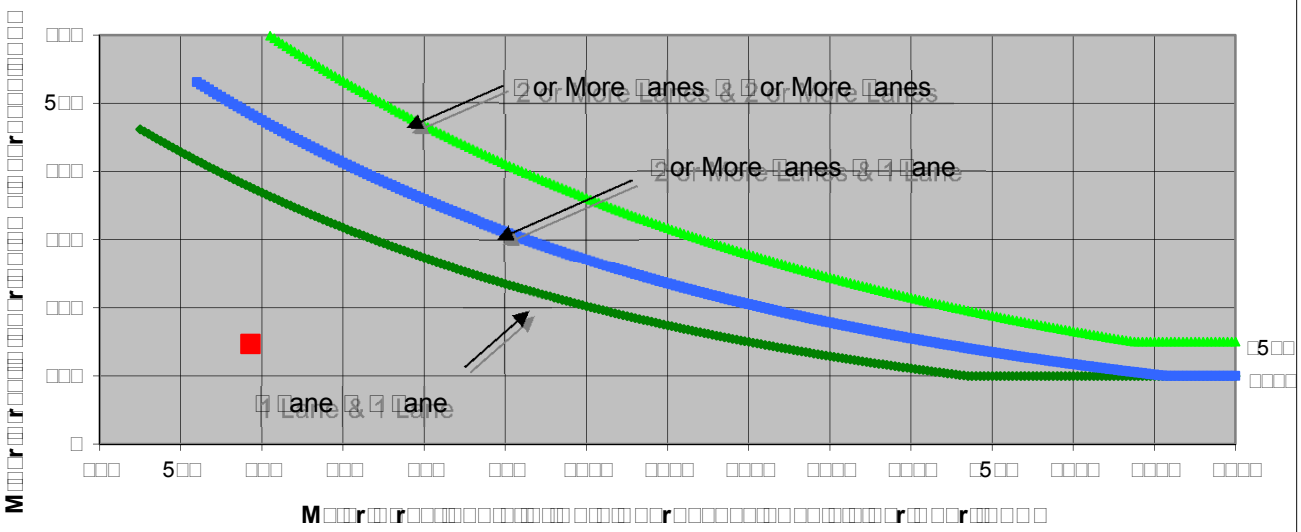
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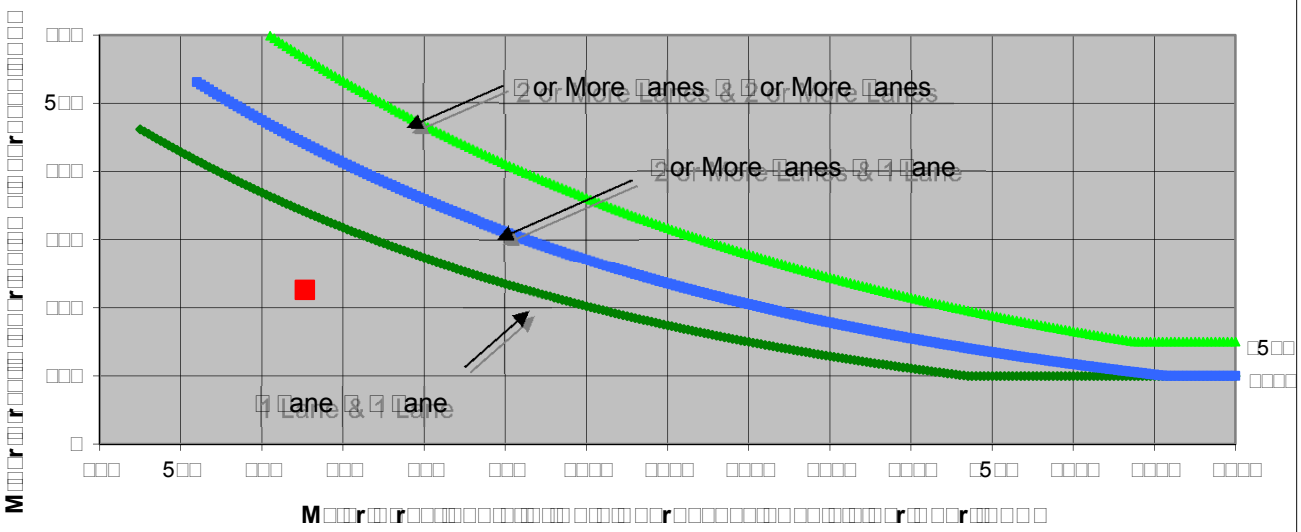

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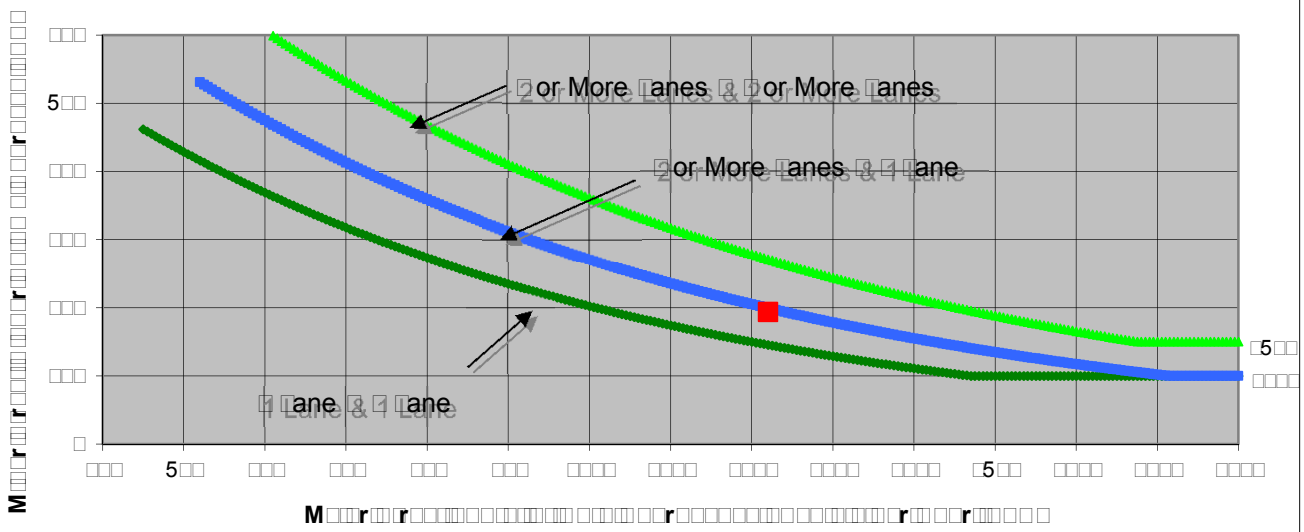

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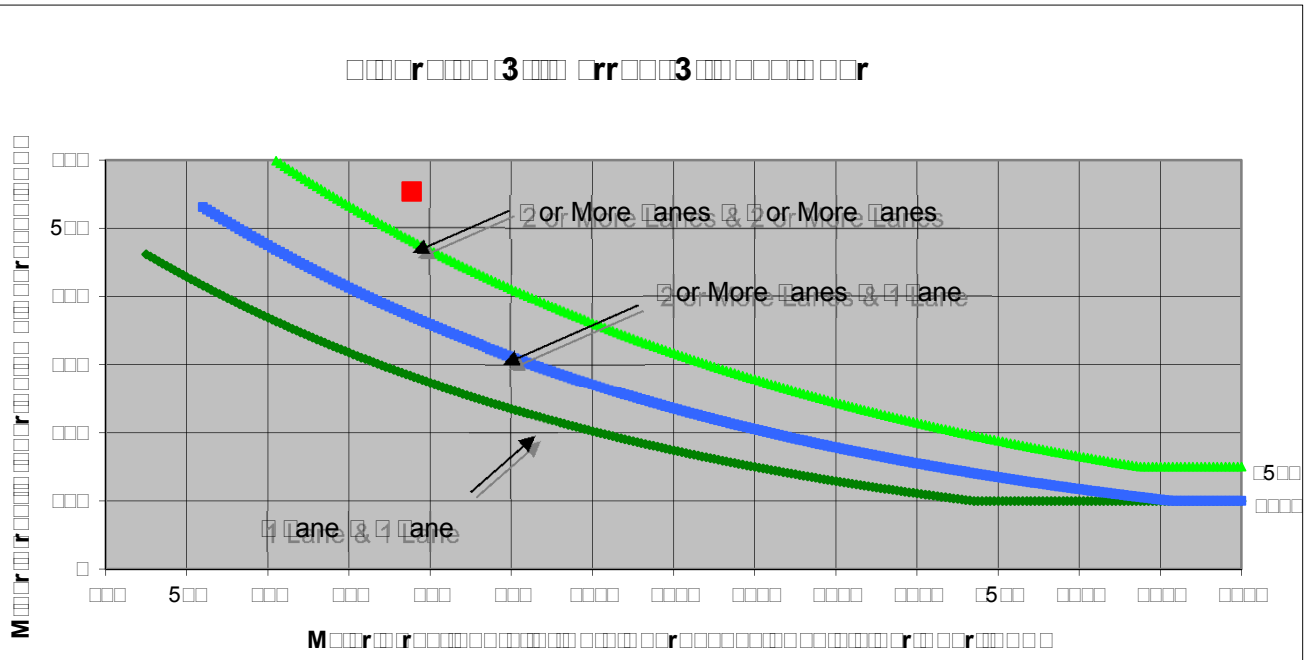
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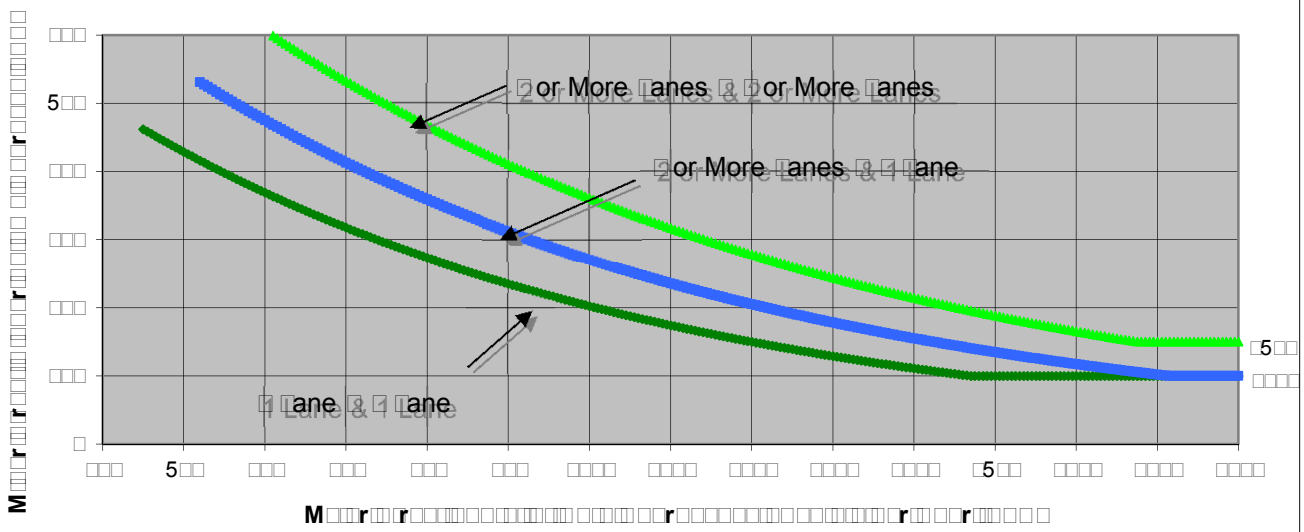

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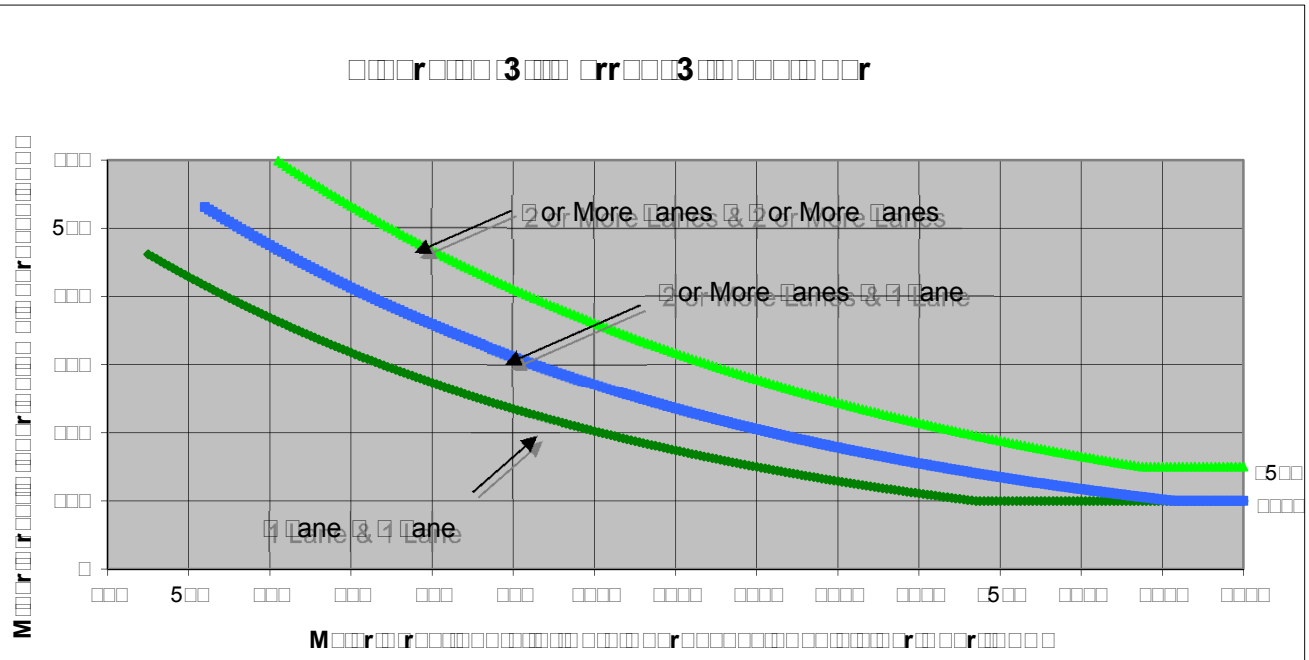

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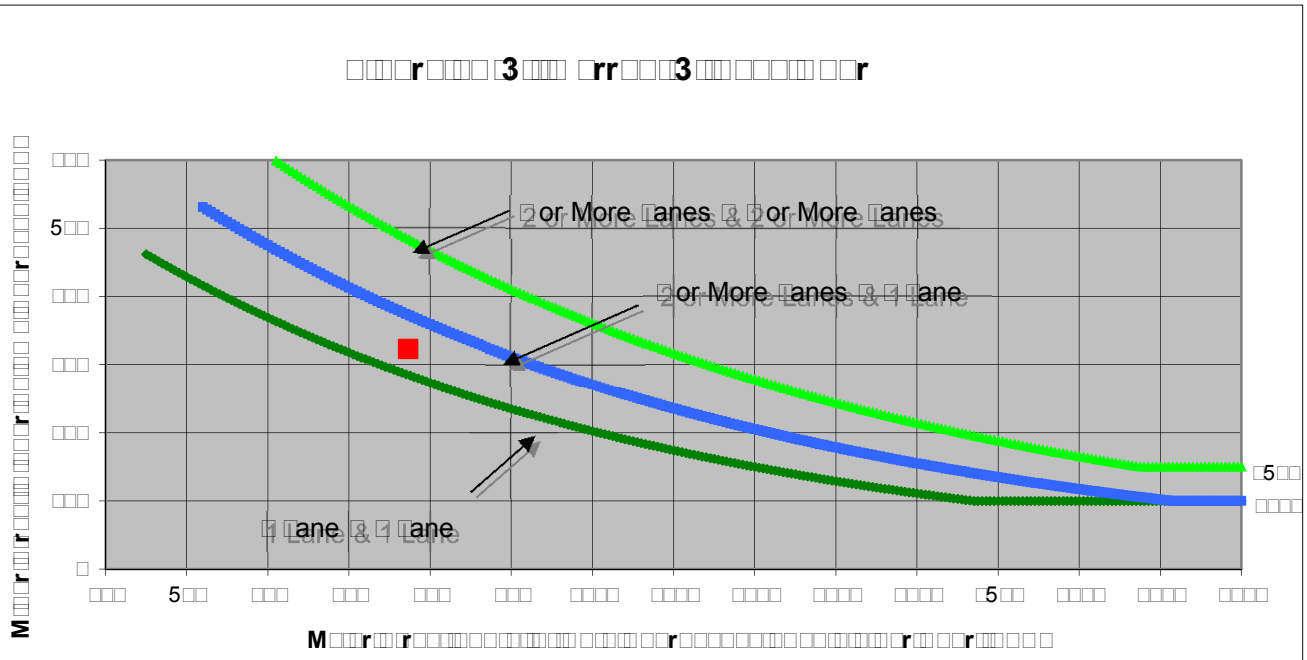
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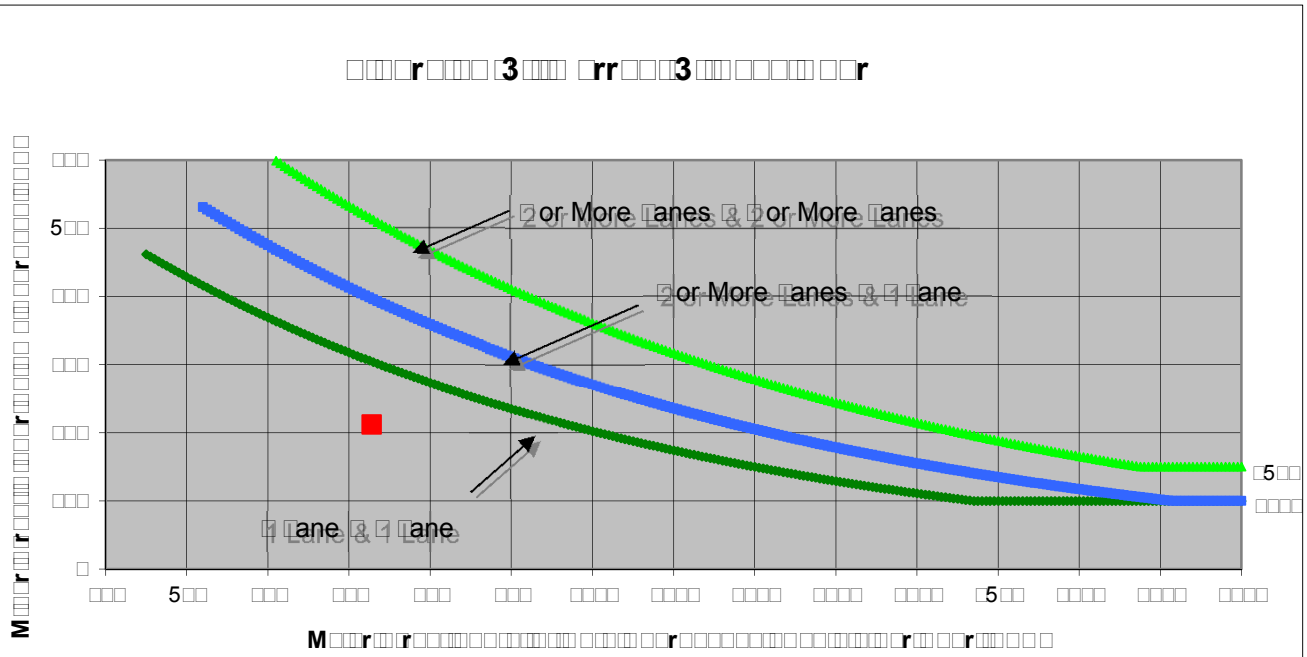
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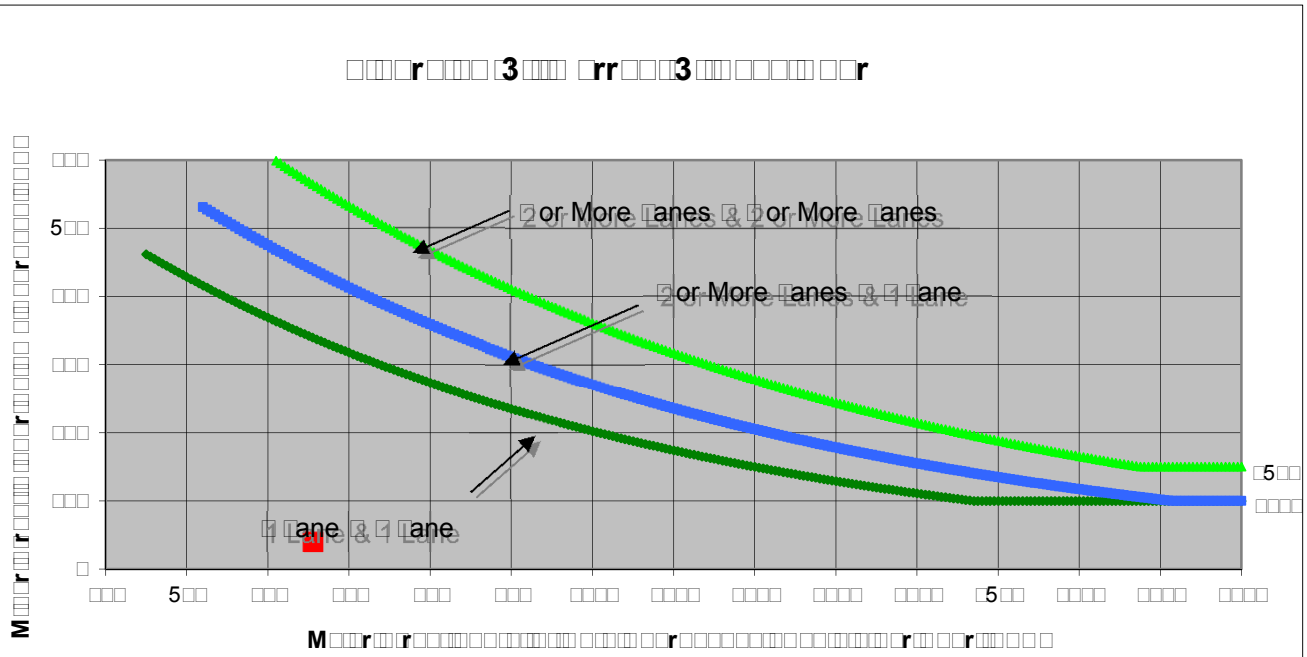
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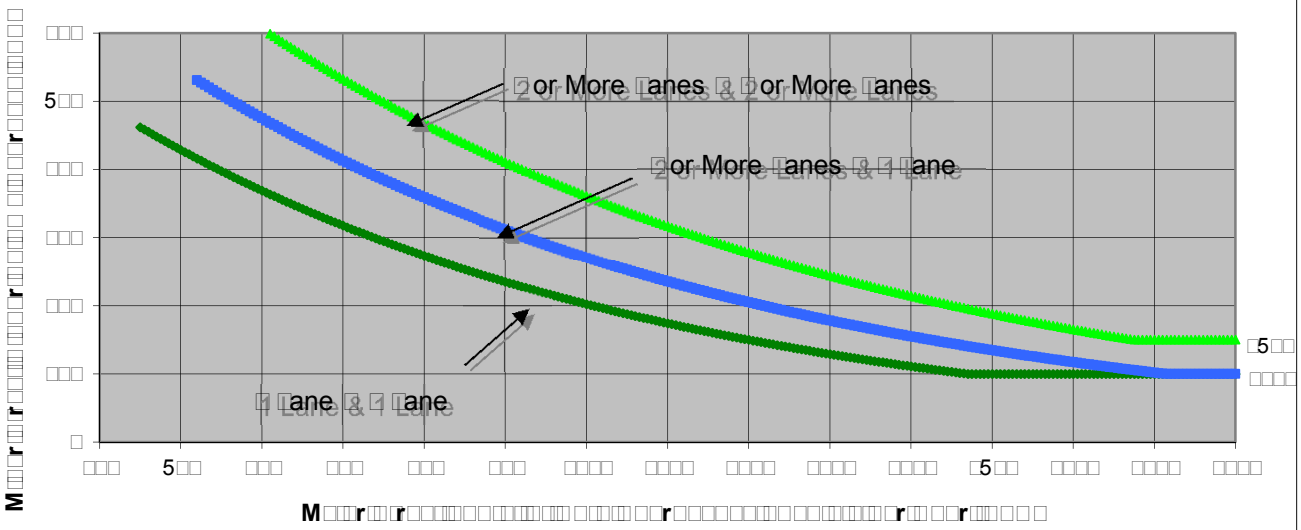

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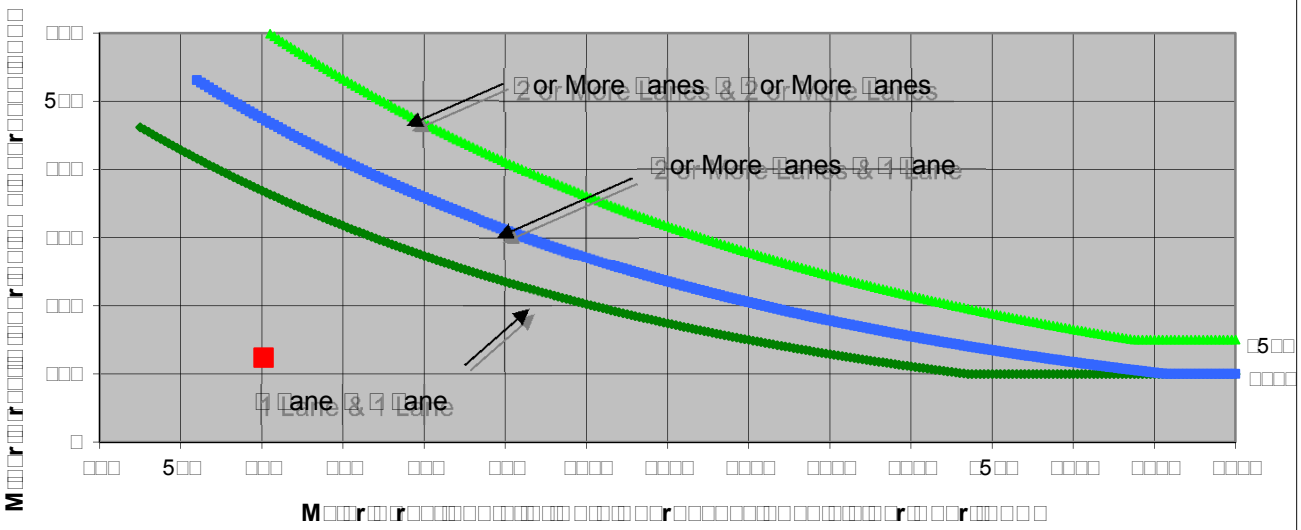

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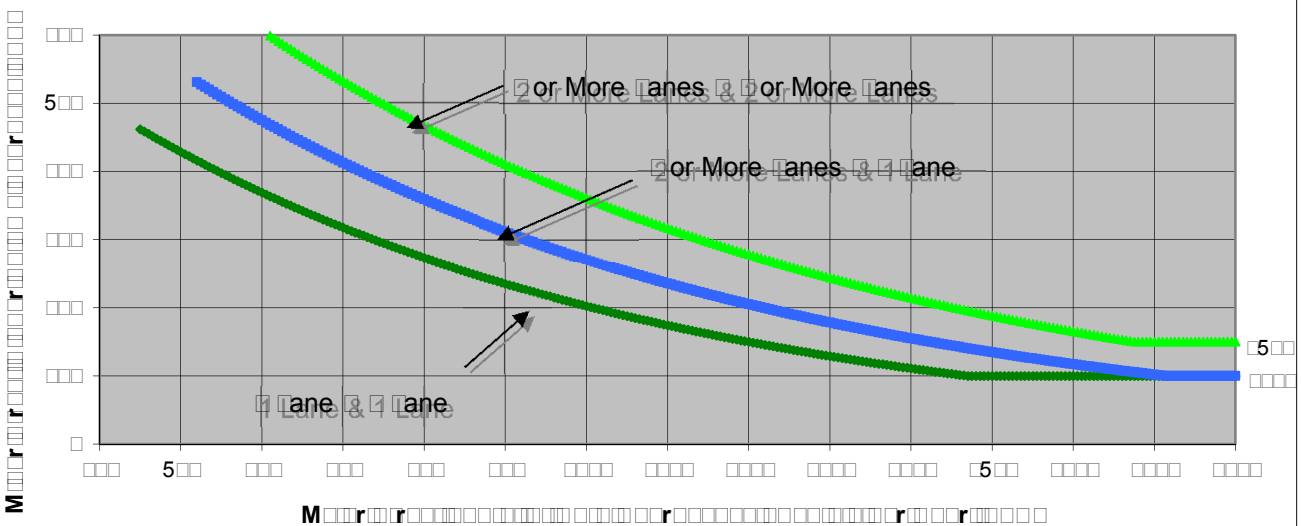

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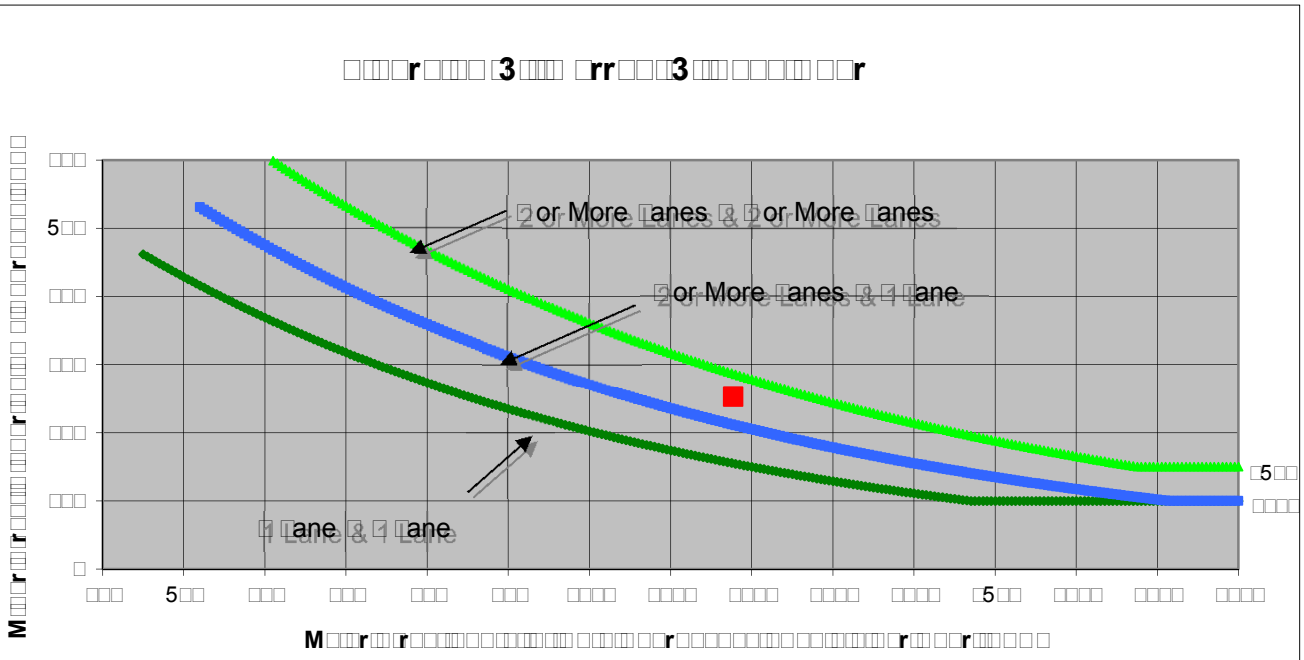
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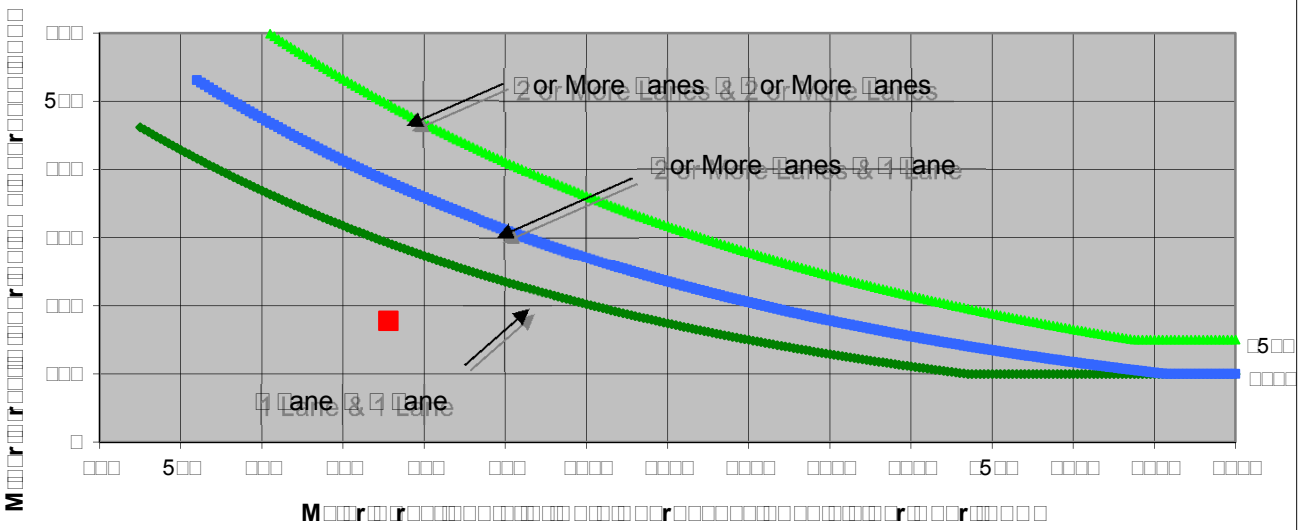

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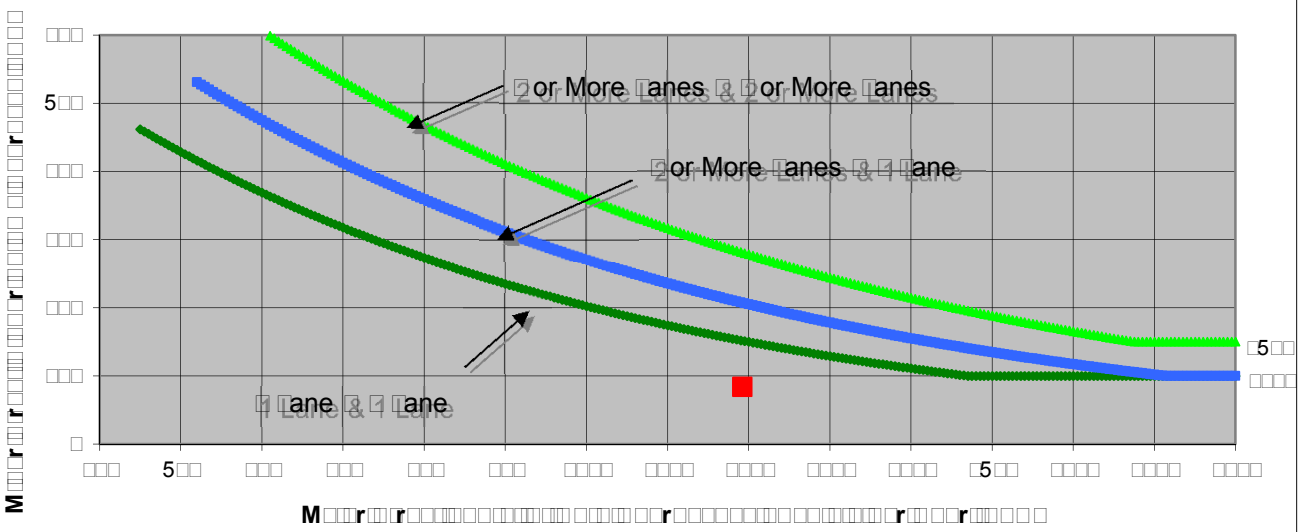

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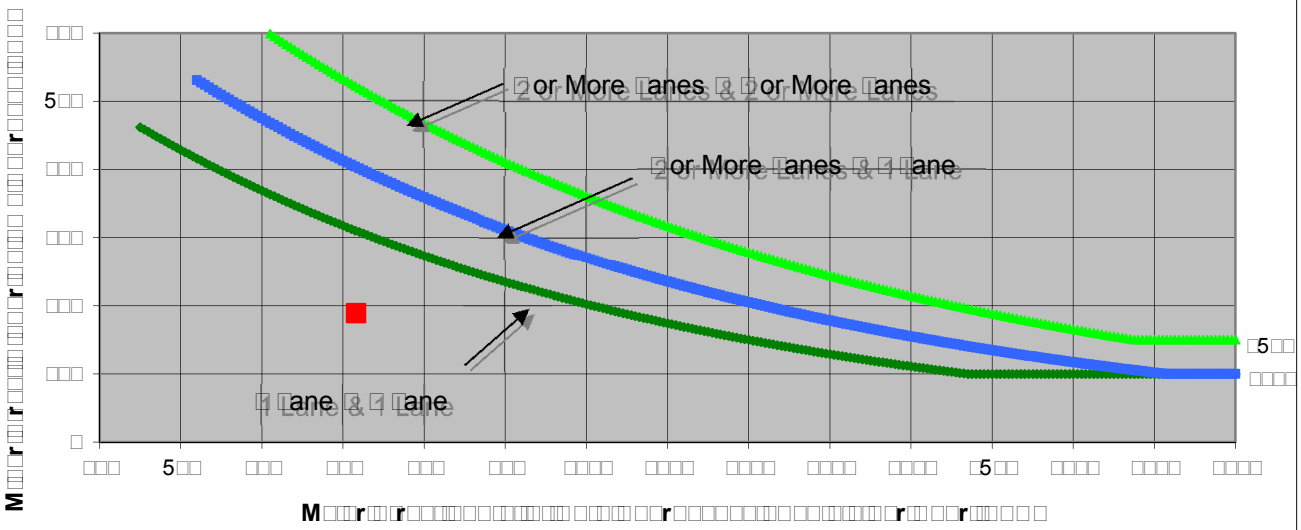
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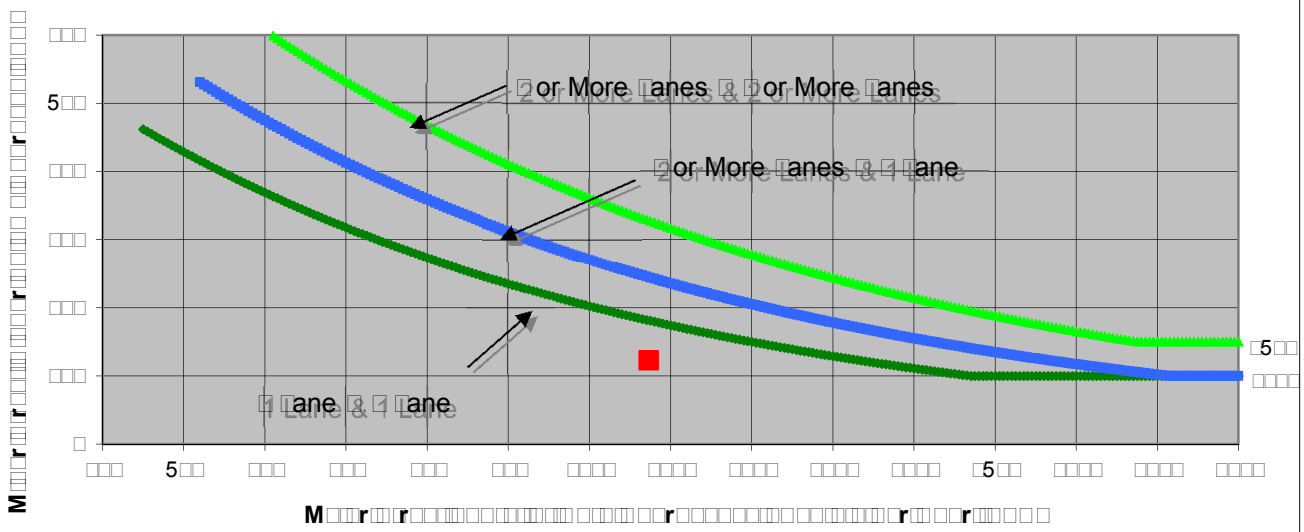
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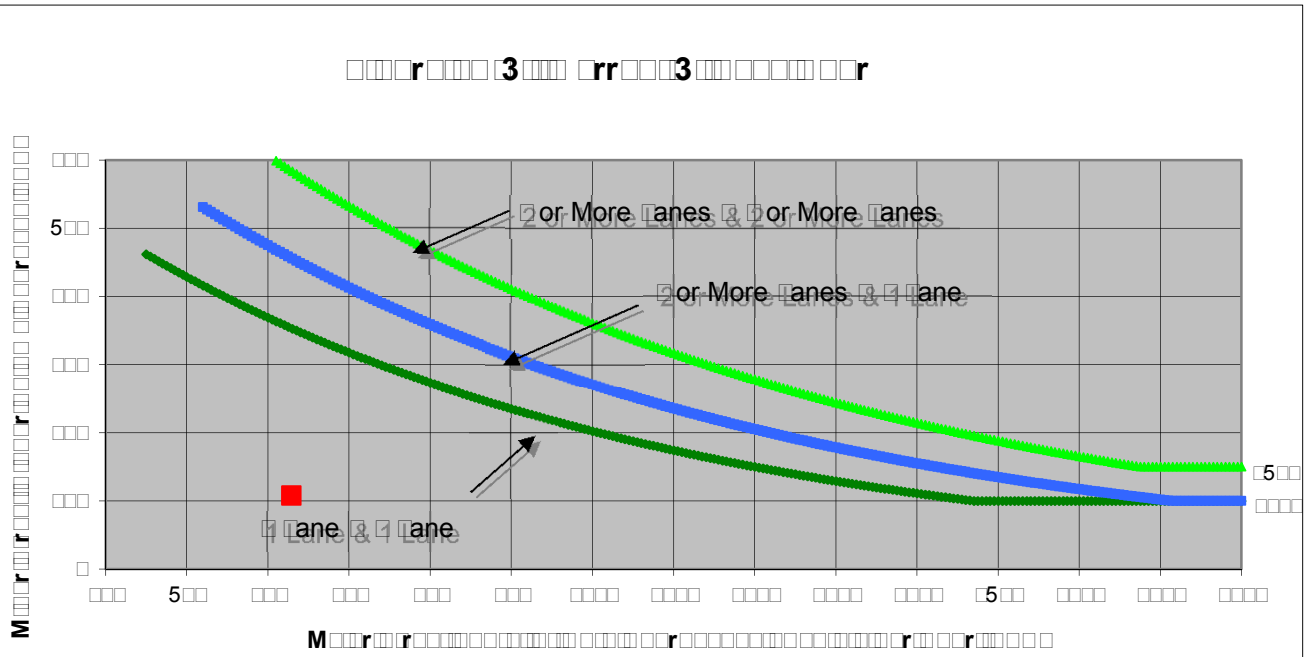
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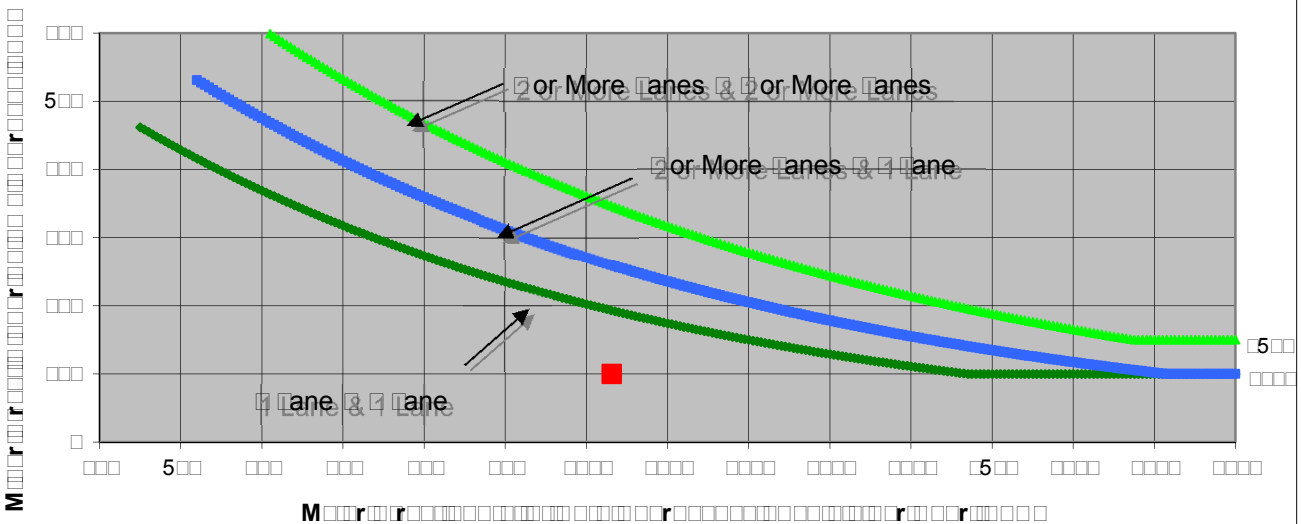
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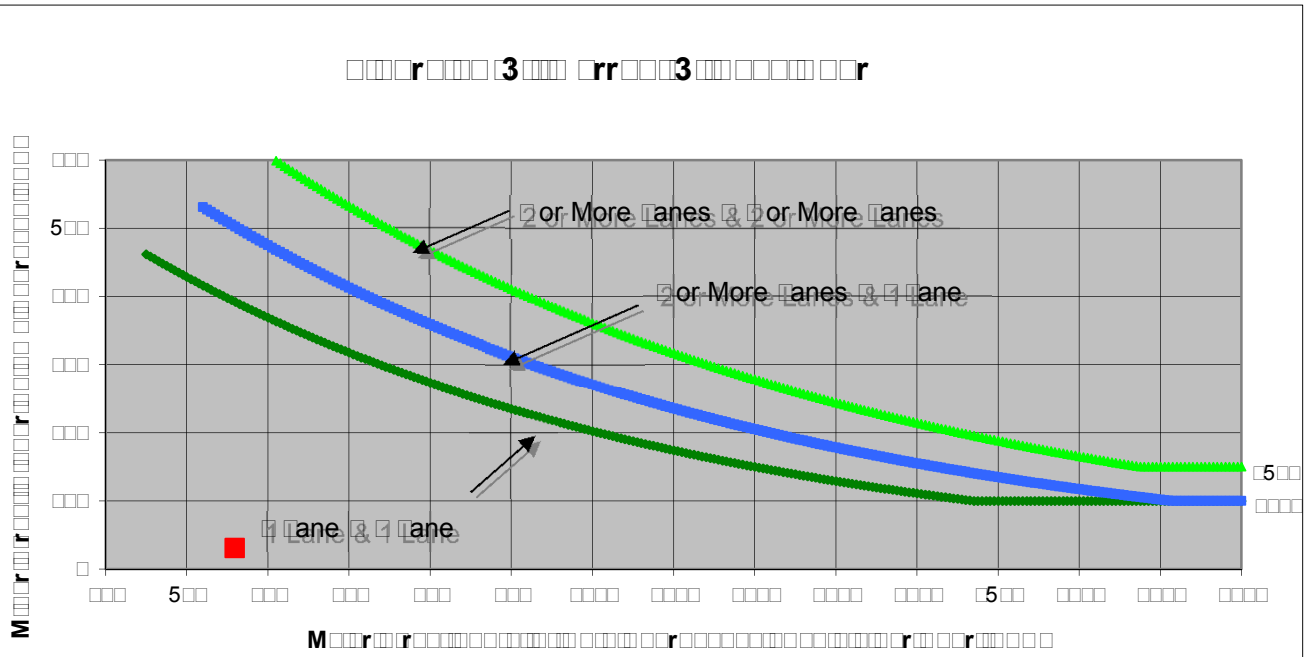
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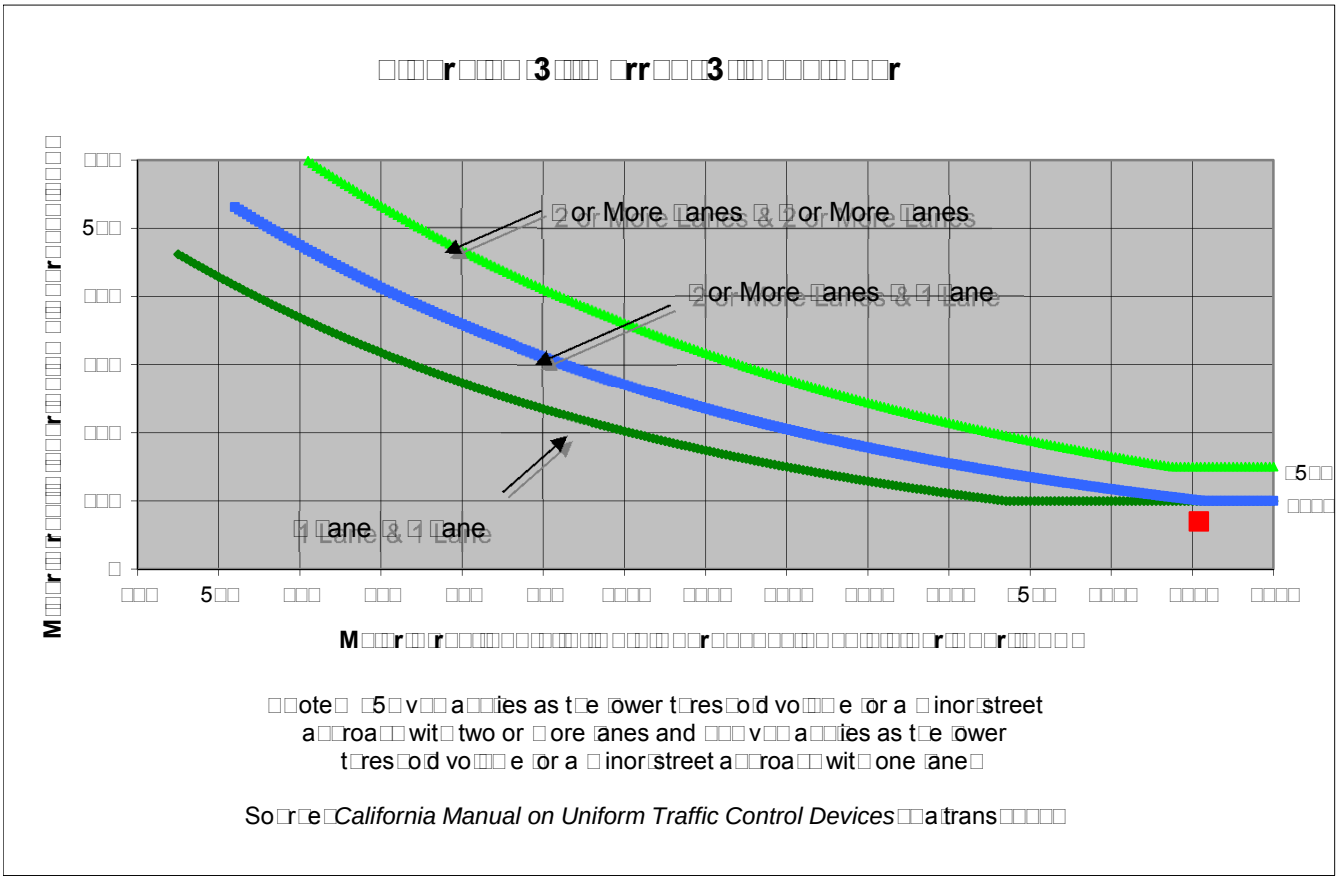

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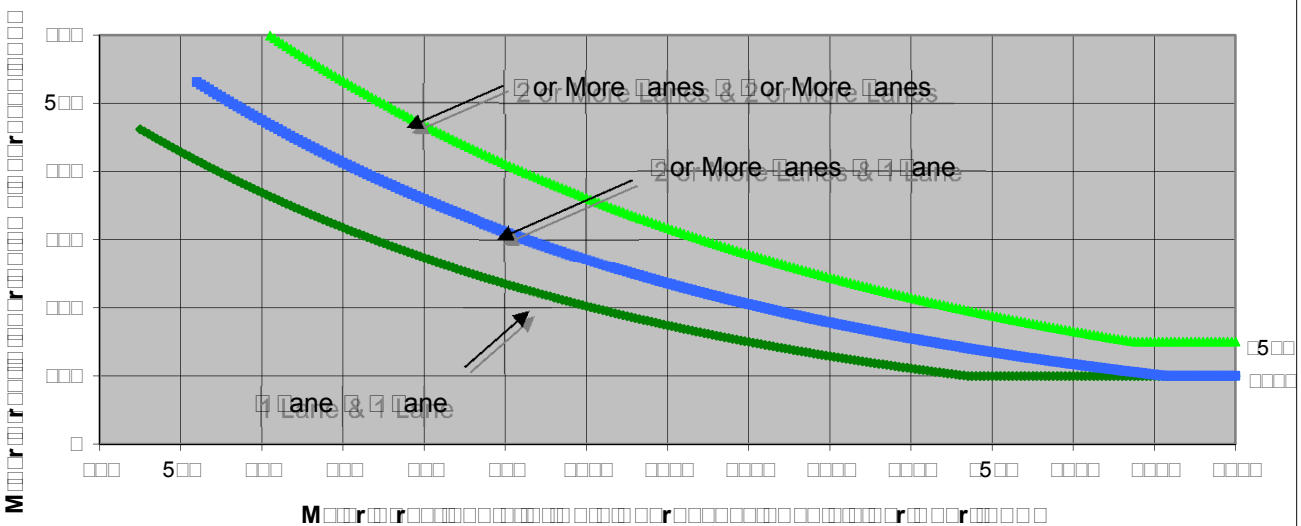

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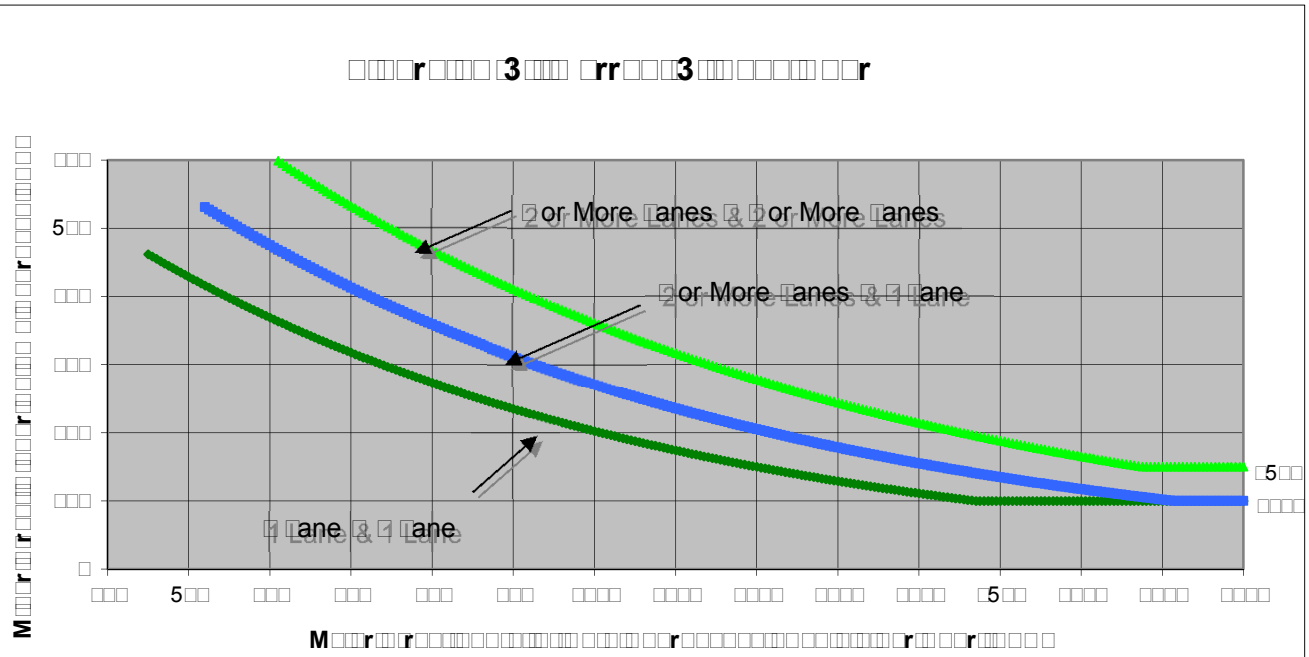

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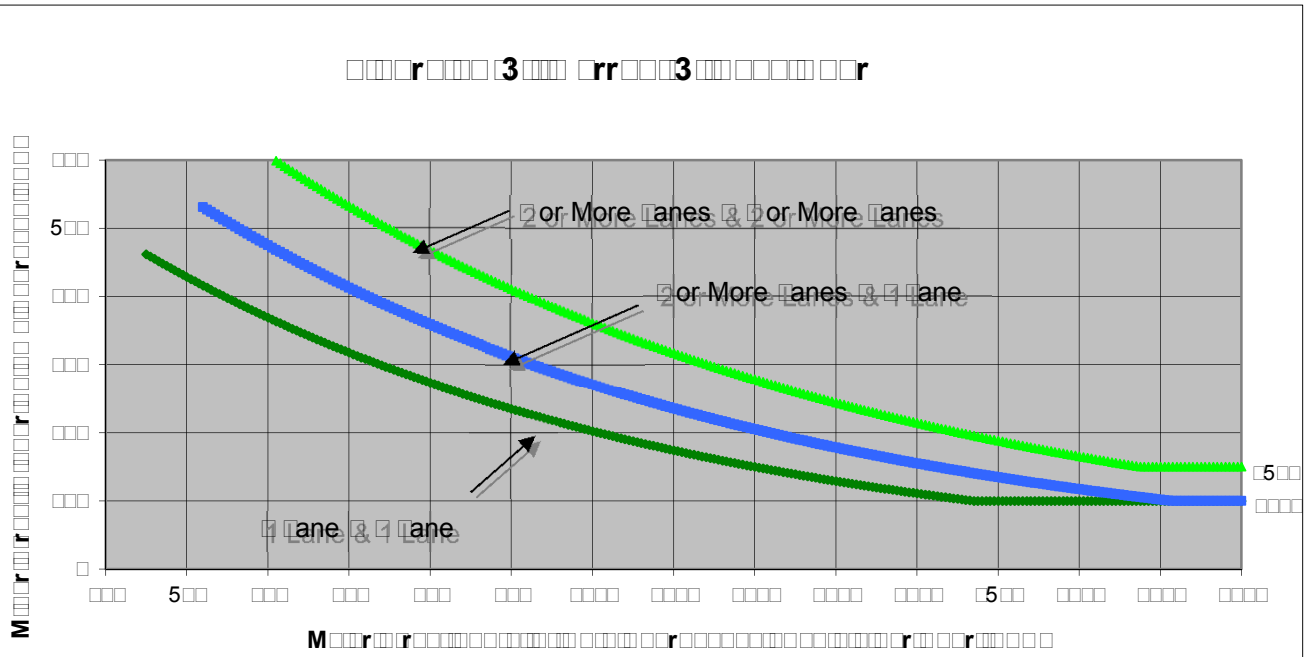
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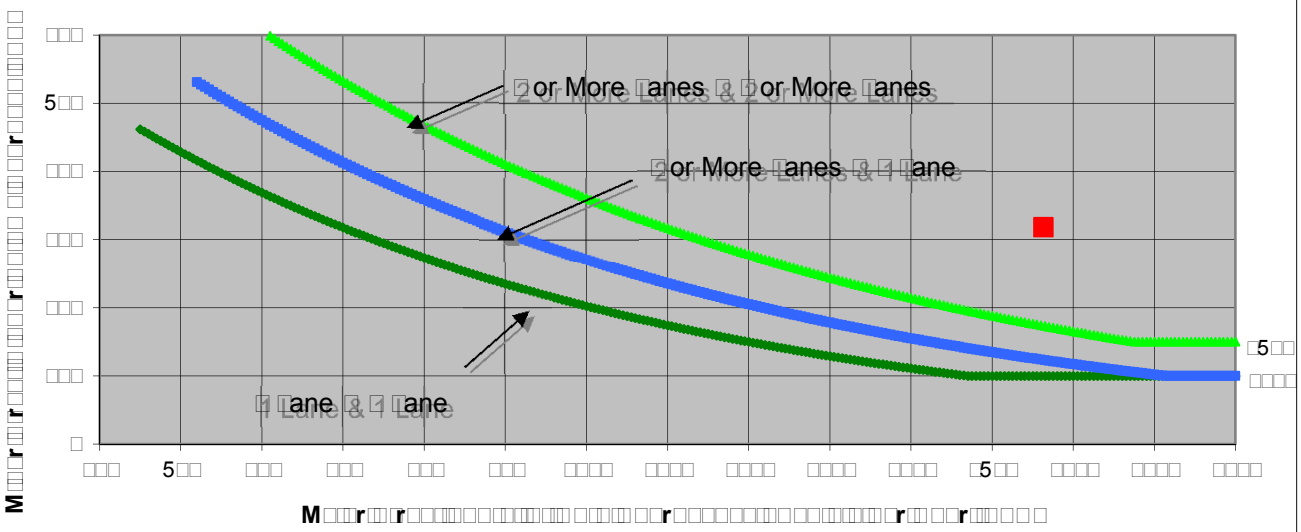
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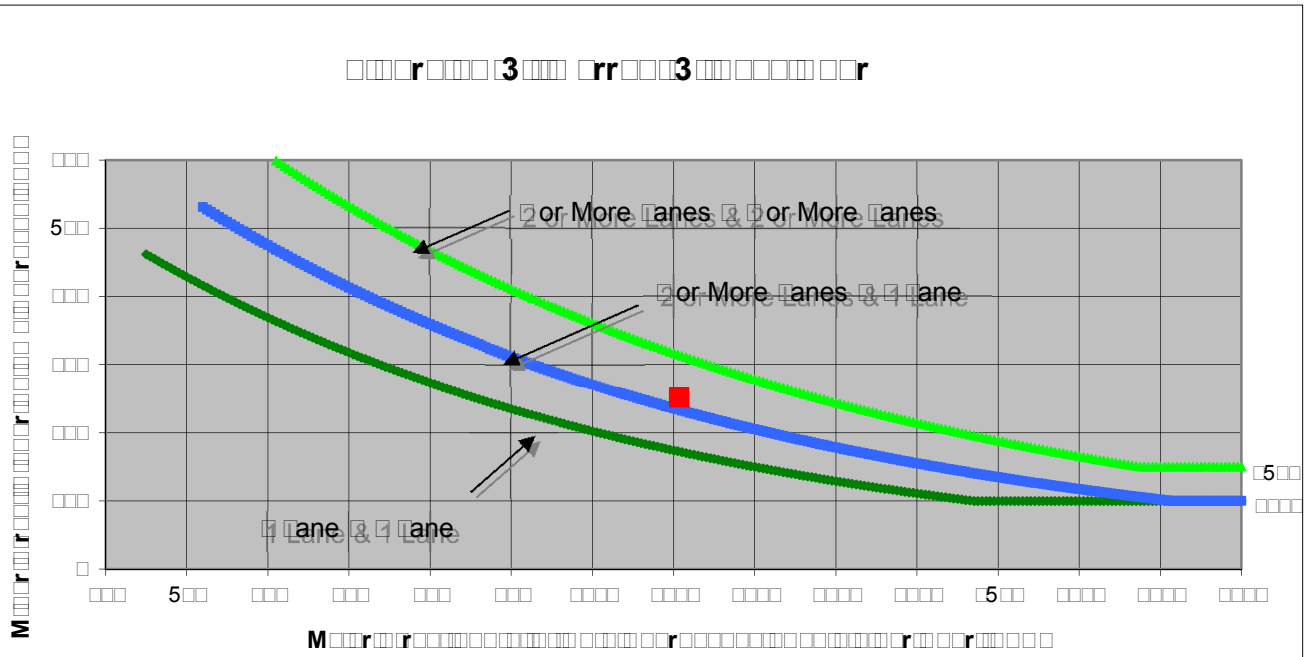
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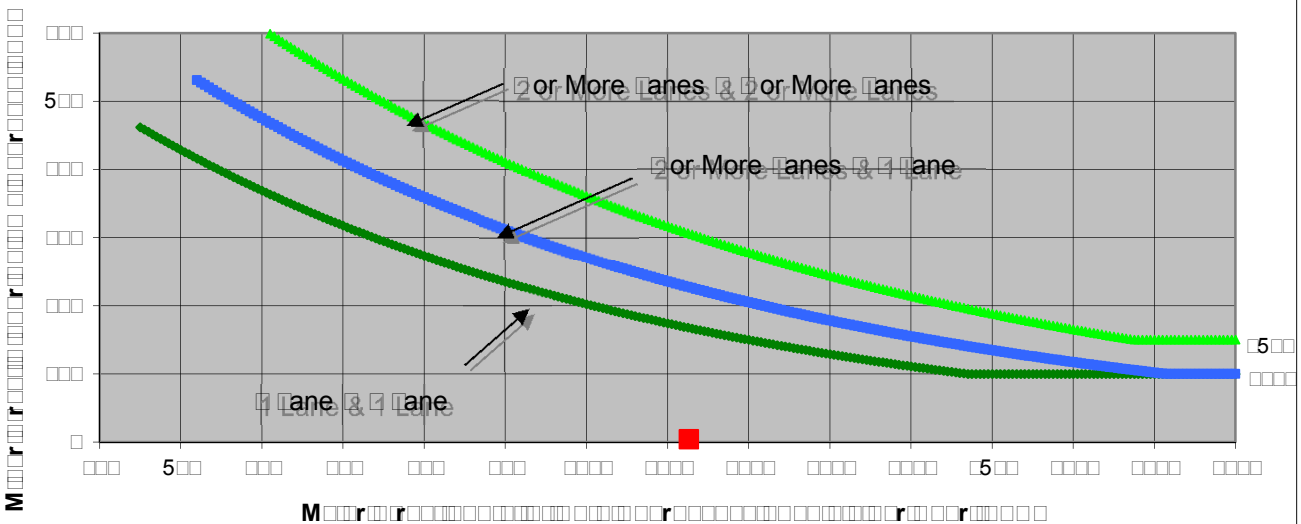

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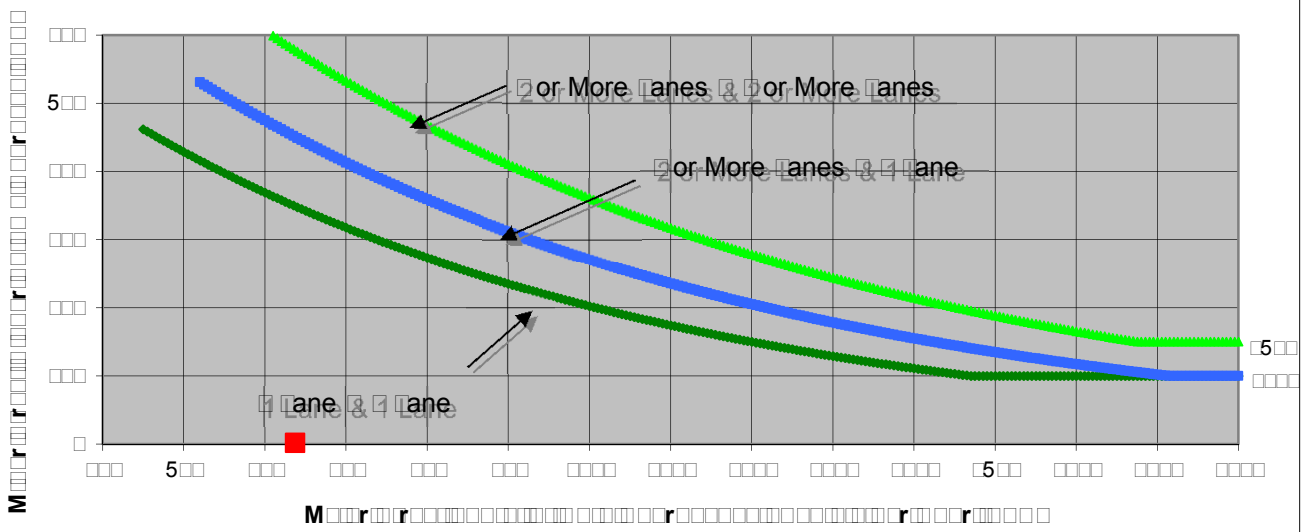
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Freeway Analysis Worksheets

FEHR PEERS

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd Off-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,963	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	857	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,963	857		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,991	214		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,963	857		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,955	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,963	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,106	pcph	9,600	pcph	No
Ramp volume, v_R	857	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,004	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,955	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.90	
Density, D_R	36.6	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.375	
Space mean speed in ramp influence area, S_R	59.5	mph
Space mean speed in outer lanes, S_O	72.9	mph
Space mean speed for all vehicles, S	65.6	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Off-ramp to On-ramp
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,106	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,777	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,106	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,777	pcphpl
Average passenger-car speed, S	66.1	mph
Volume-to-capacity ratio, v/c	0.74	
Density, D	26.9	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd On-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,050	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	944	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,050	944		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,013	236		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,050	944		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.100		(Equation 13-3, 13-4, or 13-5)
v_{12} =	709	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,106	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,050	pcph	9,600	pcph	No
Ramp volume, v_R	944	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,198	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,842	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,786	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.82	
Density, D_R	32.1	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.457	
Space mean speed in ramp influence area, S_R	57.2	mph
Space mean speed in outer lanes, S_O	64.1	mph
Space mean speed for all vehicles, S	60.7	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd to Keller Ave
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	8,050	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	2,013	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	8,050	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,013	pcphpl
Average passenger-car speed, S	62.3	mph
Volume-to-capacity ratio, v/c	0.84	
Density, D	32.3	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,050	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	554	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,050	554		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,013	139		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,050	554		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,822	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,050	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,496	pcph	9,600	pcph	No
Ramp volume, v_R	554	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,114	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,822	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.87	
Density, D_R	35.3	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.348	
Space mean speed in ramp influence area, S_R	60.3	mph
Space mean speed in outer lanes, S_O	72.4	mph
Space mean speed for all vehicles, S	66.1	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp to On-ramp
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,496	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,874	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,496	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,874	pcphpl
Average passenger-car speed, S	64.7	mph
Volume-to-capacity ratio, v/c	0.78	
Density, D	29.0	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave On-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,990	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	494	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,990	494		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,998	124		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,990	494		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.156		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,170	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,496	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,990	pcph	9,600	pcph	No
Ramp volume, v_R	494	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,163	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,998	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,492	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.76	
Density, D_R	30.0	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.413	
Space mean speed in ramp influence area, S_R	58.4	mph
Space mean speed in outer lanes, S_O	63.7	mph
Space mean speed for all vehicles, S	61.3	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave to Edwards Ave
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,990	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,998	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,990	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,998	pcphpl
Average passenger-car speed, S	62.6	mph
Volume-to-capacity ratio, v/c	0.83	
Density, D	31.9	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Edwards Ave On-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,703	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	713	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,703	713		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,176	178		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,703	713		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.129		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	1,028	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,990	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,703	pcph	9,600	pcph	No
Ramp volume, v_R	713	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,481	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	3,196	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,909	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.85	
Density, D_R	33.1	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.479	
Space mean speed in ramp influence area, S_R	56.6	mph
Space mean speed in outer lanes, S_O	62.9	mph
Space mean speed for all vehicles, S	59.9	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Semminary Ave Off-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,703	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	442	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,703	442		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,176	111		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,703	442		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	4,044	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,703	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,261	pcph	9,600	pcph	No
Ramp volume, v_R	442	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,330	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	4,044	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.92	
Density, D_R	37.2	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.338	
Space mean speed in ramp influence area, S_R	60.5	mph
Space mean speed in outer lanes, S_O	71.6	mph
Space mean speed for all vehicles, S	66.0	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB Off-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,261	vph

Off Ramp Data

Type of diverge	Major	
Number of lanes in ramp	2	
Free-flow speed on ramp	65	mph
Volume on ramp	2,463	vph
Length of deceleration lane(s)	740	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,261	2,463		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,065	616		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,261	2,463		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.260		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,970	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,261	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,798	pcph	9,600	pcph	No
Ramp volume, v_R	2,463	pcph	4,700	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,145	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,970	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.90	
Density, D_R	36.1	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.260	
Space mean speed in ramp influence area, S_R	62.7	mph
Space mean speed in outer lanes, S_O	72.3	mph
Space mean speed for all vehicles, S	67.4	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB to Frontage Rd
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	5,798	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,450	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,798	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,450	pcphpl
Average passenger-car speed, S	69.3	mph
Volume-to-capacity ratio, v/c	0.60	
Density, D	20.9	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	CA-13 NB: I-580 WB to Calaveras Ave
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	2,463	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	616	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	2,463	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,232	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.51	
Density, D	17.6	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd Off-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,347	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	870	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,347	870		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,087	218		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,347	870		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	4,130	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,347	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,477	pcph	9,600	pcph	No
Ramp volume, v_R	870	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,109	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	4,130	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.94	
Density, D_R	38.1	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.376	
Space mean speed in ramp influence area, S_R	59.5	mph
Space mean speed in outer lanes, S_O	72.5	mph
Space mean speed for all vehicles, S	65.4	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Off-ramp to On-ramp
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	7,477	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,869	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,477	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,869	pcphpl
Average passenger-car speed, S	64.8	mph
Volume-to-capacity ratio, v/c	0.78	
Density, D	28.8	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd On-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,240	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	763	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,240	763		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,060	191		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,240	763		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.122		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	915	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,477	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,240	pcph	9,600	pcph	No
Ramp volume, v_R	763	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,281	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,991	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,754	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.82	
Density, D_R	31.9	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.451	
Space mean speed in ramp influence area, S_R	57.4	mph
Space mean speed in outer lanes, S_O	63.7	mph
Space mean speed for all vehicles, S	60.7	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Golf Links Rd to Keller Ave
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	8,240	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	2,060	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	8,240	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,060	pcphpl
Average passenger-car speed, S	61.4	mph
Volume-to-capacity ratio, v/c	0.86	
Density, D	33.5	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,240	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	194	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,240	194		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,060	49		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,240	194		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,702	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,240	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,046	pcph	9,600	pcph	No
Ramp volume, v_R	194	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,269	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,702	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.84	
Density, D_R	34.3	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.315	
Space mean speed in ramp influence area, S_R	61.2	mph
Space mean speed in outer lanes, S_O	71.8	mph
Space mean speed for all vehicles, S	66.6	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave Off-ramp to On-ramp
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	8,046	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	2,012	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	8,046	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,012	pcphpl
Average passenger-car speed, S	62.4	mph
Volume-to-capacity ratio, v/c	0.84	
Density, D	32.3	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave On-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,889	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	843	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,889	843		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,222	211		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,889	843		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.112		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	905	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,046	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,889	pcph	9,600	pcph	No
Ramp volume, v_R	843	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,571	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	3,218	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	4,061	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.88	
Density, D_R	34.3	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.511	
Space mean speed in ramp influence area, S_R	55.7	mph
Space mean speed in outer lanes, S_O	62.8	mph
Space mean speed for all vehicles, S	59.3	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Keller Ave to Edwards Ave
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	8,889	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	2,222	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	8,889	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,222	pcphpl
Average passenger-car speed, S	57.9	mph
Volume-to-capacity ratio, v/c	0.93	
Density, D	38.4	pcpmpl
Level of service, LOS	E	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Edwards Ave On-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	10,013	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	1,124	vph
Length of acceleration lane(s)	400	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	10,013	1,124		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,503	281		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	10,013	1,124		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)	
P_{FM} =	0.077		(Equation 13-3, 13-4, or 13-5)	
v_{12} =	687	pc/h		

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,889	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	10,013	pcph	9,600	pcph	Yes
Ramp volume, v_R	1,124	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	4,101	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	3,556	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	4,680	pcph	4,600	pcph	Yes

Level of Service Determination

Volume-to-capacity ratio, v/c	1.02	
Density, D_R	-	pcpmpl
Level of service for ramp-freeway junction area of influence	F	

Speed Estimation

Intermediate speed variable, M_S or D_S	-	
Space mean speed in ramp influence area, S_R	-	mph
Space mean speed in outer lanes, S_O		mph
Space mean speed for all vehicles, S		mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: Semminary Ave Off-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	10,013	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	253	vph
Length of deceleration lane(s)	200	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	10,013	253		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,503	63		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	10,013	253		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	4,508	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	10,013	pcph	9,600	pcph	Yes
Exiting freeway volume, v_{FO}	9,760	pcph	9,600	pcph	Yes
Ramp volume, v_R	253	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,752	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =	4,613	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	4,613	pcph	4,600	pcph	Yes

Level of Service Determination

Volume-to-capacity ratio, v/c	1.05	
Density, D_R	-	pcpmpl
Level of service for ramp-freeway junction area of influence	F	

Speed Estimation

Intermediate speed variable, M_S or D_S	-	
Space mean speed in ramp influence area, S_R	-	mph
Space mean speed in outer lanes, S_O		mph
Space mean speed for all vehicles, S		mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB Off-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	9,760	vph

Off Ramp Data

Type of diverge	Major	
Number of lanes in ramp	2	
Free-flow speed on ramp	65	mph
Volume on ramp	2,426	vph
Length of deceleration lane(s)	740	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	9,760	2,426		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,440	607		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	9,760	2,426		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.260		(Equation 13-9, 13-10, or 13-11)
v_{12} =	4,333	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	9,760	pcph	9,600	pcph	Yes
Exiting freeway volume, v_{FO}	7,334	pcph	9,600	pcph	No
Ramp volume, v_R	2,426	pcph	4,700	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,714	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =	4,360	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	4,360	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.99	
Density, D_R	-	pcpmpl
Level of service for ramp-freeway junction area of influence	F	

Speed Estimation

Intermediate speed variable, M_S or D_S	-	
Space mean speed in ramp influence area, S_R	-	mph
Space mean speed in outer lanes, S_O		mph
Space mean speed for all vehicles, S		mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	I-580 WB: CA-13 NB to Frontage Rd
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	7,334	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,834	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,334	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,834	pcphpl
Average passenger-car speed, S	65.3	mph
Volume-to-capacity ratio, v/c	0.76	
Density, D	28.1	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Westbound I-580
Segment	CA-13 NB: I-580 WB to Calaveras Ave
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	2,426	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	607	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	2,426	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,213	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.51	
Density, D	17.3	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave Off-ramp to CA-13 SB
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	5,505	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,376	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,505	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,376	pcphpl
Average passenger-car speed, S	69.6	mph
Volume-to-capacity ratio, v/c	0.57	
Density, D	19.8	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: CA-13 SB On-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,906	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	65	mph
Volume on ramp	2,401	vph
Length of acceleration lane(s)	600	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,906	2,401		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,977	600		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,906	2,401		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	-0.082		(Equation 13-3, 13-4, or 13-5)
v_{12} =	-453	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	5,505	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,906	pcph	9,600	pcph	No
Ramp volume, v_R	2,401	pcph	2,200	pcph	Yes
Outer lanes volume, v_3 or v_{av34}	2,979	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,202	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	4,603	pcph	4,600	pcph	Yes

Level of Service Determination

Volume-to-capacity ratio, v/c	1.00	
Density, D_R	-	pcpmpl
Level of service for ramp-freeway junction area of influence	F	

Speed Estimation

Intermediate speed variable, M_S or D_S	-	
Space mean speed in ramp influence area, S_R	-	mph
Space mean speed in outer lanes, S_O		mph
Space mean speed for all vehicles, S		mph

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave On-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,983	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	1,077	vph
Length of acceleration lane(s)	540	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,983	1,077		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,246	269		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,983	1,077		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.083		(Equation 13-3, 13-4, or 13-5)
v_{12} =	658	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,906	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,983	pcph	9,600	pcph	No
Ramp volume, v_R	1,077	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,624	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	3,162	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	4,239	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.92	
Density, D_R	34.7	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.543	
Space mean speed in ramp influence area, S_R	54.8	mph
Space mean speed in outer lanes, S_O	63.0	mph
Space mean speed for all vehicles, S	58.9	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave Off-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,983	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	567	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,983	567		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,246	142		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,983	567		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	4,236	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,983	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,416	pcph	9,600	pcph	No
Ramp volume, v_R	567	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,373	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	4,236	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.96	
Density, D_R	39.1	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.349	
Space mean speed in ramp influence area, S_R	60.2	mph
Space mean speed in outer lanes, S_O	71.4	mph
Space mean speed for all vehicles, S	65.7	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave To Keller Ave
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	8,416	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	2,104	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	8,416	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,104	pcphpl
Average passenger-car speed, S	60.5	mph
Volume-to-capacity ratio, v/c	0.88	
Density, D	34.8	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,416	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	833	vph
Length of deceleration lane(s)	220	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,416	833		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,104	208		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,416	833		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	4,139	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,416	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,583	pcph	9,600	pcph	No
Ramp volume, v_R	833	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,138	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	4,139	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.94	
Density, D_R	37.9	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.373	
Space mean speed in ramp influence area, S_R	59.6	mph
Space mean speed in outer lanes, S_O	72.4	mph
Space mean speed for all vehicles, S	65.4	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp to On-ramp
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,583	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,896	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,583	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,896	pcphpl
Average passenger-car speed, S	64.4	mph
Volume-to-capacity ratio, v/c	0.79	
Density, D	29.4	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave On-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,172	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	589	vph
Length of acceleration lane(s)	380	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,172	589		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,043	147		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,172	589		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.144		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,093	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,583	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	8,172	pcph	9,600	pcph	No
Ramp volume, v_R	589	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	3,245	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	3,033	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,622	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.79	
Density, D_R	31.1	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.433	
Space mean speed in ramp influence area, S_R	57.9	mph
Space mean speed in outer lanes, S_O	63.6	mph
Space mean speed for all vehicles, S	60.9	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave to Golf Links Rd
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	8,172	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	2,043	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	8,172	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,043	pcphpl
Average passenger-car speed, S	61.8	mph
Volume-to-capacity ratio, v/c	0.85	
Density, D	33.1	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp
Alternative	Cumulative with Project
Time period	PM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	8,172	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	956	vph
Length of deceleration lane(s)	160	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	8,172	956		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	2,043	239		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	8,172	956		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	4,102	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	8,172	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,216	pcph	9,600	pcph	No
Ramp volume, v_R	956	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,035	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?	
v_{12A}	4,102	pcph	4,600	pcph	No	

Level of Service Determination

Volume-to-capacity ratio, v/c	0.93	
Density, D_R	38.1	pcpmpl
Level of service for ramp-freeway junction area of influence	E	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.384	
Space mean speed in ramp influence area, S_R	59.2	mph
Space mean speed in outer lanes, S_O	72.8	mph
Space mean speed for all vehicles, S	65.3	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp to On-ramp
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,216	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,804	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,216	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,804	pcphpl
Average passenger-car speed, S	65.8	mph
Volume-to-capacity ratio, v/c	0.75	
Density, D	27.4	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd On-ramp
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	7,981	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,995	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	7,981	pcph

Speed Inputs and Adjustments

Number of lanes, N	5	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	7,981	pcph	9,600	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	Yes
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,596	pcphpl
Average passenger-car speed, S	68.2	mph
Volume-to-capacity ratio, v/c	0.67	
Density, D	23.4	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	CA-13 SB: Calaveras Ave to Seminary Ave
Alternative	Cumulative with Project
Time period	PM

Flow Inputs and Adjustments

Volume, V	2,671	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	668	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	2,671	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,336	pcphpl
Average passenger-car speed, S	69.8	mph
Volume-to-capacity ratio, v/c	0.56	
Density, D	19.1	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave Off-ramp to CA-13 SB
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	3,903	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	976	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	3,903	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	976	pcphpl
Average passenger-car speed, S	70.0	mph
Volume-to-capacity ratio, v/c	0.41	
Density, D	13.9	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: CA-13 SB On-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,884	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	65	mph
Volume on ramp	2,981	vph
Length of acceleration lane(s)	600	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,884	2,981		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,721	745		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,884	2,981		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	-0.052		(Equation 13-3, 13-4, or 13-5)
v_{12} =	-203	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	3,903	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,884	pcph	9,600	pcph	No
Ramp volume, v_R	2,981	pcph	2,200	pcph	Yes
Outer lanes volume, v_3 or v_{av34}	2,053	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	1,561	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	4,542	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.99	
Density, D_R	-	pcpmpl
Level of service for ramp-freeway junction area of influence	F	

Speed Estimation

Intermediate speed variable, M_S or D_S	-	
Space mean speed in ramp influence area, S_R	-	mph
Space mean speed in outer lanes, S_O		mph
Space mean speed for all vehicles, S		mph

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Seminary Ave On-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,419	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	535	vph
Length of acceleration lane(s)	540	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,419	535		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,855	134		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,419	535		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.151		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,039	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,884	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	7,419	pcph	9,600	pcph	No
Ramp volume, v_R	535	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,923	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	Yes				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,754	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	3,289	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.71	
Density, D_R	27.5	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.377	
Space mean speed in ramp influence area, S_R	59.4	mph
Space mean speed in outer lanes, S_O	64.4	mph
Space mean speed for all vehicles, S	62.1	mph

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave Off-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	7,419	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	715	vph
Length of deceleration lane(s)	180	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	7,419	715		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,855	179		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	7,419	715		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,638	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	7,419	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,704	pcph	9,600	pcph	No
Ramp volume, v_R	715	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,891	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,638	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.83	
Density, D_R	33.9	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.362	
Space mean speed in ramp influence area, S_R	59.9	mph
Space mean speed in outer lanes, S_O	73.3	mph
Space mean speed for all vehicles, S	66.0	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Edwards Ave To Keller Ave
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,704	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,676	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,704	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,676	pcphpl
Average passenger-car speed, S	67.4	mph
Volume-to-capacity ratio, v/c	0.70	
Density, D	24.9	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,704	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	494	vph
Length of deceleration lane(s)	220	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,704	494		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,676	124		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,704	494		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,202	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,704	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,210	pcph	9,600	pcph	No
Ramp volume, v_R	494	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,751	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,202	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.73	
Density, D_R	29.8	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.342	
Space mean speed in ramp influence area, S_R	60.4	mph
Space mean speed in outer lanes, S_O	73.9	mph
Space mean speed for all vehicles, S	66.8	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave Off-ramp to On-ramp
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,210	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,553	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,210	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,553	pcphpl
Average passenger-car speed, S	68.6	mph
Volume-to-capacity ratio, v/c	0.65	
Density, D	22.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Merge Segment

Merge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave On-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,599	vph

On Ramp Data

Type of merge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	389	vph
Length of acceleration lane(s)	380	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,599	389		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,650	97		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,599	389		pcph

Estimation of Volume in Merge Area

L_{EQ} =		ft	(Equation 13-6 or 13-7)
P_{FM} =	0.169		(Equation 13-3, 13-4, or 13-5)
v_{12} =	1,051	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,210	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	6,599	pcph	9,600	pcph	No
Ramp volume, v_R	389	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	2,580	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	Yes				
If yes, v_{12A} =	2,484	pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

	Actual		Maximum		Violation?
v_{R12}	2,873	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.62	
Density, D_R	25.3	pcpmpl
Level of service for ramp-freeway junction area of influence	C	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.356	
Space mean speed in ramp influence area, S_R	60.0	mph
Space mean speed in outer lanes, S_O	65.1	mph
Space mean speed for all vehicles, S	62.8	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Keller Ave to Golf Links Rd
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,599	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,650	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,599	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,650	pcphpl
Average passenger-car speed, S	67.7	mph
Volume-to-capacity ratio, v/c	0.69	
Density, D	24.4	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Diverge Segment

Diverge Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp
Alternative	Cumulative with Project
Time period	AM

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70	mph
Volume on freeway	6,599	vph

Off Ramp Data

Type of diverge	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45	mph
Volume on ramp	1,015	vph
Length of deceleration lane(s)	160	ft

Adjacent Ramp Data

	Upstream		Downstream	
Does adjacent ramp exist?	No		No	
Volume on adjacent ramp		vph		vph
Type of adjacent ramp				
Distance to adjacent ramp		ft		ft

Conversion to pcph Under Base Conditions

Junction Components	Freeway	Ramp	Adj. Ramp	
Volume, V	6,599	1,015		vph
Peak-hour factor, PHF	1.00	1.00		
Peak 15-min volume, v_{15}	1,650	254		veh
Trucks and buses	0%	0%		
Recreational vehicles	0%	0%		
Terrain type	Level	Level		
Grade				
Length				mi
Trucks and buses PCE, E_T	1.5	1.5		
Recreational vehicle PCE, E_R	1.2	1.2		
Heavy vehicle adjustment, f_{HV}	1.000	1.000		
Driver popoulation factor, f_P	1.00	1.00		
Flow rate, v_p	6,599	1,015		pcph

Estimation of Volume in Diverge Area

L_{EQ} =		ft	(Equation 13-12 or 13-13)
P_{FM} =	0.436		(Equation 13-9, 13-10, or 13-11)
v_{12} =	3,450	pc/h	

Capacity Checks

	Actual		Maximum		LOS F?
Entering freeway volume, v_{Fi}	6,599	pcph	9,600	pcph	No
Exiting freeway volume, v_{FO}	5,584	pcph	9,600	pcph	No
Ramp volume, v_R	1,015	pcph	2,100	pcph	No
Outer lanes volume, v_3 or v_{av34}	1,575	pcph	(Equation 13-14 or 13-17)		
Is v_3 or v_{av34} > 2,700 pcph?	No				
Is v_3 or v_{av34} > 1.5 v_{12} / 2?	No				
If yes, v_{12A} =		pcph	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Diverge Influence Area

	Actual		Maximum		Violation?
v_{12A}	3,450	pcph	4,600	pcph	No

Level of Service Determination

Volume-to-capacity ratio, v/c	0.78	
Density, D_R	32.5	pcpmpl
Level of service for ramp-freeway junction area of influence	D	

Speed Estimation

Intermediate speed variable, M_S or D_S	0.389	
Space mean speed in ramp influence area, S_R	59.1	mph
Space mean speed in outer lanes, S_O	74.5	mph
Space mean speed for all vehicles, S	65.6	mph

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd Off-ramp to On-ramp
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	5,584	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,396	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	5,584	pcph

Speed Inputs and Adjustments

Number of lanes, N	4	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,396	pcphpl
Average passenger-car speed, S	69.6	mph
Volume-to-capacity ratio, v/c	0.58	
Density, D	20.1	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	I-580 EB: Golf Links Rd On-ramp
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	6,564	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	1,641	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	6,564	pcph

Speed Inputs and Adjustments

Number of lanes, N	5	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	6,564	pcph	9,600	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	Yes
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,313	pcphpl
Average passenger-car speed, S	69.9	mph
Volume-to-capacity ratio, v/c	0.55	
Density, D	18.8	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	Oak Knoll Project EIR
Freeway	Eastbound I-580
Segment	CA-13 SB: Calaveras Ave to Seminary Ave
Alternative	Cumulative with Project
Time period	AM

Flow Inputs and Adjustments

Volume, V	3,301	vph
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v_{15}	825	veh
Trucks and buses	0%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	1.000	
Driver popoulation factor, f_p	1.00	
Flow rate, v_p	3,301	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width		ft
Right-side lateral clearance		ft
Total ramp density, TRD		ramps/mi
Lane width adjustment, f_{LW}		mph
Lateral clearance adjustment, f_{LC}		mph
TRD adjustment		mph
Calculated free-flow speed, FFS		mph
Measured free-flow speed, FFS		mph
Free-flow speed curve	70	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,651	pcphpl
Average passenger-car speed, S	67.6	mph
Volume-to-capacity ratio, v/c	0.69	
Density, D	24.4	pcpmpl
Level of service, LOS	C	

APPENDIX V-H

CMP ANALYSIS WORKSHEETS



Freeway Segments												
Arterials												

APPENDIX V-I

QUEUING ANALYSIS SUMMARY TABLES



EXISTING AND YEAR 2040 CONDITIONS QUEUING ANALYSIS
95TH PERCENTILE QUEUES

Intersections	Traffic Control[1]	Movement	Storage (feet)	95th Percentile Queues (feet)			Difference[3]		95th Percentile Queues (feet)			Difference[3]	
				2040 No Project AM[2]	2040 + Project AM[2]	2040 + Project + MIT AM[2]	(2040+ Project) - 2040 No Project	(2040+ Project + MIT) - 2040 No Project	2040 No Project PM[2]	2040 + Project PM[2]	2040 + Project + MIT PM[2]	(2040+ Project) - 2040 No Project	(2040+ Project + MIT) - 2040 No Project
1. Overdale Avenue/ I-580 EB Off-Ramp & semiary Avenue	SSSC	WB-L	50	20	20		0		20	20		0	
		NB-LR	345	-	-	N/A	-	N/A	-	-	N/A	-	N/A
		SB-LT	1,200	58	60		2		580	598		18	
		SB-R	175	337	356		19		608	633		25	
2. Sunnymere Ave. Kuhnle Ave & Seminary Avenue/ I-580 EB On-Ramp	AWSC/ Signal[4]	EB-L	330	-	-	#573	-	-	-	-	#556	-	-
		EB-TR	330	-	-	298	-	-	-	-	#472	-	-
		NB-LTR	450	-	-	#304	-	-	-	-	136	-	-
		SB-L	125/375	-	-	m27	-	-	-	-	m#400	-	-
		SB-T	375	-	-	0	-	-	-	-	m161	-	-
		SB-R[6]	375	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3. Kuhnle Ave & Frontage Rd/ I-580 Wb Off Ramp	SSSC/ Signal[4]	EB-LR	325	20	20	#183	0	163	-	-	#188	-	-
		WB-L	1,050	-	-	-	-	-	-	-	#359	-	-
		WB-TR	250	98	98	51	0	-47	215	215	107	0	-108
		NB-L	125	77	77	m#767	0	**690**	56	56	m#493	0	**437**
		NB-T	375	0	0	m4	0	0	0	0	m0	0	0
		SB-TR	350	20	20	20	0	0	0	0	15	0	15
4. MacArthur Boulevard/Foothill Boulevard/ 73rd Avenue	Signal	EB-L	200	#318	#318		0		#349	#349		0	
		EB-T	1,250	426	434		8		#795	#827		32	
		WB-L	50	43	46		3		#207	#223		16	
		WB-TR	350	#855	#888	N/A	**33**	N/A	#693	#741	N/A	**48**	N/A
		NB-LTR	221	#512	#515		3		#743	#748		5	
		SB-L	1,000	101	106		5		159	174		15	
		SB-TR	1,000	#830	#830		0		#820	#820		0	
7. Edwards Ave/ I-580 EB Off-Ramp	Signal	EB-T	800	#404	#401		-3		#563	#603		40	
		WB-T	215	155	168		13		137	156		19	
		NB-T	100	0	0	N/A	0	N/A	20	20	N/A	0	N/A
		SB-TL	850	46	51		5		84	94		10	
		SB-R	300	50	59		9		34	34		0	
8. Mountain Boulevard/I-580 WB On-Ramp/ Edwards Ave	Signal	EB-L	215	#455	#459		4		397	#433		**36**	
		EB-TR	215	28	29		1		41	47		6	
		WB-TL	200	84	84		0		65	67		2	
		WB-R	200	40	40	N/A	0	N/A	20	20	N/A	0	N/A
		NB-L	100	193	212		19		172	198		**26**	
		NB-T	1,000	#340	#360		20		33	42		9	
		NB-R	100	20	20		0		20	20		0	
10. Mountain Boulevard/I-580 WB On-Ramp/ Maynard Avenue	SSSC	WB-LTR	455	75	112	N/A	37	N/A	18	37	N/A	19	N/A
		NB-L	200	64	110		46		31	50		19	
12. Fontaine Street/ I-580 EB Off-Ramp and Keller Ave	AWSC/ Signal[4]	EB-TR	210	-	-	199	-	-	-	-	155	-	-
		WB-L	315	-	-	m143	-	-	-	-	m#209	-	-
		WB-T	315	-	-	m8	-	-	-	-	m38	-	-
		SB-LTR	1,110	-	-	180	-	-	-	-	272	-	-
13. Mountain Boulevard & Keller Ave	AWSC/ Signal[4]	EB-LTR	315	-	-	53	-	-	-	-	#193	-	-
		WB-LT	500	-	-	242	-	-	-	-	212	-	-
		WB-R	500	-	-	205	-	-	-	-	55	-	-
		NB-LTR	550	-	-	#534	-	-	-	-	194	-	-
		SB-L	100	-	-	#85	-	-	-	-	#180	-	-
		SB-TR	250	-	-	56	-	-	-	-	96	-	-
16. I-580 WB Off-ramp/Mountain Boulevard/Shone Avenue	SSSC/ Signal[4]	EB-L	300	134	253	#124	119	-10	235	733	221	**498**	-10
		EB-R	700	20	20	52	0	32	20	20	166	0	146
		WB-LR	700	20	20	0	0	-20	20	20	20	0	0
		NB-T	1,200	0	0	559	0	559	0	0	260	0	260
		SB-T	550	0	0	m20	0	20	0	0	96	0	12
17. Bancroft Avenue/82nd Avenue	Signal	NB-L	90	72	72	N/A	0	N/A	#75	#75	N/A	0	N/A
		SB-L	90	#144	#144		0		#98	#98		0	
27. International Boulevard/ 98th Ave	Signal	EB-L	75	#370	#370		0		#415	#415		0	
		EB-TR	1,000	267	272		5		#589	#625		36	
		WB-L	60	165	174		9		#318	#334		16	
		WB-T	310	320	338		18		219	232		13	
		WB-R	60	96	104	N/A	8	N/A	76	85	N/A	9	N/A
		NB-L	100	#264	#264		0		#225	#225		0	
		NB-T	1,500	276	278		2		#530	#537		7	
		NB-R[5]	100	N/A	N/A		N/A		N/A	N/A		N/A	
		SB-L	100	217	221		4		#384	#404		20	
		SB-TR	1,100	#539	#539		0		349	349		0	

Notes:
1. NB-northbound, SB-southbound, EB-eastbound, WB-westbound, L-left turn movement, T-through movement, R-right turn movement.
2. The Synchro software provides reasonable queuing results for locations operating in the LOS A through LOS D, but can misrepresent conditions as intersection operations approach capacity. In these instances, the software output denotes the condition with a letter/symbol adjacent to the analysis output worksheet. Furthermore, due to Synchro software limitations, 95th percentile queue data for all-way-stop controlled intersections is not available.
3. Differnces shown in **bold** represent locations where the project would result in an increase in 95th queue greater than 25 ft along movements that exceed the queue storage capacity under No Project conditions. N/A indicate that mitigation measures were not required for these intersections, therefore difference in queues is not reported for the mitigated improvement scenario.
4. Intersection asssumed to be signalized as part of the proposed mitigation measure.
5. Lane assumed to be removed by 2040 to accomodate proposed bike lane or BRT improvements.
6. Proposed mitigation measure would extend storage length under 2040 Plus Project Conditions.
7. Intersection was analyzed in SimTraffic.
Source: Fehr & Peers, 2016.

EXISTING AND YEAR 2040 CONDITIONS QUEUING ANALYSIS
95TH PERCENTILE QUEUES

Intersections	Traffic Control[1]	Movement	Storage (feet)	95th Percentile Queues (feet)			Difference[3]		95th Percentile Queues (feet)			Difference[3]	
				Existing AM[2]	Existing + Project AM[2]	Existing + Project + MIT AM[2]	(Existing+ Project) - Existing	(Existing+ Project + MIT) - Existing	Existing PM[2]	Existing + Project PM[2]	Existing + Project + MIT PM[2]	(Existing+ Project) - Existing	(Existing+ Project + MIT) - Existing
28. Holly Street/ 98th Ave	Signal	NB-LTR	375	68	68	N/A	0	N/A	34	34	N/A	0	N/A
		SB-LTR	530	62	62		0		69	69		0	
29. Plymouth Street/ 98th Ave	Signal	NB-LTR	530	146	146	N/A	0	N/A	107	107	N/A	0	N/A
		SB-LTR	530	87	87		0		66	66		0	
30. Birch Street/ 98th Ave	Signal	NB-LTR	450	157	157	N/A	0	N/A	102	102	N/A	0	N/A
		SB-LTR	530	111	111		0		50	50		0	
31. Bancroft Avenue/ 98th Ave	Signal	EB-L	100	#196	#193	N/A	-3	N/A	#187	#188	N/A	1	N/A
		EB-TR	980	268	278		10		270	302		32	
		WB-L	100	98	114		16		m73	m85		12	
		NB-L	80	119	119		0		83	83		0	
		NB-TR	500	324	331		7		321	343		22	
		SB-L	125	#175	#180		5		#156	#173		17	
		SB-TR	500	364	368		4		#491	#494		3	
32. MacArthur Boulevard/ 98th Ave	Signal	EB-L	100	m74	m72	N/A	-2	N/A	m56	m49	N/A	-7	N/A
		EB-TR	900	111	116		5		78	90		12	
		WB-L	150	m30	m33		3		40	47		7	
		WB-TR	600	285	317		32		232	282		50	
		NB-L	75	127	127		0		105	105		0	
		NB-TR	450	302	303		1		228	234		6	
		SB-L	75	147	150		3		135	140		5	
		SB-TR	500	182	182		0		259	259		0	
34. Lawlor Street/ 98th Ave	Signal	NB-LTR	300	24	24	N/A	0	N/A	10	10	N/A	0	N/A
		SB-LTR	450	254	254		0		102	102		0	
35. Stearns Avenue/ 98th Avenue	Signal	EB-L	75	m97	m97	N/A	0	N/A	43	44	N/A	1	N/A
		EB-TR	750	143	143		0		58	61		3	
		WB-L	75	m5	m4		-1		m14	m14		0	
		WB-TR	1,000	m303	m421		118		195	235		40	
		NB-LTR	500	#203	#203		0		21	21		0	
		SB-L	90	57	57		0		66	66		0	
		SB-TR	550	20	20		0		20	20		0	
37. 98th Avenue and I-580 EB On-Ramp	SSSC	SB-L	200	35	50	N/A	15	N/A	0	0	N/A	0	N/A
38. I- 580 EB Off- Ramp 98th Avenue/ Golf Links Road[7]	Signal	EB-T	1,500	140	140	140	0	0	120	120	140	0	20
		EB-R	100	120	120	140	0	20	120	120	120	0	0
		NB-L	100	100	100	120	0	20	100	80	100	-20	0
		NB-R	300	140	160	260	20	120	60	60	80	0	20
		SB-LT	1,000	520	520	540	0	20	440	480	380	40	-60
		SB-TR	150/450[7]	300	300	300	0	0	300	300	300	0	0
		WB-L	350	240	300	300	60	60	240	280	340	40	100
		WB-T	350	140	140	140	0	0	180	160	160	-20	-20
39. I-580 WB Ramps/Golf Links Road[7]	Signal	EB-LT	350	380	420	480	**40**	**100**	260	240	340	-20	80
		EB-T	350	380	400	520	20	**140**	200	260	260	60	60
		NB-LT	850	260	280	340	20	80	340	340	360	0	20
		NB-R	275/300[6]	260	280	300	20	**40**	140	160	180	20	40
		WB-T	125	160	160	160	0	0	180	160	180	-20	0
		WB-R[5]	125	120	120	80	0	-40	120	120	80	0	-40
40. Moutnain Boulevard-Oakland Zoo Driveway/ Golf Links Road[7]	SSSC	EB-L	125	60	80	160	20	**100**	20	40	160	20	**140**
		EB-TR	125	40	60	240	20	**200**	20	20	240	0	**220**
		NB-LT	400	40	40	40	0	0	60	60	100	0	40
		NB-TR	1,000	20	20	20	0	0	20	20	20	0	0
		SB-LTR	1,600	120	480	220	360	100	80	560	240	480	160
		WB-LTR	3,000	540	520	1,320	-20	780	260	540	300	280	40
41. San Leandro Street/ 98th Ave	Signal	EB-L	130	#209	#209	N/A	0	N/A	137	137	N/A	0	N/A
		EB-T	650	176	181		5		329	342		13	
		EB-R	100	0	0		0		105	106		1	
		WB-L	100	55	65		10		105	114		9	
		WB-TR	1,000	337	351		14		#394	#412		18	
		NB-L	120	#221	#221		0		#186	#186		0	
		NB-TR	1,000	204	206		2		94	95		1	
		SB-L	200	98	101		3		#271	#288		17	
		SB-TR	2,000	91	91		0		254	254		0	
42. Mountain Boulevard/ Creekside Pwky	Signal	SB-L	200	N/A	#103	N/A	N/A	N/A	N/A	166	N/A	N/A	N/A

Notes:
1. NB-northbound, SB-southbound, EB-eastbound, WB-westbound, L-left turn movement, T-through movement, R-right turn movement.
2. The Synchro software provides reasonable queuing results for locations operating in the LOS A through LOS D, but can misrepresent conditions as intersection operations approach capacity. In these instances, the software output denotes the condition with a letter/symbol adjacent to the analysis output worksheet. Furthermore, due to Synchro software limitations, 95th percentile queue data for all-way-stop controlled intersections is not available.
3. Differnces shown in **bold** represent locations where the project would result in an increase in 95th queue greater than 25 ft along movements that exceed the queue storage capacity under No Project conditions. N/A indicate that mitigation measures were not required for these intersections, therefore difference in queues is not reported for the mitigated improvement scenario.
4. Intersection asssumed to be signalized as part of the proposed mitigation measure.
5. Lane assumed to be removed by 2040 to accomodate proposed bike lane or BRT improvements.
6. Proposed mitigation measure would extend storage length under 2040 Plus Project Conditions.
7. Intersection was analyzed in SimTraffic.
Source: Fehr & Peers, 2016.

EXISTING AND YEAR 2040 CONDITIONS QUEUING ANALYSIS
95TH PERCENTILE QUEUES

Intersections	Traffic Control[1]	Movement	Storage (feet)	95th Percentile Queues (feet)			Difference[3]		95th Percentile Queues (feet)			Difference[3]	
				2040 No Project AM[2]	2040 + Project AM[2]	2040 + Project + MIT AM[2]	(2040+ Project) - 2040 No Project	(2040+ Project + MIT) - 2040 No Project	2040 No Project PM[2]	2040 + Project PM[2]	2040 + Project + MIT PM[2]	(2040+ Project) - 2040 No Project	(2040+ Project + MIT) - 2040 No Project
1. Overdale Avenue/ I-580 EB Off-Ramp & semiary Avenue	SSSC	WB-L	50	20	20		0		20	20		0	
		NB-LR	345	-	-	N/A	-	N/A	-	-	N/A	-	N/A
		SB-LT	1,200	58	60		2		580	598		18	
		SB-R	175	337	356		19		608	633		25	
2. Sunnymere Ave. Kuhnle Ave & Seminary Avenue/ I-580 EB On-Ramp	AWSC/ Signal[4]	EB-L	330	-	-	#573	-	-	-	-	#556	-	-
		EB-TR	330	-	-	298	-	-	-	-	#472	-	-
		NB-LTR	450	-	-	#304	-	-	-	-	136	-	-
		SB-L	125/375	-	-	m27	-	-	-	-	m#400	-	-
		SB-T	375	-	-	0	-	-	-	-	m161	-	-
		SB-R[6]	375	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3. Kuhnle Ave & Frontage Rd/ I-580 Wb Off Ramp	SSSC/ Signal[4]	EB-LR	325	20	20	#183	0	163	-	-	#188	-	-
		WB-L	1,050	-	-	-	-	-	-	-	#359	-	-
		WB-TR	250	98	98	51	0	-47	215	215	107	0	-108
		NB-L	125	77	77	m#767	0	**690**	56	56	m#493	0	**437**
		NB-T	375	0	0	m4	0	0	0	0	m0	0	0
		SB-TR	350	20	20	20	0	0	0	0	15	0	15
4. MacArthur Boulevard/Foothill Boulevard/ 73rd Avenue	Signal	EB-L	200	#318	#318		0		#349	#349		0	
		EB-T	1,250	426	434		8		#795	#827		32	
		WB-L	50	43	46		3		#207	#223		16	
		WB-TR	350	#855	#888	N/A	**33**	N/A	#693	#741	N/A	**48**	N/A
		NB-LTR	221	#512	#515		3		#743	#748		5	
		SB-L	1,000	101	106		5		159	174		15	
		SB-TR	1,000	#830	#830		0		#820	#820		0	
7. Edwards Ave/ I-580 EB Off-Ramp	Signal	EB-T	800	#404	#401		-3		#563	#603		40	
		WB-T	215	155	168		13		137	156		19	
		NB-T	100	0	0	N/A	0	N/A	20	20	N/A	0	N/A
		SB-TL	850	46	51		5		84	94		10	
		SB-R	300	50	59		9		34	34		0	
8. Mountain Boulevard/I-580 WB On-Ramp/ Edwards Ave	Signal	EB-L	215	#455	#459		4		397	#433		**36**	
		EB-TR	215	28	29		1		41	47		6	
		WB-TL	200	84	84		0		65	67		2	
		WB-R	200	40	40	N/A	0	N/A	20	20	N/A	0	N/A
		NB-L	100	193	212		19		172	198		**26**	
		NB-T	1,000	#340	#360		20		33	42		9	
		NB-R	100	20	20		0		20	20		0	
10. Mountain Boulevard/I-580 WB On-Ramp/ Maynard Avenue	SSSC	WB-LTR	455	75	112	N/A	37	N/A	18	37	N/A	19	N/A
		NB-L	200	64	110		46		31	50		19	
12. Fontaine Street/ I-580 EB Off-Ramp and Keller Ave	AWSC/ Signal[4]	EB-TR	210	-	-	199	-	-	-	-	155	-	-
		WB-L	315	-	-	m143	-	-	-	-	m#209	-	-
		WB-T	315	-	-	m8	-	-	-	-	m38	-	-
		SB-LTR	1,110	-	-	180	-	-	-	-	272	-	-
13. Mountain Boulevard & Keller Ave	AWSC/ Signal[4]	EB-LTR	315	-	-	53	-	-	-	-	#193	-	-
		WB-LT	500	-	-	242	-	-	-	-	212	-	-
		WB-R	500	-	-	205	-	-	-	-	55	-	-
		NB-LTR	550	-	-	#534	-	-	-	-	194	-	-
		SB-L	100	-	-	#85	-	-	-	-	#180	-	-
		SB-TR	250	-	-	56	-	-	-	-	96	-	-
16. I-580 WB Off-ramp/Mountain Boulevard/Shone Avenue	SSSC/ Signal[4]	EB-L	300	134	253	#124	119	-10	235	733	221	**498**	-10
		EB-R	700	20	20	52	0	32	20	20	166	0	146
		WB-LR	700	20	20	0	0	-20	20	20	20	0	0
		NB-T	1,200	0	0	559	0	559	0	0	260	0	260
		SB-T	550	0	0	m20	0	20	0	0	96	0	12
17. Bancroft Avenue/82nd Avenue	Signal	NB-L	90	72	72	N/A	0	N/A	#75	#75	N/A	0	N/A
		SB-L	90	#144	#144		0		#98	#98		0	
27. International Boulevard/ 98th Ave	Signal	EB-L	75	#370	#370		0		#415	#415		0	
		EB-TR	1,000	267	272		5		#589	#625		36	
		WB-L	60	165	174		9		#318	#334		16	
		WB-T	310	320	338		18		219	232		13	
		WB-R	60	96	104	N/A	8	N/A	76	85	N/A	9	N/A
		NB-L	100	#264	#264		0		#225	#225		0	
		NB-T	1,500	276	278		2		#530	#537		7	
		NB-R[5]	100	N/A	N/A		N/A		N/A	N/A		N/A	
		SB-L	100	217	221		4		#384	#404		20	
		SB-TR	1,100	#539	#539		0		349	349		0	

Notes:
1. NB-northbound, SB-southbound, EB-eastbound, WB-westbound, L-left turn movement, T-through movement, R-right turn movement.
2. The Synchro software provides reasonable queuing results for locations operating in the LOS A through LOS D, but can misrepresent conditions as intersection operations approach capacity. In these instances, the software output denotes the condition with a letter/symbol adjacent to the analysis output worksheet. Furthermore, due to Synchro software limitations, 95th percentile queue data for all-way-stop controlled intersections is not available.
3. Differnces shown in **bold** represent locations where the project would result in an increase in 95th queue greater than 25 ft along movements that exceed the queue storage capacity under No Project conditions. N/A indicate that mitigation measures were not required for these intersections, therefore difference in queues is not reported for the mitigated improvement scenario.
4. Intersection asssumed to be signalized as part of the proposed mitigation measure.
5. Lane assumed to be removed by 2040 to accomodate proposed bike lane or BRT improvements.
6. Proposed mitigation measure would extend storage length under 2040 Plus Project Conditions.
7. Intersection was analyzed in SimTraffic.
Source: Fehr & Peers, 2016.

EXISTING AND YEAR 2040 CONDITIONS QUEUING ANALYSIS
95TH PERCENTILE QUEUES

Intersections	Traffic Control[1]	Movement	Storage (feet)	95th Percentile Queues (feet)			Difference[3]		95th Percentile Queues (feet)			Difference[3]	
				2040 No Project AM[2]	2040 + Project AM[2]	2040 + Project + MIT AM[2]	(2040+ Project) - 2040 No Project	(2040+ Project + MIT) - 2040 No Project	2040 No Project PM[2]	2040 + Project PM[2]	2040 + Project + MIT PM[2]	(2040+ Project) - 2040 No Project	(2040+ Project + MIT) - 2040 No Project
28. Holly Street/ 98th Ave	Signal	NB-LTR	375	92	92	N/A	0	N/A	52	52	N/A	0	N/A
		SB-LTR	530	83	83		0		83	83		0	
29. Plymouth Street/ 98th Ave	Signal	NB-LTR	530	165	165	N/A	0	N/A	137	137	N/A	0	N/A
		SB-LTR	530	110	110		0		91	91		0	
30. Birch Street/ 98th Ave	Signal	NB-LTR	450	#213	#213	N/A	0	N/A	125	125	N/A	0	N/A
		SB-LTR	530	139	139		0		67	67		0	
31. Bancroft Avenue/ 98th Ave	Signal	EB-L	100	m#214	m#215	N/A	1	N/A	#206	#207	N/A	1	N/A
		EB-TR	980	317	329		12		408	442		34	
		WB-L	100	m#170	m#188		18		m71	m#96		25	
		NB-L	80	#170	#170		0		#135	#135		0	
		NB-TR	500	#421	#435		14		#374	#425		51	
		SB-L	125	#210	#214		4		#203	#216		13	
		SB-TR	500	#403	#410		7		#492	#495		3	
32. MacArthur Boulevard/ 98th Ave	Signal	EB-L	100	m85	m81	N/A	-4	N/A	m81	m75	N/A	-6	N/A
		EB-TR	900	206	217		11		#97	#244		147	
		WB-L	150	m66	m69		3		56	65		9	
		WB-TR	600	314	348		34		396	#442		46	
		NB-L	75	#246	#246		0		#251	#251		0	
		NB-TR	450	405	407		2		278	284		6	
		SB-L	75	#166	#173		7		#174	#186		12	
		SB-TR	500	224	224		0		#400	#400		0	
34. Lawlor Street/ 98th Ave	Signal	NB-LTR	300	38	38	N/A	0	N/A	30	30	N/A	0	N/A
		SB-LTR	450	291	291		0		134	134		0	
35. Stearns Avenue/ 98th Avenue	Signal	EB-L	75	m#153	m#153	N/A	0	N/A	54	55	N/A	1	N/A
		EB-TR	750	#515	#544		-1		83	85		2	
		WB-L	75	m25	m24		-1		m33	m29		-4	
		WB-TR	1,000	#545	#612		67		m237	m296		59	
		NB-LTR	500	#239	#239		0		41	41		0	
		SB-L	90	69	69		0		84	84		0	
		SB-TR	550	20	20		0		25	25		0	
37. 98th Avenue and I-580 EB On-Ramp	SSSC	SB-L	200	58	78	N/A	20	N/A	48	67	N/A	19	N/A
38. I- 580 EB Off- Ramp 98th Avenue/ Golf Links Road[7]	Signal	EB-T	1,500	220	220	220	0	0	240	720	280	480	40
		EB-R	100	160	140	160	-20	0	160	180	160	20	0
		NB-L	100	140	140	140	0	0	160	160	140	0	-20
		NB-R	300	280	260	240	-20	-40	460	440	300	-20	-160
		SB-LT	1,000	820	800	500	-20	-320	840	960	500	120	-340
		SB-TR	150/450[7]	280	280	440	0	160	280	280	440	0	160
		WB-L	350	260	280	280	20	20	180	360	320	**180**	140
		WB-T	350	180	160	300	-20	120	100	220	340	120	240
39. I-580 WB Ramps/Golf Links Road[7]	Signal	EB-LT	350	520	500	360	-20	-160	560	560	460	0	-100
		EB-T	350	440	480	400	**40**	-40	240	420	340	**180**	100
		NB-LT	850	520	540	400	20	-120	520	560	480	40	-40
		NB-R	275/300[6]	400	420	280	20	-120	380	380	280	0	-100
		WB-T	125	180	160	160	-20	-20	160	160	160	0	0
		WB-R[5]	125	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
40. Moutnain Boulevard-Oakland Zoo Driveway/ Golf Links Road[7]	SSSC	EB-L	125	140	140	220	0	**80**	120	140	200	20	**80**
		EB-TR	125	200	220	200	20	0	120	200	200	**80**	**80**
		NB-LT	400	40	40	220	0	180	80	80	580	0	**500**
		NB-TR	1,000	40	40	40	0	0	40	40	280	0	240
		SB-LTR	1,600	300	1,060	440	760	140	160	1,060	440	900	280
		WB-LTR	3,000	520	520	1,260	0	740	520	520	1,340	0	820
41. San Leandro Street/ 98th Ave	Signal	EB-L	130	#223	#223	N/A	0	N/A	#317	#317	N/A	0	N/A
		EB-T	650	205	208		3		373	385		12	
		EB-R	100	52	52		0		142	142		0	
		WB-L	100	91	102		11		#178	#194		16	
		WB-TR	1,000	#505	#526		21		#505	#523		18	
		NB-L	120	#325	#325		0		#380	#380		0	
		NB-TR	1,000	342	344		2		390	396		6	
		SB-L	200	154	157		3		#269	#285		16	
		SB-TR	2,000	213	213		0		#543	#543		0	
42. Mountain Boulevard/ Creekside Pwky	Signal	SB-L	200	N/A	#104	N/A	N/A	N/A	N/A	178	N/A	N/A	N/A

Notes:
1. NB-northbound, SB-southbound, EB-eastbound, WB-westbound, L-left turn movement, T-through movement, R-right turn movement.
2. The Synchro software provides reasonable queuing results for locations operating in the LOS A through LOS D, but can misrepresent conditions as intersection operations approach capacity. In these instances, the software output denotes the condition with a letter/symbol adjacent to the analysis output worksheet. Furthermore, due to Synchro software limitations, 95th percentile queue data for all-way-stop controlled intersections is not available.
3. Differnces shown in **bold** represent locations where the project would result in an increase in 95th queue greater than 25 ft along movements that exceed the queue storage capacity under No Project conditions. N/A indicate that mitigation measures were not required for these intersections, therefore difference in queues is not reported for the mitigated improvement scenario.
4. Intersection asssumed to be signalized as part of the proposed mitigation measure.
5. Lane assumed to be removed by 2040 to accomodate proposed bike lane or BRT improvements.
6. Proposed mitigation measure would extend storage length under 2040 Plus Project Conditions.
7. Intersection was analyzed in SimTraffic.
Source: Fehr & Peers, 2016.

APPENDIX V-J
COLLISION DATA



□□□

PHASE I
ENVIRONMENTAL SITE ASSESSMENT
Former Naval Medical Center Oakland
8750 Mountain Boulevard
Oakland, California

November 2013

Prepared for

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SIGNATURE PAGE

In conformance with 40 CFR 312, the undersigned "declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in § 312.10 of 40 CFR 312."

"We have the specific qualifications based on education, training and experience to assess a property of the nature, history and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312."



Peter M. Krasnoff
California Registered Civil Engineer (44031)

11/25/13
Date



Peter E. Morris
California Professional Geologist (7084)

11/25/13
Date

1.0 INTRODUCTION

West Environmental Services & Technology, Inc. (WEST), prepared this *Phase I Environmental Site Assessment* ("*Phase I ESA*") for the Former Department of the Navy's (DoN) Naval Medical Center Oakland (NMCO) located at 8750 Mountain Boulevard in Oakland, California ("the Site;" Figure 1-1). This *Phase I ESA* was conducted in accordance with: 1) the United States Environmental Protection Agency's (USEPA's) Chapter 40 Code of Federal (CFR) Regulations Part 312, S*tandards and Practices for All Appropriate Inquiry: Final Rule* (40 CFR 312); and 2) ASTM *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process E 1527-05* (ASTM E 1527).

1.1 PURPOSE

The objective of performing the *Phase I ESA* was to identify recognized environmental conditions at the Site related to the previous ownership and uses of the Site and adjoining properties. Recognized environmental conditions, as applied in the scope of this work, are the presence or likely presence of any hazardous substance or petroleum product at the Site under conditions that indicate an existing release, a past release or a material threat of release into structures or into the ground, groundwater or surface water of the Site.

1.2 DETAILED SCOPE-OF-SERVICES

The work followed the guidelines as outlined in 40 CFR 312 and ASTM E 1527, except as otherwise noted. Specifically, WEST performed the following activities:

- WEST obtained and reviewed reasonably ascertainable background data on the characteristics and previous uses of the Site. The work included reviewing selected historical aerial photographs, topographic maps, Sanborn Fire Insurance Maps and reasonably ascertainable data on the geology and hydrogeology of the Site and vicinity;

- WEST conducted a Site reconnaissance of accessible exterior portions of the grounds and performed a drive-by reconnaissance of the surrounding neighborhood;

- WEST conducted an interview with the Site owner representative to obtain information regarding the previous and current uses of the Site;

- WEST searched pertinent regulatory records concerning potential releases of hazardous materials at the Site and surrounding properties that may have impacted soil and/or groundwater quality. Representatives of appropriate regulatory agencies were contacted regarding regulatory records for the Site and surrounding area;

- The findings were evaluated to develop opinions regarding whether they represented recognized environmental conditions; and

- WEST performed a data gap analysis.

The scope of the *Phase I ESA* did not include evaluations for possible natural hazards such as naturally occurring radon gas, methane gas or the potential for earthquake or flood damage.

1.3 LIMITATIONS AND EXCEPTIONS

The observations and conclusions presented in this report are professional opinions based on the activities conducted and the information obtained during the environmental assessment described herein. Opinions presented here apply only to the observed Site conditions existing at the time of the assessment and cannot necessarily apply to Site conditions or changes of which this office is not aware or has not had the opportunity to evaluate. Any conclusions drawn from this data rely on the integrity of the information available at the time of the investigation and an absolute determination of environmental risks cannot be made.

1.4 SPECIAL TERMS AND CONDITIONS

No special terms and conditions were indicated by the User for this *Phase I ESA*.

1.5 USER RELIANCE

The *Phase I ESA* report is for the exclusive use of the User and its designees. Use of this report by any other party shall be at such party's sole risk.

1.6 EXECUTIVE SUMMARY

We have prepared this *Phase I ESA* in conformance with the scope and limitations of ASTM E 1527. Any exceptions to, or deletions from, this practice are described in Section 8.0 of this report. This assessment revealed no evidence of current recognized environmental conditions in connection with the Site; except for those listed in Table 7-1. Consistent with 40 CFR 312 and ASTM E 1527, no data gaps of historical records were identified but additional investigations are recommended to evaluate the potential presence of petroleum products and/or hazardous substances. A summary of the *Phase I ESA* is presented below.

The approximately 167-acre sloping Site is located along Mountain Boulevard in Oakland, California. The Assessors Parcel Numbers (APNs) for the Site include: 043A-4675-003-21; 048-6865-002-03; and 048-6870-001-00.

In the 1920s, the Site was occupied by the Oak Knoll Golf and Country Club (Toxichem, 2007). In the 1940s, the DoN acquired the Site for construction and development of the NMCO for treatment of casualties during World War II. Following World War II, the NMCO expanded and decreased its footprint across the Site as a result of subsequent foreign wars. The NMCO was closed by the DoN in 1996 (Toxichem, 2007). Features at the Site during NMCO operation included: "H-shaped" wards; gasoline service stations; officer quarters; a 450,000-square-foot 500-plus bed hospital; incinerator; automobile repair facilities; helicopter pads; boiler plant;

underground fuel storage tanks (USTs); aboveground fuel storage tanks (ASTs); and storage areas for hazardous and radioactive materials and wastes. In the 1960s, several "H-shaped" wards were demolished for construction of the 500-plus bed hospital. Between 1970s and 1980s, additional "H-shaped buildings were demolished for construction of apartments. In 2007, the DoN auctioned the former NMCO for redevelopment. Between 2010 and 2011, the hospital and all remaining buildings; except for those associated with the Seneca Center, Seawest Credit Union and the former Club Oak Knoll; were demolished (EDR, 2013).

In the 1990s, several investigations were conducted at the Site by the DoN in preparation for closure. The Site was divided into approximately 63 parcels (Parcels 110 to 163). In 1994, the DoN completed their Environmental Baseline Study (EBS), which identified environmental conditions at the Site.

As part of the EBS, the DoN investigated 20 underground storage tanks (USTs) for potential releases of petroleum hydrocarbons. Based on the results of the DoN's investigations, the California Regional Water Quality Control Board – San Francisco Bay Region (Regional Water Board) and the Department of Toxic Substances Control (DTSC) provided closure of 18 USTs. Two of the USTs were not found (ERM-West, 1994).

The DoN also removed four aboveground storage tanks (ASTs). The Navy concluded that, "no notifications are required" and "no restrictions exist" with respect to the ASTs (FOST, 1999). However, soil sampling in the vicinity of an observed release near two of the ASTs revealed the presence of total petroleum hydrocarbons in soil below current regulatory screening criteria for commercial/industrial use, but above applicable screening criteria for residential use.

The DoN did not identify releases of volatile organics from hazardous materials storage and historical solvent use. However, the DoN also did not conduct sampling to confirm these Site conditions. In addition, changes in regulatory guidance since the DoN issued its *Finding of Suitability for Transfer* (FOST), indicates that soil gas sampling should be conducted to confirm the absence of volatile organic vapors in the subsurface (DTSC, 2004).

The DoN also investigated and conducted soil excavation to address lead in soil from historical use of lead-based paint (LBP). Based on the laboratory analysis of soil samples collected by the DoN, DTSC concluded that the presence of lead in soil on parcels designated for mixed-use did not pose an unacceptable risk to human health or the environment. However, the DoN has acknowledged that lead residues remain in soil at the Site and that soil sampling will be required following transfer. In addition, the USEPA noted that the LBP was an "unresolved agency comment" (FOST, 1999). In 2000, DTSC indicated to the DoN, that due to the change from the previous development plan to convey the property to the City of Oakland, DTSC required remedial actions and placed restrictions on the Site until the successor owner "fully investigates and remediates lead in soil pursuant to the NCP" (DTSC, 2000). In 2005, the DoN indicated to the DTSC, that "the property recipient will demolish all target housing structures, conduct soil sampling, and if necessary, remediation after demolition" (DoN, 2005).

The DoN conducted investigations to identify potential impacts to soil from: pesticide application; and storage of equipment containing polychlorinated biphenyls (PCBs). Based on the pesticide and PCB soil sampling, the DoN concluded that, "no notifications are required" and "no restrictions exist" with respect to pesticide application and PCBs (FOST, 1999). However, the DoN did not investigate soil beneath buildings where pesticides may have been applied and PCBs were detected in soil above current regulatory health-based screening criteria.

The DoN also conducted an evaluation of areas previously used for storage of radiological materials. Based on the results of the evaluation, the DoN concluded that, "no notifications are required" and "no restrictions exist" with respect to radiological materials (FOST, 1999).

In 1999, the DoN issued it *Finding of Suitability to Transfer* (FOST). The DoN concluded in the FOST, with concurrence from the Regional Water Board, DTSC and the United States Environmental Protection Agency (USEPA), that based on their evaluations the DoN has represented that "all remedial action necessary to protect human health and the environment with respect to any hazardous substance remaining on the Property has been taken before the date of transfer" (FOST, 1999).

2.0 SITE DESCRIPTION

The approximately 167-acre Site is located east of Mountain Boulevard in Oakland, California and is composed of 63 DoN-designated parcels (Figure 2-1). The Site is located adjacent to a residential area east of Interstate 580 and Mountain Boulevard, south and west of Keller Avenue and north of Sequoyah Road in Oakland, California. Assessor's Parcel Numbers for the Site include: 043A-4675-003-21; 048-6865-002-03; and 048-6870-001-00.

The Site is currently a closed DoN facility. Since 2010, remaining structures on the Site have been demolished including the approximately 450,000-square-foot hospital and approximately 70 other residential and administrative buildings. The Site is currently unoccupied. The Seneca Center and Sea West Federal Credit Union are located on former portions of the Site (Figure 2-1).

Historical features at the Site during NMCO operation included: "H-shaped" wards; gasoline service stations; officer quarters; a 450,000-square-foot 500-plus bed hospital; incinerator; automobile repair facilities; helicopter pads; boiler plant; USTs; ASTs; and storage areas for hazardous and radioactive materials and wastes.

2.1 GEOLOGICAL AND HYDROGEOLOGICAL SETTING

The Site is located within the San Francisco Bay Region of the Coast Ranges Geomorphic Province. The Site subsurface geology consists of unconsolidated alluvial deposits and bedrock. The unconsolidated alluvium deposits are present as stream channel deposits composed of weathered bedrock, sands, silts and clays. Bedrock underlying the Site is composed of the Leona Rhyolite. The Leona Rhyolite is composed of a weathered zone containing loose rock fragments in a clay matrix (PRC, 1994). The weathered zone was observed in excavations at the Site up to approximately 30 feet thick. Underlying the weathered bedrock zone is competent bedrock composed of volcanic deposits of Rhyolite, volcanic glass and pyrite minerals (PRC, 1994).

The depth to groundwater measured in geotechnical borings advanced between 1957 and 1983 near the former Hospital building at the Site has ranged between 5-feet and 43 feet below ground surface (EIR, 1998). Groundwater flow direction has been estimated to the south-southeast following surface topography (PRC, 1994). Groundwater may be present within the unconsolidated alluvium and underlying bedrock, which are considered one hydrogeological unit.

2.2 SURFACE WATER

Rifle Range Creek transects the Site northeast to southwest and may intersect the groundwater table (Figure 2-1). Rifle Range Creek conveys surface water from the Site toward Mountain Boulevard. Power House Creek is located along the southern edge of the Site and is contained within a subsurface drainage structure. Power House Creek flows to Rifle Range Creek with the confluence near Parcel 160.

2.3 CURRENT USES OF ADJOINING PROPERTIES

The surrounding properties consist of residential neighborhoods to the north, east, south and west. Interstate Highway 580 is located approximately one-eighth of a mile to the west (Figure 2-1).

3.0 USER PROVIDED INFORMATION

WEST submitted a questionnaire to the User to assist in identifying the known recognized environmental conditions in connection with the Site.

3.1 TITLE RECORDS

At the time of this *Phase I ESA*, a preliminary title report was provided by the User for review as part of the *Phase I ESA*. A copy of the preliminary title report is included in Appendix A.

3.2 ENVIRONMENTAL LIENS OR ACTIVITY AND USE LIMITATIONS

The User provided a copy of the *Quitclaim Deed Former Naval Medical Center Oakland with Environmental Restrictions Pursuant to California Civil Code 1471* ("*Quitclaim Deed*") dated March 27, 2006 as part of the preliminary title report. The *Quitclaim Deed* provided notifications regarding environmental conditions at the Site including the presence of lead-based paint [LBP], asbestos and pesticides. The notifications identify that the property "may include improvements that are presumed to contain LBP [lead-based paint]" and that "interim use of these structures as residential real property or child occupied facilities prior to demolition is prohibited." The *Quitclaim Deed* indicates that the Grantee agrees to "conduct soil sampling and if, necessary remediation after demolition and removal of demolition debris and prior to occupancy."

The *Quitclaim Deed* identifies that "asbestos and asbestos containing material (ACM) have been found and are otherwise presumed to exist in buildings and structures located on the Property" and prohibits "occupancy and use of buildings and structures, or portions thereof, containing known asbestos or ACM hazardous prior to abatement."

Notification is also provided in the *Quitclaim Deed* that the Grantor "shall have no obligation under the covenants provided…for the removal or remediation of pesticides, either at the site of their application or if moved from that site for any purpose."

The *Quitclaim Deed* also identifies that "all remedial action necessary to protect human health and the environment with respect to any hazardous substance remaining on the Property has been taken before the date of transfer;" and that the "Grantor shall conduct any additional remedial actions found necessary after the date of the transfer for any hazardous substance existing on the Property prior to the date of this Deed."

An Environmental Lien Search Report was also obtained from Environmental Data Resources, Inc. (EDR) of Milford, Connecticut (EDR, 2013b). The Environmental Lien Search Report did not identify environmental liens or activity use limitations associated with the Site. Copies of the *Quitclaim Deed* and the EDR Environmental Lien Search Report are included in Appendix A.

3.3 SPECIALIZED KNOWLEDGE

The User indicated no specialized knowledge of the Site.

3.4 VALUATION REDUCTION FOR ENVIRONMENTAL ISSUES

The User indicated no environmental issues related to valuation reduction of the Site.

3.5 OWNER, PROPERTY MANAGER, AND OCCUPANT INFORMATION

The User did not identify Site Owner or Property Manager representatives.

3.6 REASON FOR PERFORMING PHASE I ESA

The User indicated the purposes for conducting the *Phase I ESA* is to understand potential environmental conditions impacting the Site. A copy of the User Questionnaire is included in Appendix A.

3.7 OTHER

The User indicated that the Site is proposed for residential use. A copy of the User Questionnaire is included in Appendix A.

4.0 RECORDS REVIEW

A records review was conducted to identify recognized environmental conditions at and near the Site. The records searched for this *Phase I ESA* consisted of standard federal and state environmental record sources as defined in ASTM E 1527. Historical records searched as part of the *Phase I ESA* included: aerial photographs; Sanborn Fire Insurance Maps; topographic maps; and city directories. Relevant historical uses associated with the Site and surrounding areas are depicted on Figure 2-1 and discussed in Table 7-1.

4.1 STANDARD ENVIRONMENTAL RECORD SOURCES

An environmental database report was prepared by EDR and consisted of a review of federal and state regulatory listings for sites within the search radii established under the ASTM E 1527 (EDR, 2013a). Sites listed in the EDR environmental database report located: greater than 1,000-feet distance from the Site; at topographically lower elevations; and/or hydraulically downgradient or cross-gradient from the Site, were reviewed but not considered relevant to the identification of recognized environmental conditions. Discussions of the relevant findings from the environmental database report, e.g., sites within approximately 1,000-feet and hydraulically upgradient of the Site have been included, as appropriate, in Table 7-1. A copy of the EDR environmental database report is included in Appendix A.

4.2 ADDITIONAL ENVIRONMENTAL RECORDS SOURCES

Additional environmental records including previous environmental reports, permits and correspondence were requested from the City of Oakland, Regional Water Board, DTSC and the DoN. Electronic databases were also accessed from the California State Water Resources Control Boards Geotracker database and DTSC's Envirostor database. Discussions of the relevant findings from the additional environmental record sources have been included in Table 7-1. Copies of the relevant documents have been included in Appendix B.

4.3 PHYSICAL SETTING SOURCES

The Oakland East California United States Geological Service (USGS) 7.5 Minute Quadrangle topographic maps were reviewed to identify geologic, hydrogeologic, hydrologic and topographic features of the Site and surrounding area. Copies of the USGS topographic maps are included in Appendix B.

4.4 HISTORICAL USE INFORMATION ON THE SITE

The objective for reviewing historical sources regarding past uses of the Site was to develop information regarding history of previous uses of the Site and surrounding area to identify the likelihood of past uses having led to recognized environmental conditions in connection with the Site. Reasonably ascertainable historical sources including aerial photographs, Sanborn Fire Insurance Maps and topographic maps were reviewed. Locations of relevant historical uses of the Site are identified on Figure 2-1. Copies of the historical aerial photographs, Sanborn Fire Insurance Maps and topographic maps are included in Appendix B.

4.5 HISTORICAL USE INFORMATION ON ADJOINING PROPERTIES

The information sources used for evaluating the historical use of the Site were reviewed to identify historical uses of adjoining properties. Locations of relevant historical uses of adjoining properties are identified on Figure 2-1.

5.0 SITE RECONNAISSANCE

A Site reconnaissance was performed by WEST on November 15, 2013. Mr. Peter Morris, a representative of WEST, conducted the reconnaissance. The objective of the reconnaissance was to obtain information indicating the likelihood of recognized environmental conditions in connection with the Site. The reconnaissance included a visual observation of the Site and adjoining properties. A summary of the relevant conditions observed during the Site reconnaissance is included in Table 7-1. Photographs of the Site are included in Appendix C.

5.1 METHODOLOGY AND LIMITING CONDITIONS

As part of the reconnaissance, accessible portions of the Site were observed visually. Accessible physical conditions included: pathways, access roads and walkways located on the perimeter of the Site as well. Adjoining properties were also visually observed, where possible.

5.2 GENERAL SITE SETTING

Observations were made during the Site reconnaissance of current and past uses of the Site and adjoining properties likely to involve the use, treatment, storage, disposal or generation of hazardous substances or petroleum hydrocarbons. A summary of the observations is included in Table 7-1.

6.0 INTERVIEWS

The objective of the interviews was to obtain information indicating recognized environmental conditions in connection with the Site.

6.1 INTERVIEW WITH OWNER

The Site Owner representative, Mr. Eric Higuchi of Signature Development Group, was contacted for an interview. A copy of the interview documentation is included in Appendix D. Other Site owner representatives were not identified for interviews.

6.2 INTERVIEW WITH PROPERTY MANAGER

Property manager representatives were not identified by the User for interviews; thus, property manager representatives were not interviewed.

6.3 INTERVIEW WITH OCCUPANTS

The Site was unoccupied; thus, Site occupant representatives were not interviewed.

6.4 INTERVIEWS WITH LOCAL GOVERNMENT OFFICIALS

File review requests were sent to representatives of City of Oakland, Regional Water Board, DTSC; and the Bay Area Air Quality Management District (BAAQMD). Discussions of the relevant findings from the local government agencies have been included in Table 7-1.

6.5 INTERVIEWS WITH OTHERS

Other knowledgeable individuals regarding the Site uses and conditions were not identified.

7.0 FINDINGS AND CONCLUSIONS

WEST has performed a *Phase I ESA* in conformance with the scope and limitations of ASTM E 1527 of the Site. Any exceptions to, or deletions from, this practice are described in Section 8.0 of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the Site; except for those listed in Table 7-1. The findings, opinions and conclusions supporting the findings of the recognized environmental conditions at the Site are presented in Table 7-1.

In accordance with Section 12.5 of ASTM E 1527, a summary of the history, relevant information obtained during the Phase I ESA, potential chemicals present, the known or suspect recognized environmental condition, as well as historical recognized environmental conditions and *de minimis* conditions have been identified and provided in Table 7-1.

In accordance with Section 12.6 of ASTM E 1527, the opinions including WEST's rationale for concluding that the known or suspect recognized environmental conditions identified in the findings section are or are not currently recognized environmental conditions are presented in Table 7-1. In accordance with Section 12.8 of ASTM E 1527, the conclusions as to whether the findings recognized environmental conditions are presented in Table 7-1. Pursuant to Section 3.2.74 of ASTM E 1527, *de minimis* conditions, i.e., conditions that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies, are not considered recognized environmental conditions.

8.0 DEVIATIONS

There were no deviations from the ASTM Practice E 1527 standard while conducting this *Phase I ESA* except for the following:

- Historical aerial photographs were not reviewed in five-year increments; and
- Site tax files were not reasonably ascertainable.

9.0 ADDITIONAL INVESTIGATIONS

Consistent with 40 CFR 312 Section 312.31 and ASTM E 1527 Section 12.6.1, an evaluation was conducted to identify whether additional investigations are needed to obtain greater certainty with regard to Site conditions. Based on the evaluation, additional investigations are recommended.

10.0 DATA GAPS

Consistent with 40 CFR 312 Section 312.20(g) and ASTM E 1527 Section 12.7, a data gap analysis was performed. No significant data gaps associated with information for the *Phase I ESA* were identified.

11.0 ADDITIONAL SERVICES

No additional services were performed as part of this *Phase I ESA*.

12.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

This report has been prepared under the direction of Peter M. Krasnoff, P.E., a registered Civil Engineer with over 25 years of environmental assessment and evaluation experience. Mr. Krasnoff received his Master of Science from the University of California at Berkeley in Environmental Engineering and his Bachelor of Civil Engineering from the Georgia Institute of Technology. Mr. Krasnoff has extensive experience in environmental investigations and remediation and has conducted reviews of over 100 sites involving hazardous materials and waste disposal activities. Mr. Krasnoff was supported by Mr. Peter Morris, P.G., a Professional Geologist.

Mr. Morris, a Professional Geologist with over 20 years of environmental assessment and investigating experience, also prepared this *Phase I ESA*. Mr. Morris received his Bachelors of Science degree from the University of California at Davis in Geology and his Masters of Science degree in Civil and Environmental Engineering from George Washington University. Mr. Morris has conducted and supervised numerous site investigations involving the evaluation of hazardous materials and wastes with emphasis on soil and groundwater characterization and remediation.

13.0 REFERENCES

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14.0 DISTRIBUTION LIST

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TABLES

TABLE 7-1
SUMMARY OF SITE CONDITIONS
Former Naval Medical Center Oakland
8750 Mountain Boulevard
Oakland, California

Map ID (Figure 2-1)	Location		FINDINGS: History	FINDINGS: Known or suspect environmental conditions	FINDINGS: Chemicals: TPH	FINDINGS: Chemicals: VOCs	FINDINGS: Chemicals: SVOCs	FINDINGS: Chemicals: Pesticides	FINDINGS: Chemicals: Metals	FINDINGS: Chemicals: PCBs/Dioxins	FINDINGS: Regulatory Closure (FOST)	OPINIONS: Rationale	CONCLUSIONS: Environmental Condition: Yes: Known	CONCLUSIONS: Environmental Condition: Yes: Suspect	CONCLUSIONS: Environmental Condition: No: *de minimis*	CONCLUSIONS: Environmental Condition: No: No
1	Former Underground Storage Tanks	Site Parcels 108, 110, 115, 132, 137, 139, 151, 154 and 159	Twenty underground storage tanks (USTs) were investigated at the Site between 1991 and 1997 (FOST, 1999). Based on the investigations, 18 of the 20 USTs were found and removed. Two of the 20 USTs were not found (Parcel 110). The USTs were used for storage of petroleum products at four former service stations (Parcels 108, 110, 151 and 159), the hospital and hospital boiler (Parcels 137 and 139), Officer's residence (Parcel 115), a warehouse (Parcel 132) and the boiler plant (Parcel 154). The 18 USTs were closed as "low risk soil-only" by the California Regional Water Quality Control Board - San Francisco Bay Region (Regional Water Board) between 1994 and 1997 with concurrence from the California Department of Toxic Substances Control (DTSC). Residual petroleum hydrocarbons remain in soil at 14 of the 18 former USTs on Parcels 108, 115, 132, 137, 139, 151, 154 and 159 (FOST, 1999). Total petroleum hydrocarbons as gasoline (TPHg) and benzene were detected in soil samples up to 4,000 milligrams per kilogram (mg/kg) and 23 mg/kg, respectively, adjacent to the former USTs at Parcel 108 (Regional Water Board, 1997a) above their current Regional Water Board ESLs of 100 mg/kg and 0.044 mg/kg and the current SWRCB Low Threat Closure Policy criteria of 12 mg/kg for benzene. Soil samples were not collected from the base of the excavations or along product piping runs during removal of the USTs at Parcels 132, 137 and 159. In 1999, the Department of the Navy (DoN) concluded that the releases from the former USTs did not pose a risk under a mixed-use scenario (FOST, 1999) and that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas.” (FOST, 1999). Information regarding current soil conditions near the former USTs was not reasonably ascertainable.	Releases of petroleum hydrocarbons and VOCs to soil from the former USTs.	X	X					X	While previously closed, based on the reported residual concentrations of TPH and benzene above current regulatory thresholds, the releases from the USTs represent a current recognized environmental condition.	X			
2	Former Underground Storage Tanks	Site Parcels 108, 151 and 159	Residual petroleum hydrocarbons and VOCs are present in soil near the former gasoline USTs on less than 0.1-acre portions of the 162-acre Site: Parcel 108 (less than 1-acre; 510A, 510B and 510C); Parcel 151 (less than 1-acre; 214A to 214D); and Parcel 159 (less than 1-acre; 141-A; FOST, 1999). The Regional Water Board closed the gasoline USTs on Parcels 108 (Regional Water Board, 1997a), 151 (Regional Water Board, 1997b) and 159 (FOST, 1999). The Regional Water Board closure documentation indicated that "no further action related to the underground storage tank release is required," however, "if a change in land use is proposed, the owner must notify this agency." In 1995, ERM-West indicated that the inhalation exposure pathway for the USTs on Parcel 108 would be complete "if a structure was constructed over areas of impacted soil" (ERM-West, 1995). In 1999, the DoN concluded that the releases from the former USTs did not pose a risk under a mixed-use scenario (FOST, 1999) and that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas.” (FOST, 1999). Information regarding current soil gas conditions near the former USTs was not reasonably ascertainable.	Potential for impacts to indoor air from the gasoline UST releases.	X	X					X	While the Regional Water Board closed the gasoline USTs on Parcels 108, 151 and 159, due to the lack of soil gas data and the change in Site use, the potential for impacts to indoor air from the presence of VOCs in soil gas associated with the gasoline USTs represents a suspect recognized environmental condition.		X		

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3	Former Aboveground Storage Tanks	Site Parcels 110, 137 and 153	Six aboveground storage tanks (ASTs) were located on less than 0.1-acre portions of the 162-acre Site: Parcels 110 (two 300-gallon ASTs), 137 (one 500-gallon AST), and 153 (two 10,000-gallon and one 163,000 gallon AST; FOST, 1999). The ASTs reportedly contained diesel fuel. Four of the six ASTs were removed prior to 1999: the two 300-gallon ASTs on Parcel 110 (located inside); and the two 10,000-gallon ASTs on Parcel 153 (FOST, 1999). The two other ASTs were removed after 2008: the 500-gallon AST on Parcel 137; and the 163,000-gallon AST on Parcel 153. The 163,000-gallon AST on Parcel 153 "has never been filled" (ERM-West, 1994). Staining was observed within the secondary containment for the 10,000-gallon ASTs on Parcel 153 which indicate "past leaks" (ERM-West, 1994). Two soil samples collected near the 10,000-gallon ASTs on parcel 153 revealed total petroleum hydrocarbons at 760 mg/kg at 0.5 feet and 170 mg/kg at 3.5 feet below ground surface (PRC, 1996), above the Regional Water Board ESL of 100 mg/kg. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas.” (FOST, 1999).	Releases of petroleum hydrocarbons to soil from the former ASTs.	X	X						Based on the presence of TPH in soil above regulatory screening criteria near the ASTs on Parcel 153, the lack of soil data near the remaining ASTs and the reported staining, releases from the ASTs represent a suspect recognized environmental condition that might require corrective actions..		X		
4	Lead-Based Paint	Site Parcels	Lead-based paint is present on structures constructed before 1978 at the Site (FOST, 1999). Laboratory analysis of the soil samples collected by DTSC in 1997 revealed lead in soil up to 6,400 mg/kg (Parcel 115), up to 2,440 mg/kg near Building 67 (Parcel 130), up to 483 mg/kg near Building 101 (Parcel 131), up to 2,750 mg/kg near Building 73 (Parcel 134) and up to 314 mg/kg near Building 18 (Parcel 162) above the California Department of Toxic Substances Control (DTSC) California Human Health Screening Level (CHHSL) of 80 mg/kg for residential use. Soil containing lead was removed from Parcel 115 in 1999 (FOST, 1999). In 1997, the DoN conducted limited removal of soil containing lead near the Barcelona-Santa Cruz Streets residential area (IT, 1997). Post-removal soil sampling revealed lead in soil up to 1,090 mg/kg, which is above the DTSC residential CHHSL of 80 mg/kg. In 1999, the DoN concluded that the presence of lead in soil did not pose a risk under a mixed-use scenario (FOST, 1999) and that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas.” (FOST, 1999). In 2000, DTSC indicated to the DoN, that due to the change from the previous plan to convey the property to the City of Oakland, DTSC required remedial actions and placed restrictions on the property until the successor owner “fully investigates and remediates lead in soil pursuant to the NCP” (DTSC, 2000). In 2005, the DoN indicated to the DTSC, that “the property recipient will demolish all target housing structures, conduct soil sampling, and if necessary, remediation after demolition” (DoN, 2005). Observations from the Site visit indicate that the buildings at the Site have been demolished (Appendix C). Information regarding soil conditions following demolition or if remedial actions have been conducted was not reasonably ascertainable.	Presence of lead in soil above its human-health based screening criterion.					X		X	Based on the presence of lead in soil above its current residential applicable screening criterion, DTSC's 2000 and DoN's 2005 requirements, and the lack of soil data following building demolition, the presence of lead in soil represents both a suspect and known recognized environmental condition.	X	X		

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			History	Known or suspect environmental conditions	Chemicals							Regulatory Closure (FOST)	Rationale	Environmental Condition			
														Yes		No	
					TPH	VOCs	SVOCs	Pesticides	Metals	PCBs/Dioxins				Known	Suspect	*de minimis*	No
5	Pesticides	Site Parcels	Pesticides, insecticides, termiticides and rodenticides were "ordinarily and routinely applied" at the Site (FOST, 1999). Pesticides were reportedly stored and mixed on a less than 0.3-acre portion of the 162-acre Site on Parcel 157. Laboratory analysis of two soil samples collected from Parcel 157 did not reveal pesticides at concentrations above current health-based residential screening criteria. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas." (FOST, 1999). Information regarding soil conditions and past use, storage and disposal practices with respect to pesticides at the Site was not reasonably ascertainable.	Potential releases to soil from pesticide application				X			X	Based on the lack of soil data and the lack of information regarding past practices for Navy application of pesticides, the potential presence of pesticides in soil represents a suspect recognized environmental condition.		X		
6	Hazardous Substance and Waste Storage	Site Parcels 106, 110, 113, 126, 131, 132, 137 and 154	"Incidental quantities of household type cleaning chemicals and consumer products" containing hazardous substances were historically stored in cabinets in buildings on Parcels 106, 113, 126, 131, 132, 137 and 154 (ERM-West, 1994; FOST, 1999). Compressed gas cylinders containing dichlorodifluoromethane (Freon-12) were stored within Building 216 on Parcel 105 (FOST, 1999). Halogenated solvents, i.e., F-listed wastes (F001 and F002) were stored within the open space on a less than approximately 1-acre portion of the 162-acre Site on Parcel 136 (FOST, 1999). Paints, pesticides, Photodeveloping chemicals including mercury were also stored on Parcel 131 (Building 101). Information regarding soil gas conditions and past disposal practices with respect to hazardous substances at the Site was not reasonably ascertainable.	Potential presence of hazardous substances in soil gas to that could migrate to indoor air for future buildings on Parcels 105 and 136.		X						X	Based on the lack of soil gas data and information regarding disposal practices of halogenated solvents, the potential release of hazardous substances to soil gas from hazardous waste storage activities represents a suspect recognized environmental condition.		X		

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7	Boiler Treatment Chemicals	Site Parcel 154	Scale and corrosion chemicals for treatment of boiler blowdown water were used and stored in Building 22 on Parcel 154. "Stains on floor indicate past releases of chemicals" (ERM-West, 1994). Boiler blowdown was discharged to the storm drain. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas." (FOST, 1999). Information regarding soil conditions near Building 22 were not reasonably ascertainable.	Releases to soil from boiler blowdown of water with treatment chemicals.					X		X	Based on the indications of past releases and the lack of soil data, the release of water with treatment chemicals represents a recognized environmental condition.	X			
8	Radioactive Material Storage	Site Parcels 112, 113, 116, 117, 123, 133 and 137	Radioactive materials were stored in Building 107 (Parcel 112), Building 17 (Parcel 113), Building 85 (Parcel 116) and Building 110 (Parcel 117), Building 75 (Parcel 133) and Building 500 (Parcel 137) (ERM, 1994). A radioactive waste compactor was formerly operated in Building 65 (Parcel 123; ERM, 1994). According to the DoN, radioactive material handling permits were terminated and no notifications or restrictions exist with respect to radioactive materials storage areas at the Site (FOST, 1999). Information regarding soil conditions with respect to the radioactive material storage areas was not reasonably ascertainable.	Potential releases to soil from storage of radioactive materials and waste.							X	Based on the closure of the radioactive material storage areas by the DoN with concurrence from DTSC prior to property transfer, the former storage of radioactive materials does not represent a recognized environmental condition.				X

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9	Former Incinerator	Site Parcel 114	An incinerator formerly operated at Building 115 (Parcel 114) on a less than 0.1-acre portion of the 162-acre Site. The incinerator was reportedly operated until the 1970s and was used for disposal of animal carcasses, medical waste and narcotics (ERM, 1994). In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas.” (FOST, 1999). Information regarding soil conditions near the former incinerator was not reasonably ascertainable.	Potential releases of hazardous substances to soil from disposal of incinerator wastes.			X		X	X	X	Due to the lack of soil data, potential releases of incinerator waste represents a suspect recognized environmental condition.		X		
10	Former Hydraulic Lift	Site Parcel 159	A hydraulic lift associated with auto repair facility operated near Building 111 (Parcel 159) on a less than 0.1-acre portion of the 162-acre Site (FOST, 1999). Building 111 is located near the hydraulically downgradient edge of the Site. Petroleum hydrocarbons were detected in soil at a depth between 12 and 14 feet below ground surface following removal of the hydraulic lift. Approximately 80 cubic yards of soil were removed near the hydraulic lift. Soil containing petroleum hydrocarbons and VOCs remained adjacent to Building 111 and Rifle Range Creek (FOST, 1999). Based on the analytical results of sediment samples collected from Rifle Range Creek near the former hydraulic lift, the United States Department of Fish and Game concluded that "there is no increased risk to ecological receptors of concern (FOST, 1999).	Potential for VOCs in soil gas to migrate to indoor air of future buildings from the former hydraulic lift release.	X	X					X	While the regulatory agencies have indicated that no further action is necessary to address the releases to soil from the hydraulic lift on Parcel 159, based of the lack of soil gas data and the potential change in Site use, the presence of VOCs in soil near the former hydraulic lift represents a suspect recognized environmental condition		X		

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11	Former Automobile Repair	Site Parcel 159	An auto repair facility operated at Building 112 (Parcel 159) on a less than 0.1-acre portion of the 162-acre Site (FOST, 1999). Hazardous substances and petroleum products were used, stored and disposed at Building 112. Laboratory analysis for VOCs of one soil sample (SP-159-3) collected at approximately 3.5 feet below ground surface and adjacent to Building 112 did not reveal VOCs above their respective laboratory-reporting limits of 0.01 mg/kg (PRC, 1996). Laboratory analysis of five soil samples collected on Parcel 159 revealed arsenic up to 11.8 mg/kg below reported background concentrations of similar geologic strata of 11 mg/kg (Diverge, 2011). Lead was detected in the five soil samples up to 1,460 mg/kg above DTSC's CHHSL of 80 mg/kg (DTSC, 2010); and TPH as motor oil up to 3,500 mg/kg above its Regional Board Environmental Screening Level (ESL) of 500 mg/kg. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas." (FOST, 1999). Information regarding soil gas conditions was not reasonably ascertainable.	Releases of TPH and lead to soil	X				X		X	Based on the presence of TPH and lead above current applicable screening criteria, the releases at the former automobile repair facility represent a recognized environmental condition.	X			
				Potential presence of VOCs in soil gas that could migrate to indoor air of future buildings		X					X	Based on the lack of soil gas data and the past releases to soil, the potential release of VOCs in automobile repair solvents to soil gas represents a suspect recognized environmental condition.		X		
12	Oil-Filled Transformers	Site Parcel 155	Oil-filled transformers containing detectable concentrations of polychlorinated biphenyls (PCBs) were present at the Site until approximately 1985 (FOST, 1999). In 1994, the survey results of oil-filled industrial equipment at the Site did not reveal the presence of PCBs above 5 parts per million (FOST, 1999). Transformers were historically stored on a less than 0.05-acre portion of the 162-acre Site on Parcel 155 (PRC, 1996). Laboratory analysis of two soil samples collected on Parcel 155 revealed the presence of PCBs up to 0.4 mg/kg, above DTSC's residential CHHSL of 0.089 mg/kg. Based on the soil sample results and Site use, the DoN and DTSC concurred that no further action was necessary to address PCBs in soil at Parcel 155 (FOST, 1999).	Release of PCBs to soil						X	X	Based on the presence of PCBs in soil above current human-health protective levels, the release from the former transformer represents a current recognized environmental condition.	X			

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			History	Known or suspect environmental conditions	Chemicals						Regulatory Closure (FOST)	Rationale	Environmental Condition				
													Yes		No		
					TPH	VOCs	SVOCs	Pesticides	Metals	PCBs/Dioxins			Known	Suspect	*de minimis*	No	
13	Cleaning Solvent Tank	Site Parcel 104	A cleaning solvent tank was reportedly used at Building 63 (Parcel 104) on a less than 0.1-acre portion of the 162-acre Site (ERM, 1994). Flammable materials, acids and paints were also reportedly stored in cabinets in Building 63. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas" (FOST, 1999). Information regarding current soil and soil gas conditions near the former cleaning solvent tank was not reasonably ascertainable.	Potential releases of acids and VOCs to soil and potential migration of VOCs in soil gas to migrate to indoor air.		X			X		X	Due to the lack of soil and soil gas data and the lack of information regarding historical use, storage and disposal practices of hazardous waste, the potential for releases to soil and soil gas from cleaning solvent tank use represents a suspect recognized environmental condition.		X		
14	Former Paint Booth, Paint, Pesticide, Solvent and Lubricant Storage	Site Parcel 110	A paint booth formerly operated in Building 13 and paints, pesticides, solvents and lubricants were stored in buildings on Parcel 110, which was the public works center for the Site (ERM, 1994, PRC, 1996). Soil samples collected in 1994, revealed TPH as motor oil up to 1,100 mg/kg, above the Regional Water Board's 2013 ESL of 500 mg/kg. Lead wa also detected in soil up to 85 mg/kg, above the CHHSL of 80 mg/kg. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas" (FOST, 1999). Information regarding current soil and soil gas conditions or historical use, storage and disposal practices was not reasonably ascertainable.	Potential releases to soil and soil gas of paints and solvents.		X					X	Due to the lack of soil and soil gas data and the lack of information regarding historical use, storage and disposal practices, the potential for releases to soil and soil gas from paints and solvents represents a suspect recognized environmental condition.		X		

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Map ID (Figure 2-1)	Location		FINDINGS: History	FINDINGS: Known or suspect environmental conditions	FINDINGS: Chemicals: TPH	FINDINGS: Chemicals: VOCs	FINDINGS: Chemicals: SVOCs	FINDINGS: Chemicals: Pesticides	FINDINGS: Chemicals: Metals	FINDINGS: Chemicals: PCBs/Dioxins	FINDINGS: Regulatory Closure (FOST)	OPINIONS: Rationale	CONCLUSIONS: Environmental Condition: Yes: Known	CONCLUSIONS: Environmental Condition: Yes: Suspect	CONCLUSIONS: Environmental Condition: No: *de minimis*	CONCLUSIONS: Environmental Condition: No: No
15	Diesel Backup Generator	Site Parcel 123	A back-up diesel generator and associated diesel AST operated near Building 65 (Parcel 123) on a less than 0.1-acre portion of the 162-acre Site (ERM-West, 1994). Solvents may have also been used to clean equipment as part of the generator maintenance activities. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas" (FOST, 1999). Information regarding current soil and soil gas conditions or historical cleaning practices was not in the reasonably ascertainable documents.	Potential releases of petroleum products and hazardous substances from spills during maintenance activities.	X	X					X	Due of the lack of soil and soil gas data and the lack of information regarding historical maintenance activities, the potential for releases to soil and soil gas represents a suspect recognized environmental condition.		X		
16	Former Laboratory Facilities	Site Parcel 125	Former laboratory facilities were located in former Buildings 1, 4 and 46 (Parcel 125) on less than a 1-acre portion of the 162-acre Site (ERM, 1994). The buildings on Parcel 125 were demolished prior to construction of the hospital building in the 1960s (ERM-West, 1994). In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas" (FOST, 1999). Information regarding current soil and soil gas conditions or hazardous substance and petroleum product use, storage and disposal from laboratory operations was not in the reasonably ascertainable documents.	Potential releases of hazardous substances and petroleum products from the laboratories.	X	X					X	Based on the lack of soil and soil gas data and the lack of information regarding historical chemical use, storage and disposal practices, the potential releases of petroleum products and hazardous substances represents a suspect recognized environmental condition.		X		

TABLE 7-1
SUMMARY OF SITE CONDITIONS
Former Naval Medical Center Oakland
8750 Mountain Boulevard
Oakland, California

Map ID (Figure 2-1)	Location		FINDINGS: History	FINDINGS: Known or suspect environmental conditions	FINDINGS: Chemicals: TPH	FINDINGS: Chemicals: VOCs	FINDINGS: Chemicals: SVOCs	FINDINGS: Chemicals: Pesticides	FINDINGS: Chemicals: Metals	FINDINGS: Chemicals: PCBs/Dioxins	FINDINGS: Regulatory Closure (FOST)	OPINIONS: Rationale	CONCLUSIONS: Environmental Condition: Yes: Known	CONCLUSIONS: Environmental Condition: Yes: Suspect	CONCLUSIONS: Environmental Condition: No: *de minimis*	CONCLUSIONS: Environmental Condition: No: No
17	Motor Oil Spill	Site Parcel 125	An unknown amount of motor oil was spilled on Parcel 125 in May 1992 (ERM, 1994). The area of the spill was reportedly "washed down" (ERM, 1994). In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas” (FOST, 1999). Information regarding current soil conditions near the spill area was not in the reasonably ascertainable documents.	Release to soil from the motor oil spill.	X						X	The release of motor oil represents a historical recognized environmental condition; however, based on the lack of soil data, the release of motor oil on Parcel 125 is a current recognized environmental condition.	X			
18	Hydraulic Fluid Release	Site Parcel 149	Approximately five gallons of hydraulic fluid were spilled on Parcel 149 in 1991 (ERM, 1994). The spilled hydraulic fluid was reportedly cleaned up by "washing the chemicals down the storm sewer" (ERM, 1994). Groundwater has not been encountered at the Site between the ground surface and approximately 45 feet below ground surface (PRC, 1994). In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas” (FOST, 1999). Information regarding current soil conditions near the spill area was not in the reasonably ascertainable documents.	Release of hydraulic fluid to soil	X						X	The release of hydraulic fluid represents a historical recognized environmental condition; however, based on the lack of soil data, the release of hydraulic fluid on Parcel 149 is a current recognized environmental condition.	X			

TABLE 7-1
SUMMARY OF SITE CONDITIONS
Former Naval Medical Center Oakland
8750 Mountain Boulevard
Oakland, California

Map ID (Figure 2-1)	Location		FINDINGS: History	FINDINGS: Known or suspect environmental conditions	FINDINGS: Chemicals: TPH	FINDINGS: Chemicals: VOCs	FINDINGS: Chemicals: SVOCs	FINDINGS: Chemicals: Pesticides	FINDINGS: Chemicals: Metals	FINDINGS: Chemicals: PCBs/Dioxins	FINDINGS: Regulatory Closure (FOST)	OPINIONS: Rationale	CONCLUSIONS: Environmental Condition: Yes: Known	CONCLUSIONS: Environmental Condition: Yes: Suspect	CONCLUSIONS: Environmental Condition: No: *de minimis*	CONCLUSIONS: Environmental Condition: No: No
19	Distressed vegetation	Site Parcel 145	Distressed vegetation was observed on the 1958, 1965, 1982, 1993 and 1998 historical aerial photographs on a less than 0.2-acre portion of the southwest corner of Parcel 145 (EDR, 2005). The distressed vegetation was observed near an unpaved access road on Parcel 145. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas” (FOST, 1999). Information regarding current soil conditions near the distressed vegetation area was not in the reasonably ascertainable documents.	Potential releases to soil of hazardous substances and petroleum products.	X	X					X	Based on the lack of soil data and the historical observations of distressed vegetation, then potential releases of petroleum products and hazardous substances represents a suspect recognized environmental condition.		X		
20	Rifle Range/Power House Creek	Site	Rifle Range Creek is an ephemeral stream that transects less than 0.1-acre portions of Parcels 110, 125, 135, 143 and 160 of the 162-acre Site. Rifle Range Creek is exposed on Parcels 110, 143 and 160 and flows underground through Parcels 125 and 135 (PRC, 1996). Power House Creek is channelized along the southern boundary of the Site and is exposed at Parcel 156. The confluence of Rifle Range Creek and Power House Creek is at Parcel 160. Laboratory analysis of sediment samples collected from Rifle Range and Power House Creeks revealed PCBs up to 200 micrograms per kilogram (ug/kg), above the residential CHHSL of 89 ug/kg and dieldrin up to 4 ug/kg which is above the Regional Water Board ESL of 2.3 ug/kg (PRC, 1996). Laboratory analysis of the sediment samples revealed the presence of: the pesticide 4,4-DDE; and metals including arsenic, copper, lead, mercury, nickel and zinc, above their respective 1996 and 2005 screening criteria (PRC, 1996). TPH as motor oil was reported up 1,200 mg/kg, above its 2005 screening criteria of 1,000 mg/kg (and 2013 Regional Water Board ESL of 500 mg/kg) for industrial/commercial exposure was determined to "not have caused an adverse environmental impact" (PRC, 1996). Based on the laboratory analysis of the sediment samples, the DoN concluded that, "[n]o further action is recommended for Rifle Range and Power House Creeks" (PRC, 1996). Information regarding current sediment conditions within Rifle Range Creek was not reasonably ascertainable.	Potential releases of hazardous substances and petroleum products to sediments.	X	X	X	X	X	X	X	Based on the sediment sample data, the presence of pesticides, metals and TPH in the sediments of Rifle Range Creek and Power House Creek above current screening levels represents a recognized environmental condition.	X			

TABLE 7-1
SUMMARY OF SITE CONDITIONS
Former Naval Medical Center Oakland
8750 Mountain Boulevard
Oakland, California

Map ID (Figure 2-1)	Location		FINDINGS: History	FINDINGS: Known or suspect environmental conditions	FINDINGS: Chemicals: TPH	FINDINGS: Chemicals: VOCs	FINDINGS: Chemicals: SVOCs	FINDINGS: Chemicals: Pesticides	FINDINGS: Chemicals: Metals	FINDINGS: Chemicals: PCBs/Dioxins	FINDINGS: Regulatory Closure (FOST)	OPINIONS: Rationale	CONCLUSIONS: Environmental Condition: Yes: Known	CONCLUSIONS: Environmental Condition: Yes: Suspect	CONCLUSIONS: Environmental Condition: No: *de minimis*	CONCLUSIONS: Environmental Condition: No: No
21	Sanitary Sewers	Site	Sanitary sewers are present at the Site. Wastewater from operations conducted at the Site were discharged to the sanitary sewer system. Thirty-two soil samples were collected in 1994 from areas adjacent to the sanitary sewers near Parcels 109, 110, 123, 125, 128, 130, 131, 132, 134, 135, 136, 137, 142, 143, 146, 147, 148, 159 and 161 (PRC, 1996). Laboratory analysis of the soil samples did not reveal the presence of VOCs or SVOCs above their respective 1996 "residential PRGs in soil" or current regulatory screening criteria. Laboratory analysis of the soil samples revealed the presence of: metals including beryllium, manganese, nickel and zinc below their respective 1996 and 2005 regulatory screening criteria. TPH as motor oil was also detected up to 780 mg/kg, above its 2013 Regional Water Board ESL of 500 mg/kg. Soil gas samples were proposed to be collected but information regarding soil gas conditions was not reasonably ascertainable (ERM-West, 1995a). Based on the sewer soil sample analytical results, the DoN concluded that "no further action is recommended" (PRC, 1996).	Potential releases of hazardous substances and petroleum products from the sewers.	X	X	X		X		X	Based on the soil data and the lack of soil gas data, the sanitary sewers represent a suspect recognized environmental condition.		X		
22	Water Supply Wells No. 1 and No. 2	Site Parcels 110 and 143	Two water supply wells for irrigation were located on Parcels 110 (Well No. 2) and 143 (Well No. 1) (EBS-West, 1994). Well No. 1 was reportedly 200-feet deep (PRC, 1996). A water sample collected in 1995 from Well No. 1 contained: lead at 25.3 ug/l; 4,4-DDE at 2 ug/l; and TPH as motor oil at 300 ug/l, which are above their respective Regional Water Board ESLs. During the Site reconnaissance, Wells No. 1 and No. 2, were not observed. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas” (FOST, 1999). Information regarding current groundwater conditions or well abandonment records was not reasonably ascertainable.	Potential preferential pathway for releases to groundwater	X			X	X		X	Based on the groundwater data and the lack of well abandonment documentation, the water supply wells represent a suspect recognized environmental condition.		X		

TABLE 7-1
SUMMARY OF SITE CONDITIONS
Former Naval Medical Center Oakland
8750 Mountain Boulevard
Oakland, California

Map ID (Figure 2-1)	Location		FINDINGS										OPINIONS	CONCLUSIONS			
			History	Known or suspect environmental conditions	Chemicals						Regulatory Closure (FOST)		Rationale	Environmental Condition			
														Yes		No	
					TPH	VOCs	SVOCs	Pesticides	Metals	PCBs/Dioxins				Known	Suspect	*de minimis*	No
23	Discarded Drums	Parcel 112	Discarded and crushed 55-gallon drums were a observed during the Site reconnaissance adjacent to the concrete pad for former Building 107 (Parcel 112). Information regarding soil conditions or the previous contents of the drums was not reasonably ascertainable	Potential releases of hazardous substances or petroleum products to soil and soil gas from the drums.	X	X							Based on the lack of soil and soil gas data and the lack of information regarding the former drum contents, the potential releases from the drums represents a suspect recognized environmental condition.		X		
24	Former Medical Debris Landfill	Off-Site Adjacent to Site Parcel 152	Non-biohazardous medical debris was discovered on the adjacent property east of Parcel 152 (FOST, 1999). The adjacent property was formerly owned by Navy. A work plan to remove the medical debris was prepared in March 1998 (SSPORTS, 1998). In August 1998, the non-biohazardous medical debris was removed from the adjacent property. The medical debris removal was overseen by Alameda County Health Department staff. Alameda County Health Department approved the completion report for the debris removal (FOST, 1999).	Potential releases to soil from disposal of medical debris	X	X			X		X		Based on the closure by the Alameda County Health Department, the former presence of medical debris on the adjacent property represents a *de minimis* condition and not a recognized environmental condition.			X	

FIGURES

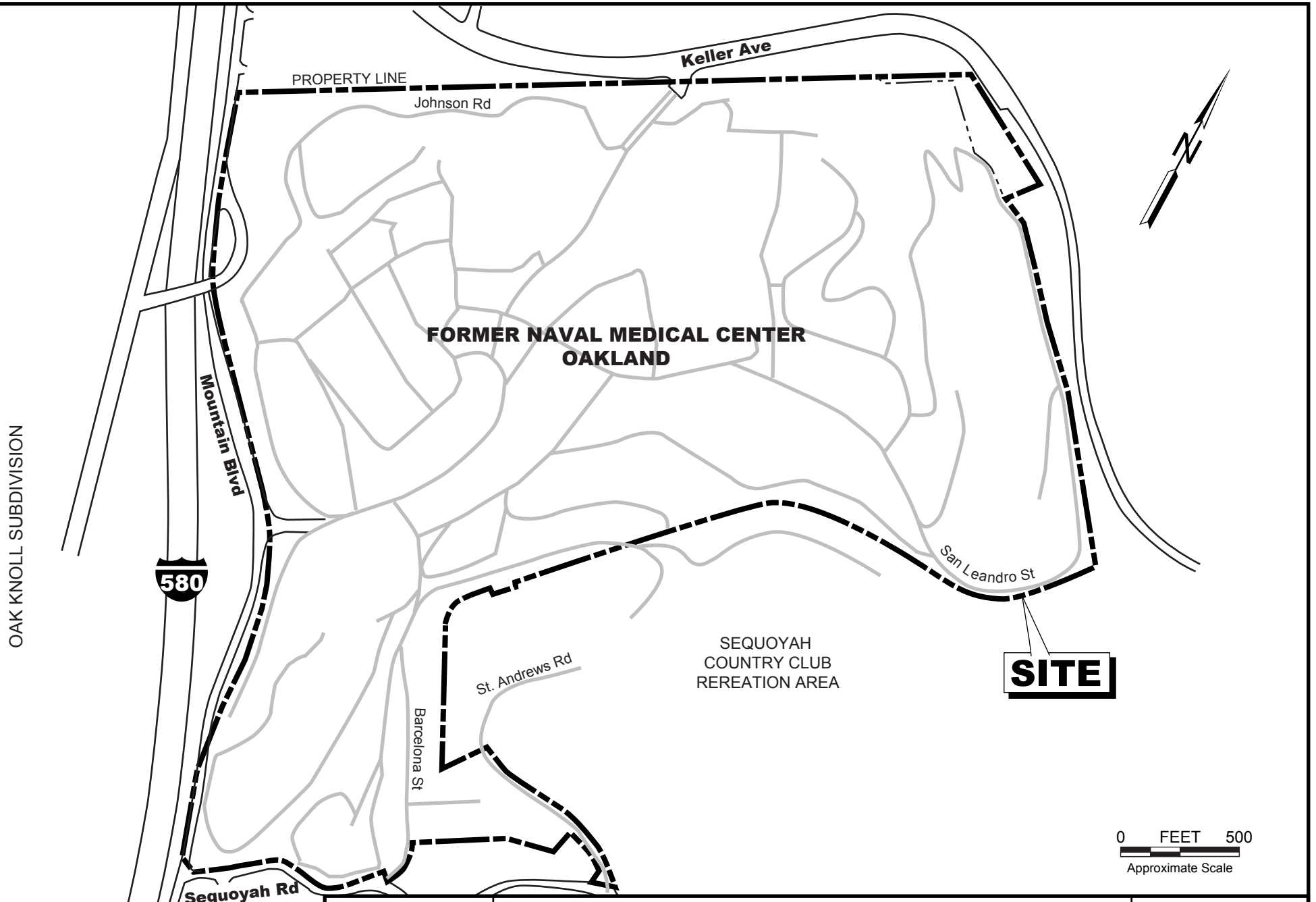

Figure 1-1	**SITE LOCATION**	WEST Environmental Services & Technology
February 2006	Former Naval Medical Center Oakland - Oakland, California	

Keller Ave
Frontage St
Mountain Blvd
580
(1950s to present)
Rifle Range Creek
Sequoyah Rd
Former San Leandro Naval Hospital (1940s-1970s)
San Leandro Tunnel (1950s-present)
Seneca Parcel
Seawest Credit Union Parcel
City of Oakland Parcel
SEQUOYAH COUNTRY CLUB RECREATION AREA
RESIDENTIAL (1940s to present)
SITE
(Sitewide)
HELIPAD
Radioactive waste compactor
Cleaning solvent tank
Hazardous substance storage
Former building/ service station/USTs
Paint booth
Water supply Well no. 2
Vehicle washing
Incinerator
Radioactive material storage
Generator/ AST
Existing Building
Paints Pesticides Solvents/ Lubricant Storage
Engraving
ASTs
Dental annex
Motor oil spill
Former laboratory
Hazardous substance storage
Radioactive waste storage/ USTs
Hazardous substance storage area
UST
Former water tanks
Former chemical storage
Existing Building
Radioactive material storage
Hazardous substance storage/ former USTs
Former USTs
Boiler room/ sump
Well no.1 shed
Hydraulic fluid spill
Distressed vegetation
Former helicopter pad
Former UST/ soil spills
Machine shop/ ammunition storage
Pesticide mixing
Former USTs/ Hazardous substance storage/boiler plant
Former ASTs
Aboveground fuel storage tank
Former service station/USTs
Radioactive material storage
Former landfill
Auto repair
Former hydraulic lift
Former USTs
Auto Repair
BBF 144
BBF 143
Existing Building
Hazardous substance/ radioactive material storage
Former USTs
Hazardous substance storage/boiler plant
Former ASTs
Aboveground fuel storage tank
Former service station/USTs
Radioactive material storage
Former landfill
Former water tanks
Former UST/ soil spills
Distressed vegetation
Former helicopter pad
Former San Leandro Naval Hospital (1940s-1970s)
San Leandro Tunnel (1950s-present)
Former building/ service station/USTs
Former chemical storage
Former USTs
Former laboratory
Former landfill
Former water tanks
Former UST/ soil spills
Former USTs/ Hazardous substance storage/boiler plant
Former ASTs
Aboveground fuel storage tank
Former service station/USTs

APPENDIX A

STANDARD ENVIRONMENTAL RECORD SOURCES

Former Oak Knoll Naval Hospital
8750 Mountain Blvd
Oakland, CA 94605

Inquiry Number: 3768145.2s
October 28, 2013

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

8750 MOUNTAIN BLVD
OAKLAND, CA 94605

COORDINATES

Latitude (North):	37.7680000 - 37° 46' 4.80''
Longitude (West):	122.1478000 - 122° 8' 52.08''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	575058.6
UTM Y (Meters):	4180211.5
Elevation:	313 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	37122-G2 OAKLAND EAST, CA
Most Recent Revision:	1980

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2012
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 8 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
OAKLAND NAVAL REGIONAL MEDICAL CT 8750 MOUNTAIN BLVD OAKLAND, CA 94627	CERC-NFRAP RCRA-SQG NPDES HIST CORTESE LUST Status: Completed - Case Closed CA FID UST Alameda County CS HIST UST SWEEPS UST MCS RESPONSE ENVIROSTOR Status: No Further Action Status: Inactive - Action Required	CA0170027254

EXECUTIVE SUMMARY

OAKLAND NAVAL REGIONAL MEDICAL CT 8750 MOUNTAIN BLVD OAKLAND, CA	FINDS	N/A
OAKLAND NAVAL HOSPITAL 8750 MOUNTAIN BOULEVARD OAKLAND, CA 94605	HIST Cal-Sites	N/A
NAVAL HOSPITAL, OAKLAND 8750 MOUNTAIN BLVD, BLDG 63B OAKLAND, CA 94627	EMI	N/A
OAKLAND NAVAL HOSPITAL - OAKLAND 8750 MOUNTAIN BOULEVARD OAKLAND, CA 94605	MCS	N/A
US NAVY - NAVAL MEDICAL CENTER OA 8750 MOUNTAIN BLVD OAKLAND, CA 94627	HAZNET	N/A
NAVAL HOSPITAL UNKNOWN OAKLAND, CA	FINDS	N/A
SUN CAL OAK KNOLL LLC 8750 MOUNTAIN BLVD OAKLAND, CA 94605	HAZNET	N/A
OAK KNOLL NAVAL HOSPITAL/SUNCAL O 8750 MOUNTAIN BLVD OAKLAND, CA 94605	HAZNET	N/A
STEVEN M SPEIER TRUSTEE OF SUNCAL 8750 MOUNTAIN BLVD OAKLAND, CA 94605	HAZNET	N/A
NAVAL HOSPITAL OAKLAND , CA	LUCIS	N/A

EXECUTIVE SUMMARY

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

SLIC ---------- Statewide SLIC Cases
INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST	Active UST Facilities
AST	Aboveground Petroleum Storage Tank Facilities
INDIAN UST	Underground Storage Tanks on Indian Land
FEMA UST	Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP	Voluntary Cleanup Program Properties
INDIAN VCP	Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS	A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI	Open Dump Inventory
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT	Waste Management Unit Database
SWRCY	Recycler Database
HAULERS	Registered Waste Tire Haulers Listing
INDIAN ODI	Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL	Clandestine Drug Labs
SCH	School Property Evaluation Program
Toxic Pits	Toxic Pits Cleanup Act Sites
CDL	Clandestine Drug Labs
US HIST CDL	National Clandestine Laboratory Register

Local Land Records

LIENS 2	CERCLA Lien Information
LIENS	Environmental Liens Listing
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators
DOT OPS	Incident and Accident Data
DOD	Department of Defense Sites

EXECUTIVE SUMMARY

FUDS	Formerly Used Defense Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
US MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
RAATS	RCRA Administrative Action Tracking System
RMP	Risk Management Plans
CA BOND EXP. PLAN	Bond Expenditure Plan
UIC	UIC Listing
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
Notify 65	Proposition 65 Records
DRYCLEANERS	Cleaner Facilities
WIP	Well Investigation Program Case List
ENF	Enforcement Action Listing
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
HWT	Registered Hazardous Waste Transporter Database
HWP	EnviroStor Permitted Facilities Listing
Financial Assurance	Financial Assurance Information Listing
LEAD SMELTERS	Lead Smelter Sites
2020 COR ACTION	2020 Corrective Action Program List
US AIRS	Aerometric Information Retrieval System Facility Subsystem
PRP	Potentially Responsible Parties
WDS	Waste Discharge System
EPA WATCH LIST	EPA WATCH LIST
US FIN ASSUR	Financial Assurance Information
PCB TRANSFORMER	PCB Transformer Registration Database
PROC	Certified Processors Database
MWMP	Medical Waste Management Program Listing

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR US Hist Auto Stat	EDR Exclusive Historic Gas Stations

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

EXECUTIVE SUMMARY

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State and tribal leaking storage tank lists

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the State Water Resources Control Board Leaking Underground Storage Tank Information System.

A review of the LUST list, as provided by EDR, and dated 09/16/2013 has revealed that there is 1 LUST site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EXXON SERVICE STATION	***8008 MOUNTAIN BLVD***	***WNW 1/4 - 1/2 (0.422 mi.)***	***13***	***39***
Status: Completed - Case Closed				

Alameda County CS: A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

A review of the Alameda County CS list, as provided by EDR, and dated 07/25/2013 has revealed that there is 1 Alameda County CS site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EXXON SERVICE STATION	***8008 MOUNTAIN BLVD***	***WNW 1/4 - 1/2 (0.422 mi.)***	***13***	***39***

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EXXON SERVICE STATION	***8008 MOUNTAIN BLVD***	***WNW 1/4 - 1/2 (0.422 mi.)***	***13***	***39***

EXECUTIVE SUMMARY

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR US Hist Cleaners: EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR US Hist Cleaners list, as provided by EDR, has revealed that there is 1 EDR US Hist Cleaners site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported	4400 KELLER AVE	N 1/8 - 1/4 (0.228 mi.)	12	39

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 9 records.

Site Name	Database(s)
FORMER BASALT ROCK COMPANY	Cortese, ENF
LEONA HEIGHTS SULPHUR MINE	CERCLIS, FINDS
LAKE CHABOT LANDFILL	CERC-NFRAP
SF0BB EAST SPAN	RCRA-SQG, FINDS
CALTRANS	RCRA-SQG, FINDS
ALA COUNTY STORM WATER TRTMT SYS P	RCRA-LQG
OAK STREET TO 9TH AVENUE	FINDS
CHILDREN'S HOSPITAL OAKLAND	FINDS
UPTOWN THEATER DISTRICT	SLIC

OVERVIEW MAP - 3768145.2s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

0 1/4 1/2 1 Miles

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Former Oak Knoll Naval Hospital	CLIENT:	WEST
ADDRESS:	8750 Mountain Blvd Oakland CA 94605	CONTACT:	Peter Morris
		INQUIRY #:	3768145.2s
LAT/LONG:	37.768 / 122.1478	DATE:	October 28, 2013 11:53 am

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DETAIL MAP - 3768145.2s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Former Oak Knoll Naval Hospital	CLIENT:	WEST
ADDRESS:	8750 Mountain Blvd Oakland CA 94605	CONTACT:	Peter Morris
		INQUIRY #:	3768145.2s
LAT/LONG:	37.768 / 122.1478	DATE:	October 28, 2013 11:54 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500	1	0	0	0	NR	NR	1
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250	1	0	0	NR	NR	NR	1
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
LUCIS	0.500	1	0	0	0	NR	NR	1
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000	1	0	0	0	0	NR	1
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000	1	0	0	0	0	NR	1
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500	1	0	0	1	NR	NR	2

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SLIC	0.500		0	0	0	NR	NR	0
Alameda County CS	0.500	1	0	0	1	NR	NR	2
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000	1	0	0	0	0	NR	1
SCH	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST	0.250	1	0	0	NR	NR	NR	1
HIST UST	0.250	1	0	0	NR	NR	NR	1
SWEEPS UST	0.250	1	0	0	NR	NR	NR	1
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
LIENS	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
CHMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP	2	NR	NR	NR	NR	NR	2
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP	2	NR	NR	NR	NR	NR	2
RAATS	TP		NR	NR	NR	NR	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
NPDES	TP	1	NR	NR	NR	NR	NR	1
Cortese	0.500		0	0	0	NR	NR	0
HIST CORTESE	0.500	1	0	0	1	NR	NR	2
CUPA Listings	0.250		0	0	NR	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
HAZNET	TP	4	NR	NR	NR	NR	NR	4
EMI	TP	1	NR	NR	NR	NR	NR	1
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
HWT	0.250		0	0	NR	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR US Hist Auto Stat	0.250		0	0	NR	NR	NR	0
EDR US Hist Cleaners	0.250		0	1	NR	NR	NR	1

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1
Target
Property

OAKLAND NAVAL REGIONAL MEDICAL CTR
8750 MOUNTAIN BLVD
OAKLAND, CA 94627

Site 1 of 11 in cluster A

Actual:
313 ft.

Database(s):
CERC-NFRAP
RCRA-SQG
NPDES
HIST CORTESE
LUST
CA FID UST
Alameda County CS
HIST UST
SWEEPS UST
MCS
RESPONSE
ENVIROSTOR

EDR ID Number: **1000277306**
EPA ID Number: **CA0170027254**

CERC-NFRAP:
Site ID: 0902712
Federal Facility: Federal Facility
NPL Status: Not on the NPL
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

CERCLIS-NFRAP Site Contact Details:
Contact Sequence ID: 13055116.00000
Person ID: 9271184.00000

Contact Sequence ID: 13287145.00000
Person ID: 13003854.00000

Contact Sequence ID: 13292740.00000
Person ID: 13003858.00000

Contact Sequence ID: 13298598.00000
Person ID: 13004003.00000

CERCLIS-NFRAP Site Alias Name(s):
Alias Name: OAKLAND NAVAL SUPPLY CTR PT MOLATE SITE
Alias Address: Not reported
CA

Alias Name: NAVAL REGIONAL MEDICAL CENTER OAKLAND
Alias Address: Not reported
CA

Alias Name: OAKLAND NAVAL REGIONAL MEDICAL CENTER
Alias Address: 8750 MOUNTAIN BLVD.
OAKLAND, CA 93031

Program Priority:
Description: BRAC Fast Track

CERCLIS-NFRAP Assessment History:
Action: ARCHIVE SITE
Date Started: / /
Date Completed: 01/23/96
Priority Level: Not reported

Action: DISCOVERY
Date Started: / /
Date Completed: 08/01/80

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Priority Level: Not reported

Action: PRELIMINARY ASSESSMENT
Date Started: / /
Date Completed: 10/01/91
Priority Level: NFRAP-Site does not qualify for the NPL based on existing information

RCRA-SQG:
Date form received by agency: 09/01/1996
Facility name: USNAVY OAKLAND NAVAL REGIONAL MED CTR
Facility address: 8750 MOUNTAIN BLVD
OAKLAND, CA 94627
EPA ID: CA0170027254
Mailing address: 8750 MOUNTAIN BOULEVARD
OAKLAND, CA 94627
Contact: Not reported
Contact address: Not reported
Not reported
Contact country: Not reported
Contact telephone: Not reported
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: UNITED STATES OF AMERICA
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Federal
Owner/Operator Type: Owner
Owner/Op start date: 01/01/0001
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Federal
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 08/15/1980
Facility name: USNAVY OAKLAND NAVAL REGIONAL MED CTR
Classification: Not a generator, verified

Violation Status: No violations found

NPDES:
Npdes Number: CAS000002
Facility Status: Active
Agency Id: 0
Region: 2
Regulatory Measure Id: 433106
Order No: 2009-0009-DWQ
Regulatory Measure Type: Enrollee
Place Id: Not reported
WDID: 2 01C365348
Program Type: Construction
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: 01/04/2013
Expiration Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Discharge Name: LV Oak Knoll LLC
Discharge Address: 19800 MacArthur
Discharge City: Irvine
Discharge State: California
Discharge Zip: 92782

Npdes Number: CAS000002
Facility Status: Terminated
Agency Id: 0
Region: 2
Regulatory Measure Id: 410409
Order No: 2009-0009-DWQ
Regulatory Measure Type: Enrollee
Place Id: Not reported
WDID: 2 01C361323
Program Type: Construction
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: 06/28/2011
Expiration Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: 02/05/2013
Discharge Name: SunCal Oak Knoll LLC
Discharge Address: 2392 Morse Avenue
Discharge City: Irvine
Discharge State: California

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Discharge Zip: 92614

CORTESE:
Region: CORTESE
Facility County Code: 1
Reg By: LTNKA
Reg Id: 01-1034

LUST:
Region: STATE
Global Id: T0600100954
Latitude: 37.764888
Longitude: -122.150065
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 07/19/1994
Lead Agency: ALAMEDA COUNTY LOP
Case Worker: JS
Local Agency: ALAMEDA COUNTY LOP
RB Case Number: 01-1034
LOC Case Number: RO0000794
File Location: Stored electronically as an E-file
Potential Media Affect: Soil
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0600100954
Contact Type: Local Agency Caseworker
Contact Name: JULIET SHIN
Organization Name: ALAMEDA COUNTY LOP
Address: 1131 HARBOR BAY PARKWAY
City: ALAMEDA
Email: Not reported
Phone Number: Not reported

Global Id: T0600100954
Contact Type: Regional Board Caseworker
Contact Name: Cherie McCaulou
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY STREET, SUITE 1400
City: OAKLAND
Email: cmccaulou@waterboards.ca.gov
Phone Number: Not reported

Status History:
Global Id: T0600100954
Status: Completed - Case Closed
Status Date: 07/19/1994

Global Id: T0600100954
Status: Open - Case Begin Date
Status Date: 12/03/1991

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Regulatory Activities:
Global Id: T0600100954
Action Type: Other
Date: 01/01/1950
Action: Leak Reported

Global Id: T0600100954
Action Type: REMEDIATION
Date: 01/01/1950
Action: Not reported

LUST REG 2:
Region: 2
Facility Id: 01-1034
Facility Status: Case Closed
Case Number: 4026
How Discovered: Inventory Control
Leak Cause: Structure Failure
Leak Source: Tank
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: 6/21/1984
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

CA FID UST:
Facility ID: 01000098
Regulated By: UTNKA
Regulated ID: 00039025
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 4156336300
Mail To: Not reported
Mailing Address: 8750 MOUNTAIN BLVD
Mailing Address 2: Not reported
Mailing City,St,Zip: OAKLAND 94627
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

Alameda County CS:
Status: Case Closed
Record Id: RO0000794
PE: 5602

HIST UST:
Region: STATE

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Facility ID: 00000039025
Facility Type: Other
Other Type: FEDERAL GOV.
Total Tanks: 0011
Contact Name: FACILITIES MANAGEMENT DEPARTME
Telephone: 4156336300
Owner Name: NAVAL HOSPITAL
Owner Address: 8750 MOUNTAIN BLVD.
Owner City,St,Zip: OAKLAND, CA 94627

Tank Num: 001
Container Num: 500A
Year Installed: 1968
Tank Capacity: 00005000
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Tank Construction: 3/16 inches
Leak Detection: None

Tank Num: 002
Container Num: 505A
Year Installed: 1981
Tank Capacity: 00000550
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Tank Construction: Not reported
Leak Detection: None

Tank Num: 003
Container Num: 111A
Year Installed: 1943
Tank Capacity: 00000000
Tank Used for: WASTE
Type of Fuel: WASTE OIL
Tank Construction: Not reported
Leak Detection: None

Tank Num: 004
Container Num: 214A
Year Installed: 1952
Tank Capacity: 00006000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Tank Construction: Not reported
Leak Detection: None

Tank Num: 005
Container Num: 214B
Year Installed: 1952
Tank Capacity: 00006000
Tank Used for: PRODUCT
Type of Fuel: REGULAR
Tank Construction: Not reported
Leak Detection: None

Tank Num: 006
Container Num: 214C

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Year Installed: 1952
Tank Capacity: 00008000
Tank Used for: PRODUCT
Type of Fuel: PREMIUM
Tank Construction: Not reported
Leak Detection: None

Tank Num: 007
Container Num: 214D
Year Installed: 1952
Tank Capacity: 00000000
Tank Used for: WASTE
Type of Fuel: Not reported
Tank Construction: Not reported
Leak Detection: None

Tank Num: 008
Container Num: 510A
Year Installed: 1981
Tank Capacity: 00010000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Tank Construction: 1.5 inches
Leak Detection: None

Tank Num: 009
Container Num: 510B
Year Installed: 1981
Tank Capacity: 00010000
Tank Used for: PRODUCT
Type of Fuel: REGULAR
Tank Construction: 1.5 inches
Leak Detection: None

Tank Num: 010
Container Num: 510C
Year Installed: 1981
Tank Capacity: 00010000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Tank Construction: 1.5 inches
Leak Detection: None

Tank Num: 011
Container Num: 510D
Year Installed: 1981
Tank Capacity: 00000550
Tank Used for: WASTE
Type of Fuel: WASTE OIL
Tank Construction: .5 inches
Leak Detection: None

SWEEPS UST:
Status: Not reported
Comp Number: 39025
Number: Not reported
Board Of Equalization: Not reported

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Tank Status:	Not reported
Owner Tank Id:	Not reported
Swrcb Tank Id:	01-000-039025-000003
Actv Date:	Not reported
Capacity:	1
Tank Use:	OIL
Stg:	WASTE
Content:	WASTE OIL
Number Of Tanks:	4

Status:	Not reported
Comp Number:	39025
Number:	Not reported
Board Of Equalization:	Not reported
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Tank Status:	Not reported
Owner Tank Id:	Not reported
Swrcb Tank Id:	01-000-039025-000008
Actv Date:	Not reported
Capacity:	10000
Tank Use:	M.V. FUEL
Stg:	PRODUCT
Content:	REG UNLEADED
Number Of Tanks:	Not reported

Status:	Not reported
Comp Number:	39025
Number:	Not reported
Board Of Equalization:	Not reported
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Tank Status:	Not reported
Owner Tank Id:	Not reported
Swrcb Tank Id:	01-000-039025-000009
Actv Date:	Not reported
Capacity:	10000
Tank Use:	M.V. FUEL
Stg:	PRODUCT
Content:	LEADED
Number Of Tanks:	Not reported

Status:	Not reported
Comp Number:	39025
Number:	Not reported
Board Of Equalization:	Not reported
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Tank Status:	Not reported
Owner Tank Id:	Not reported
Swrcb Tank Id:	01-000-039025-000010

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Actv Date:	Not reported
Capacity:	10000
Tank Use:	M.V. FUEL
Stg:	PRODUCT
Content:	REG UNLEADED
Number Of Tanks:	Not reported

Status:	Active
Comp Number:	39025
Number:	7
Board Of Equalization:	Not reported
Referral Date:	03-04-91
Action Date:	12-15-93
Created Date:	02-29-88
Tank Status:	A
Owner Tank Id:	141B
Swrcb Tank Id:	01-000-039025-000001
Actv Date:	03-04-91
Capacity:	6000
Tank Use:	M.V. FUEL
Stg:	P
Content:	DIESEL
Number Of Tanks:	6

Status:	Active
Comp Number:	39025
Number:	7
Board Of Equalization:	Not reported
Referral Date:	03-04-91
Action Date:	12-15-93
Created Date:	02-29-88
Tank Status:	A
Owner Tank Id:	500A
Swrcb Tank Id:	01-000-039025-000002
Actv Date:	03-04-91
Capacity:	5000
Tank Use:	M.V. FUEL
Stg:	P
Content:	DIESEL
Number Of Tanks:	Not reported

Status:	Active
Comp Number:	39025
Number:	7
Board Of Equalization:	Not reported
Referral Date:	03-04-91
Action Date:	12-15-93
Created Date:	02-29-88
Tank Status:	A
Owner Tank Id:	141A
Swrcb Tank Id:	01-000-039025-000004
Actv Date:	03-04-91
Capacity:	10000
Tank Use:	M.V. FUEL
Stg:	P
Content:	REG UNLEADED
Number Of Tanks:	Not reported

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Status: Active
Comp Number: 39025
Number: 7
Board Of Equalization: Not reported
Referral Date: 03-04-91
Action Date: 12-15-93
Created Date: 02-29-88
Tank Status: A
Owner Tank Id: 512
Swrcb Tank Id: 01-000-039025-000005
Actv Date: 03-04-91
Capacity: 20000
Tank Use: M.V. FUEL
Stg: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 39025
Number: 7
Board Of Equalization: Not reported
Referral Date: 03-04-91
Action Date: 12-15-93
Created Date: 02-29-88
Tank Status: A
Owner Tank Id: 214C
Swrcb Tank Id: 01-000-039025-000006
Actv Date: 07-01-85
Capacity: 8000
Tank Use: M.V. FUEL
Stg: P
Content: REG UNLEADED
Number Of Tanks: Not reported

Status: Active
Comp Number: 39025
Number: 7
Board Of Equalization: Not reported
Referral Date: 03-04-91
Action Date: 12-15-93
Created Date: 02-29-88
Tank Status: A
Owner Tank Id: 505A
Swrcb Tank Id: 01-000-039025-000007
Actv Date: 03-04-91
Capacity: 550
Tank Use: M.V. FUEL
Stg: P
Content: DIESEL
Number Of Tanks: Not reported

MCS:
Global Id: T0600112722
Latitude: 37.76791
Longitude: -122.1528
Case Type: Military Cleanup Site
Status: Completed - Case Closed

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Status Date:	01/01/2002
Lead Agency:	DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Caseworker:	HW
Local Agency:	DEPARTMENT OF TOXIC SUBSTANCES CONTROL
RB Case Number:	2199.9456
LOC Case Number:	80001204
File Location:	DTSC
Potential Media Affect:	Not reported
EDR Link ID:	T0600112722
Potential Contaminants of Concern:	Waste Oil / Motor / Hydraulic / Lubricating
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

RESPONSE:

Facility ID:	01970003
Site Type:	State Response
Site Type Detail:	Closed Base
Acres:	211
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Henry Wong
Supervisor:	Karen Toth
Division Branch:	Cleanup Berkeley
Site Code:	200530
Site Mgmt. Req.:	NONE SPECIFIED
Assembly:	18
Senate:	09
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	03/19/2008
Restricted Use:	NO
Funding:	BRAC 93
Latitude:	37.76722
Longitude:	-122.1527
APN:	NONE SPECIFIED
Past Use:	HOSPITAL
Potential COC:	* Polychlorinated Biphenyls, * Pesticides - Wastes From Production, * Metals - Lead, * WASTE POTENTIALLY CONTAINING DIOXINS, Lead
Confirmed COC:	* Polychlorinated Biphenyls, * Pesticides - Wastes From Production, * Metals - Lead, * WASTE POTENTIALLY CONTAINING DIOXINS, Lead, Lead
Potential Description:	SOIL
Alias Name:	NAVAL REGIONAL MEDICAL CENTER, BLDG 5
Alias Type:	Alternate Name
Alias Name:	Oakland Naval Hospital
Alias Type:	Alternate Name
Alias Name:	U.S. NAVY REGIONAL HOSPITAL
Alias Type:	Alternate Name
Alias Name:	110033612384
Alias Type:	EPA (FRS #)
Alias Name:	DOD100361200
Alias Type:	GeoTracker Global ID
Alias Name:	200530
Alias Type:	Project Code (Site Code)
Alias Name:	01970003

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Alias Type: Envirostor ID Number

Completed Info:

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 03/19/2008
Comments: The Navy confirms that there is no task necessary for the Joint Execution Plan for the former Naval Medical Center Oakland (aka: Oakland Naval Hospital). The Navy has shifted the remaining investigation/remedial activities for lead in soils adjacent to structures painted with lead-base paint to the transferee, SunCal. DTSC is planning to enter into a Voluntary Cleanup Agreement with SunCal by June 2008. The Voluntary Cleanup Agreement will establish the scope of work and oversight relationship.

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 09/26/1981
Comments: FACILITY IDENTIFIED EPA SUPERFUND NOTIFICATION SITE

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: De-Certification
Completed Date: 03/15/1995
Comments: Not reported

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Certification
Completed Date: 06/01/1984
Comments: Not reported

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Baseline Survey
Completed Date: 03/10/1995
Comments: C.U.

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Finding of Suitability to Transfer
Completed Date: 09/30/1999
Comments: C.U.

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Completion Report
Completed Date: 06/01/1984
Comments: Not reported

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 11/19/1999
Comments: PEA - BASWD -- Completion of PEA is based on evaluation of several documents that constitute the equivalent of a PEA.

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: * Community Environmental Response Facilitation Act
Completed Date: 03/10/1995
Comments: 176AC

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Information Request Letter
Completed Date: 08/29/2005
Comments: DTSC requires the Navy to inform all prospective transferees of the cleanup status for lead in soil. This would allow the prospective transferees to recognize the cleanup responsibility which they are assuming. DTSC would work with the successive property owners to determine the scope of lead investigation and remediation necessary.

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Information Request Letter
Completed Date: 09/28/2005
Comments: ..

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

ENVIROSTOR:
Site Type: State Response
Site Type Detailed: Closed Base
Acres: 211
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Henry Wong
Supervisor: Karen Toth
Division Branch: Cleanup Berkeley
Facility ID: 01970003
Site Code: 200530
Assembly: 18
Senate: 09
Special Program: Not reported
Status: No Further Action
Status Date: 03/19/2008
Restricted Use: NO
Site Mgmt. Req.: NONE SPECIFIED
Funding: BRAC 93
Latitude: 37.76722
Longitude: -122.1527
APN: NONE SPECIFIED
Past Use: HOSPITAL
Potential COC: * Polychlorinated Biphenyls, * Pesticides - Wastes From Production,

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

* Metals - Lead, * WASTE POTENTIALLY CONTAINING DIOXINS, Lead
Confirmed COC: * Polychlorinated Biphenyls, * Pesticides - Wastes From Production,
* Metals - Lead, * WASTE POTENTIALLY CONTAINING DIOXINS, Lead, Lead
Potential Description: SOIL
Alias Name: NAVAL REGIONAL MEDICAL CENTER, BLDG 5
Alias Type: Alternate Name
Alias Name: Oakland Naval Hospital
Alias Type: Alternate Name
Alias Name: U.S. NAVY REGIONAL HOSPITAL
Alias Type: Alternate Name
Alias Name: 110033612384
Alias Type: EPA (FRS #)
Alias Name: DOD100361200
Alias Type: GeoTracker Global ID
Alias Name: 200530
Alias Type: Project Code (Site Code)
Alias Name: 01970003
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 03/19/2008
Comments: The Navy confirms that there is no task necessary for the Joint Execution Plan for the former Naval Medical Center Oakland (aka: Oakland Naval Hospital). The Navy has shifted the remaining investigation/remedial activities for lead in soils adjacent to structures painted with lead-base paint to the transferee, SunCal. DTSC is planning to enter into a Voluntary Cleanup Agreement with SunCal by June 2008. The Voluntary Cleanup Agreement will establish the scope of work and oversight relationship.

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 09/26/1981
Comments: FACILITY IDENTIFIED EPA SUPERFUND NOTIFICATION SITE

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: De-Certification
Completed Date: 03/15/1995
Comments: Not reported

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Certification
Completed Date: 06/01/1984
Comments: Not reported

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Baseline Survey
Completed Date: 03/10/1995
Comments: C.U.

Completed Area Name: Basewide

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Completed Sub Area Name: Not reported
Completed Document Type: Finding of Suitability to Transfer
Completed Date: 09/30/1999
Comments: C.U.

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Completion Report
Completed Date: 06/01/1984
Comments: Not reported

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 11/19/1999
Comments: PEA - BASWD -- Completion of PEA is based on evaluation of several documents that constitute the equivalent of a PEA.

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: * Community Environmental Response Facilitation Act
Completed Date: 03/10/1995
Comments: 176AC

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Information Request Letter
Completed Date: 08/29/2005
Comments: DTSC requires the Navy to inform all prospective transferees of the cleanup status for lead in soil. This would allow the prospective transferees to recognize the cleanup responsibility which they are assuming. DTSC would work with the successive property owners to determine the scope of lead investigation and remediation necessary.

Completed Area Name: Basewide
Completed Sub Area Name: Not reported
Completed Document Type: Information Request Letter
Completed Date: 09/28/2005
Comments: ..

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

Site Type: Military Evaluation
Site Type Detailed: Closed Base
Acres: 183
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Henry Wong

OAKLAND NAVAL REGIONAL MEDICAL CTR (Continued) **1000277306**

Supervisor: Karen Toth
Division Branch: Cleanup Berkeley
Facility ID: 80001204
Site Code: 201767
Assembly: 18
Senate: 09
Special Program: Voluntary Cleanup Program
Status: Inactive - Action Required
Status Date: 08/03/2010
Restricted Use: NO
Site Mgmt. Req.: NONE SPECIFIED
Funding: Other Non-Military Funds
Latitude: 37.76905
Longitude: -122.1456
APN: NONE SPECIFIED
Past Use: HOSPITAL, RESIDENTIAL AREA, TRANSPORTATION - WAREHOUSING
Potential COC: * Polychlorinated Biphenyls, * Pesticides - Wastes From Production, * Metals - Lead, * WASTE POTENTIALLY CONTAINING DIOXINS, Lead, Lead, Under Investigation, Arsenic, Chlordane, DDD, DDE, DDT, Endrin, Lead, Polynuclear aromatic hydrocarbons (PAHs, TPH-diesel, TPH-gas, TPH-MOTOR OIL
Confirmed COC: * Polychlorinated Biphenyls, * Pesticides - Wastes From Production, * Metals - Lead, * WASTE POTENTIALLY CONTAINING DIOXINS, Lead, Lead, Under Investigation, Arsenic, Chlordane, DDD, DDE, DDT, Endrin, Lead, Polynuclear aromatic hydrocarbons (PAHs, TPH-diesel, TPH-gas, TPH-MOTOR OIL, Arsenic, Chlordane, DDD, DDE, DDT, Endrin, Lead, Polynuclear aromatic hydrocarbons (PAHs, TPH-diesel, TPH-gas, Under Investigation, TPH-MOTOR OIL
Potential Description: SOIL
Alias Name: T0600112722
Alias Type: GeoTracker Global ID
Alias Name: 201767
Alias Type: Project Code (Site Code)
Alias Name: 80001204
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: Not reported
Completed Sub Area Name: Not reported
Completed Document Type: Not reported
Completed Date: Not reported
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

A2 **OAKLAND NAVAL REGIONAL MEDICAL CTR** **FINDS** **1009577985**
Target **8750 MOUNTAIN BLVD** **N/A**
Property **OAKLAND, CA**

Site 2 of 11 in cluster A

Actual:
313 ft.

FINDS:

Registry ID: 110025217012

Environmental Interest/Information System

California Department of Toxic Substances Control EnviroStor System (DTSC-EnviroStor) is an online search and Geographic Information System (GIS) tool for identifying sites that have known contamination or sites for which there may be reasons to investigate further. The EnviroStor database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites.

US Base Realignment and Closure (BRAC) is a process used to close excess military installations and realign the total asset inventory in order to save money on operations and maintenance.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

A3 **OAKLAND NAVAL HOSPITAL** **HIST Cal-Sites** **S104384567**
Target **8750 MOUNTAIN BOULEVARD** **N/A**
Property **OAKLAND, CA 94605**

Site 3 of 11 in cluster A

Actual:
313 ft.

Calsite:

Facility ID:	01970003
Region:	2
Region Name:	BERKELEY
Branch:	NO
Branch Name:	OMF-NORTHERN CALIF
File Name:	Not reported
State Senate District:	03151995
Status:	ANNUAL WORKPLAN (AWP) - ACTIVE SITE
Status Name:	ANNUAL WORKPLAN - ACTIVE SITE
Lead Agency:	DTSC
Lead Agency:	DEPT OF TOXIC SUBSTANCES CONTROL
Facility Type:	CLOSE
Type Name:	CLOSED MILITARY BASE
NPL:	Not Listed
SIC Code:	97
SIC Name:	NATIONAL SECURITY/INTERNATIONAL AFFAIRS
Access:	Not reported
Cortese:	Not reported
Hazardous Ranking Score:	Not reported
Date Site Hazard Ranked:	Not reported
Groundwater Contamination:	Not reported

OAKLAND NAVAL HOSPITAL (Continued) **S104384567**

Staff Member Responsible for Site:	HWONG
Supervisor Responsible for Site:	Not reported
Region Water Control Board:	Not reported
Region Water Control Board Name:	Not reported
Lat/Long Direction:	Not reported
Lat/Long (dms):	0 0 0 / 0 0 0
Lat/long Method:	Not reported
Lat/Long Description:	MEASURED FROM MAIN GATE
State Assembly District Code:	18
State Senate District Code:	09
Facility ID:	01970003
Activity:	FOSL
Activity Name:	FINDING OF SUITABILITY TO LEASE
AWP Code:	C.U.
Proposed Budget:	0
AWP Completion Date:	09171996
Revised Due Date:	Not reported
Comments Date:	09171996
Est Person-Yrs to complete:	0
Estimated Size:	Not reported
Request to Delete Activity:	Not reported
Activity Status:	AWP
Definition of Status:	ANNUAL WORKPLAN - ACTIVE SITE
Liquids Removed (Gals):	0
Liquids Treated (Gals):	0
Action Included Capping:	Not reported
Well Decommissioned:	Not reported
Action Included Fencing:	Not reported
Removal Action Certification:	Not reported
Activity Comments:	Not reported
For Commercial Reuse:	1
For Industrial Reuse:	0
For Residential Reuse:	0
Unknown Type:	0
Facility ID:	01970003
Activity:	RA
Activity Name:	REMOVAL ACTION
AWP Code:	Not reported
Proposed Budget:	0
AWP Completion Date:	06011984
Revised Due Date:	Not reported
Comments Date:	06011984
Est Person-Yrs to complete:	0
Estimated Size:	Not reported
Request to Delete Activity:	Not reported
Activity Status:	AWP
Definition of Status:	ANNUAL WORKPLAN - ACTIVE SITE
Liquids Removed (Gals):	450
Liquids Treated (Gals):	0
Action Included Capping:	Not reported
Well Decommissioned:	Not reported
Action Included Fencing:	Not reported
Removal Action Certification:	N
Activity Comments:	Not reported
For Commercial Reuse:	0
For Industrial Reuse:	0
For Residential Reuse:	0

OAKLAND NAVAL HOSPITAL (Continued) **S104384567**

Unknown Type:	0
Facility ID:	01970003
Activity:	PEA
Activity Name:	PRELIMINARY ENDANGERMENT ASSESSMENT
AWP Code:	BASWD
Proposed Budget:	0
AWP Completion Date:	11191999
Revised Due Date:	Not reported
Comments Date:	11191999
Est Person-Yrs to complete:	0
Estimated Size:	Not reported
Request to Delete Activity:	Not reported
Activity Status:	AWP
Definition of Status:	ANNUAL WORKPLAN - ACTIVE SITE
Liquids Removed (Gals):	0
Liquids Treated (Gals):	0
Action Included Capping:	Not reported
Well Decommissioned:	Not reported
Action Included Fencing:	Not reported
Removal Action Certification:	Not reported
Activity Comments:	Not reported
For Commercial Reuse:	0
For Industrial Reuse:	0
For Residential Reuse:	0
Unknown Type:	0
Facility ID:	01970003
Activity:	CERFA
Activity Name:	COMMUNITY ENVIRONMENTAL RESPONSE FACILITATION ACT
AWP Code:	176AC
Proposed Budget:	0
AWP Completion Date:	03151995
Revised Due Date:	Not reported
Comments Date:	03151995
Est Person-Yrs to complete:	0
Estimated Size:	Not reported
Request to Delete Activity:	Not reported
Activity Status:	AWP
Definition of Status:	ANNUAL WORKPLAN - ACTIVE SITE
Liquids Removed (Gals):	0
Liquids Treated (Gals):	0
Action Included Capping:	Not reported
Well Decommissioned:	Not reported
Action Included Fencing:	Not reported
Removal Action Certification:	Not reported
Activity Comments:	Not reported
For Commercial Reuse:	0
For Industrial Reuse:	0
For Residential Reuse:	0
Unknown Type:	0
Facility ID:	01970003
Activity:	BWEBS
Activity Name:	BASEWIDE ENVIRONMENTAL BASELINE SURVEY
AWP Code:	ONH
Proposed Budget:	0
AWP Completion Date:	03151995
Revised Due Date:	Not reported
Comments Date:	03151995

OAKLAND NAVAL HOSPITAL (Continued) **S104384567**

Est Person-Yrs to complete:	0
Estimated Size:	Not reported
Request to Delete Activity:	Not reported
Activity Status:	AWP
Definition of Status:	ANNUAL WORKPLAN - ACTIVE SITE
Liquids Removed (Gals):	0
Liquids Treated (Gals):	0
Action Included Capping:	Not reported
Well Decommissioned:	Not reported
Action Included Fencing:	Not reported
Removal Action Certification:	Not reported
Activity Comments:	Not reported
For Commercial Reuse:	0
For Industrial Reuse:	0
For Residential Reuse:	0
Unknown Type:	0
Facility ID:	01970003
Activity:	CERT
Activity Name:	CERTIFICATION
AWP Code:	BASWD
Proposed Budget:	0
AWP Completion Date:	07012005
Revised Due Date:	Not reported
Comments Date:	Not reported
Est Person-Yrs to complete:	0
Estimated Size:	Not reported
Request to Delete Activity:	Not reported
Activity Status:	AWP
Definition of Status:	ANNUAL WORKPLAN - ACTIVE SITE
Liquids Removed (Gals):	0
Liquids Treated (Gals):	0
Action Included Capping:	Not reported
Well Decommissioned:	Not reported
Action Included Fencing:	Not reported
Removal Action Certification:	Not reported
Activity Comments:	Not reported
For Commercial Reuse:	0
For Industrial Reuse:	0
For Residential Reuse:	0
Unknown Type:	0
Facility ID:	01970003
Activity:	CERT
Activity Name:	CERTIFICATION
AWP Code:	Not reported
Proposed Budget:	0
AWP Completion Date:	Not reported
Revised Due Date:	Not reported
Comments Date:	06011984
Est Person-Yrs to complete:	0
Estimated Size:	Not reported
Request to Delete Activity:	Not reported
Activity Status:	AWP
Definition of Status:	ANNUAL WORKPLAN - ACTIVE SITE
Liquids Removed (Gals):	0
Liquids Treated (Gals):	0
Action Included Capping:	Not reported
Well Decommissioned:	Not reported

OAKLAND NAVAL HOSPITAL (Continued) **S104384567**

Action Included Fencing:	Not reported
Removal Action Certification:	Not reported
Activity Comments:	Not reported
For Commercial Reuse:	0
For Industrial Reuse:	0
For Residential Reuse:	0
Unknown Type:	0
Alternate Address:	8750 MOUNTAIN BOULEVARD
Alternate City,St,Zip:	OAKLAND, CA 94605
Background Info:	Naval Medical Center Oakland (NMCO) is located in the east Oaklan d foothills between San Leandro and Central Oakland in California . The site encompasses 183 acres and is bounded by residential a reas to the north, a golf course and residential area to the sout h, Skyline Boulevard to the east, and by Mountain Boulevard and I nterstate Route 580 to the west. Currently, the site includes ap proximately 135 acres of buildings, roads, parking lots, and recr eation facilities, and 48 acres of undeveloped land. The original property consisted of 211 acres, 178 of which were occupied by t he Oak Knoll Golf and Country Club. NMCO was commissioned as a Na val Hospital on July 1, 1942. In 1978, 28 of the 211 acres were p rivately sold. In 1993, the Base Realignment and Closure Commissi on recommended the closure of NMCO as part of the ongoing nationw ide military base closure effort. Base closure was completed on S eptember 30, 1996. Potential releases of contaminants at NMCO hav e resulted primarily from storing and handling products containin g hazardous susbstances, staging hazardous substances resulting f rom spill cleanup, and maintaining and repairing equipment. The O akland Base Reuse Authority approved a reuse plan for the NMCO pr operty in August 1996. The reuse plan specified that the property would be redeveloped to include: residential use, a golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas. The Navy intends to convey the NMCO propert y in accordance with the reuse plan. Specific disposal decisions have not yet been made; however, this does not preclude future un restricted reuse of the NMCO property. Based on results of a PEA and other investigations by the Navy, the Department expects to c omplete a no action Remedial Action Plan in early 2000.
Comments Date:	01011984
Comments:	Certified. 452 cu yds of contaminated soil & 500 gal. of
Comments Date:	01011984
Comments:	hazardous liquid removed. This certification was verified
Comments Date:	01011984
Comments:	by the Auditor General Report. Site identified by citizen
Comments Date:	01011984
Comments:	complaint.
Comments Date:	03151995
Comments:	Decertified. Site is now an AWP Site under the oversight of DTSC
Comments Date:	03151995
Comments:	. A removal action will be added to reflect the activi- ty origi
Comments Date:	03151995
Comments:	nally counted as a CERT.
Comments Date:	09261981
Comments:	FACILITY IDENTIFIED EPA SUPERFUND NOTIFICATION SITE
Comments Date:	10021981
Comments:	FINAL STRATEGY SITE REFERRED: TO HMMS/ENF
Comments Date:	11191999
Comments:	PEA - BASWD -- Completion of PEA is based on evaluation of severa

OAKLAND NAVAL HOSPITAL (Continued) **S104384567**

Comments Date:	11191999
Comments:	l documents that constitute the equivalent of a PEA.
ID Name:	Not reported
ID Value:	Not reported
Alternate Name:	U.S. NAVY REGIONAL HOSPITALNAVAL REGIONAL MEDICAL CENTER, BLDG 5Oakland Naval Hospital
Special Programs Code:	BRAC3
Special Programs Name:	BASE REALIGNMENT & CLOSURE, 3RD ROUND

A4 **NAVAL HOSPITAL, OAKLAND** **EMI** **S105938794**
Target **8750 MOUNTAIN BLVD, BLDG 63B** **N/A**
Property **OAKLAND, CA 94627**

Site 4 of 11 in cluster A

Actual: 313 ft.

EMI:

Year:	1987
County Code:	1
Air Basin:	SF
Facility ID:	235
Air District Name:	BA
SIC Code:	8062
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers & Smllr Tons/Yr:	0

Year:	1990
County Code:	1
Air Basin:	SF
Facility ID:	235
Air District Name:	BA
SIC Code:	8062
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	1
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	5
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers & Smllr Tons/Yr:	0

Year:	1995
County Code:	1
Air Basin:	SF
Facility ID:	235
Air District Name:	BA
SIC Code:	8062
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported

NAVAL HOSPITAL, OAKLAND (Continued) **S105938794**

Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	4
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers & Smllr Tons/Yr:	0

Year:	1996
County Code:	1
Air Basin:	SF
Facility ID:	235
Air District Name:	BA
SIC Code:	8062
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers & Smllr Tons/Yr:	0

Year:	2001
County Code:	1
Air Basin:	SF
Facility ID:	235
Air District Name:	BA
SIC Code:	8062
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers & Smllr Tons/Yr:	0

A5 **OAKLAND NAVAL HOSPITAL - OAKLAND NAVAL HOSPITAL - C.U.** **MCS** **S111346236**
Target **8750 MOUNTAIN BOULEVARD** **N/A**
Property **OAKLAND, CA 94605**

Site 5 of 11 in cluster A

Actual:
313 ft.

MCS:

Global Id:	DOD100361200
Latitude:	37.80437
Longitude:	-122.2708
Case Type:	Military Cleanup Site
Status:	Completed - Case Closed
Status Date:	03/19/2008
Lead Agency:	DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Caseworker:	HW

OAKLAND NAVAL HOSPITAL - OAKLAND NAVAL HOSPITAL - C.U. (Continued) **S111346236**

Local Agency:	DEPARTMENT OF TOXIC SUBSTANCES CONTROL
RB Case Number:	Not reported
LOC Case Number:	80001204
File Location:	DTSC
Potential Media Affect:	Not reported
EDR Link ID:	DOD100361200
Potential Contaminants of Concern:	Not reported
Site History:	See Envirostor

Click here to access the California GeoTracker records for this facility:

A6 **US NAVY - NAVAL MEDICAL CENTER OAKLAND** **HAZNET** **S112836376**
Target **8750 MOUNTAIN BLVD** **N/A**
Property **OAKLAND, CA 94627**

Site 6 of 11 in cluster A

Actual:
313 ft.

HAZNET:

Year:	1997
Gepaid:	CA0170027254
Contact:	US NAVY
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	8750 MOUNTAIN BLVD BLDG 638
Mailing City,St,Zip:	OAKLAND, CA 946054500
Gen County:	Not reported
TSD EPA ID:	CAD982042475
TSD County:	Not reported
Waste Category:	Asbestos containing waste
Disposal Method:	Disposal, Land Fill
Tons:	34.5548
Facility County:	1

Year:	1997
Gepaid:	CA0170027254
Contact:	US NAVY
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	8750 MOUNTAIN BLVD BLDG 638
Mailing City,St,Zip:	OAKLAND, CA 946054500
Gen County:	Not reported
TSD EPA ID:	TND000614321
TSD County:	Not reported
Waste Category:	Liquids with lead >= 500 Mg./L
Disposal Method:	Not reported
Tons:	.0465
Facility County:	1

Year:	1997
Gepaid:	CA0170027254
Contact:	US NAVY
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	8750 MOUNTAIN BLVD BLDG 638
Mailing City,St,Zip:	OAKLAND, CA 946054500
Gen County:	Not reported
TSD EPA ID:	TND000614321
TSD County:	Not reported

US NAVY - NAVAL MEDICAL CENTER OAKLAND (Continued) **S112836376**

Waste Category:	Off-specification, aged or surplus organics
Disposal Method:	Not reported
Tons:	.1035
Facility County:	1
Year:	1997
Gepaid:	CA0170027254
Contact:	US NAVY
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	8750 MOUNTAIN BLVD BLDG 638
Mailing City,St,Zip:	OAKLAND, CA 946054500
Gen County:	Not reported
TSD EPA ID:	TND000614321
TSD County:	Not reported
Waste Category:	Halogenated solvents (chloroforms, methyl chloride, perchloroethylene, etc)
Disposal Method:	Not reported
Tons:	.0060
Facility County:	1
Year:	1997
Gepaid:	CA0170027254
Contact:	US NAVY
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	8750 MOUNTAIN BLVD BLDG 638
Mailing City,St,Zip:	OAKLAND, CA 946054500
Gen County:	Not reported
TSD EPA ID:	TND000614321
TSD County:	Not reported
Waste Category:	Asbestos containing waste
Disposal Method:	Not reported
Tons:	.0325
Facility County:	1

Click this hyperlink while viewing on your computer to access
151 additional CA_HAZNET: record(s) in the EDR Site Report.

A7 **NAVAL HOSPITAL** **FINDS** **1014677687**
Target **UNKNOWN** **N/A**
Property **OAKLAND, CA**

Site 7 of 11 in cluster A

Actual: 313 ft.

FINDS:

Registry ID: 110041400533

Environmental Interest/Information System
CRITERIA AND HAZARDOUS AIR POLLUTANT INVENTORY

A8 **SUN CAL OAK KNOLL LLC** **HAZNET** **S112988292**
Target **8750 MOUNTAIN BLVD** **N/A**
Property **OAKLAND, CA 94605**

Site 8 of 11 in cluster A

Actual:
313 ft.

HAZNET:

Year:	2011
Gepaid:	CAC002669290
Contact:	TOM STOLLER
Telephone:	5102510711
Mailing Name:	Not reported
Mailing Address:	300 FRANK H OGAWA PLZ
Mailing City,St,Zip:	OAKLAND, CA 946122037
Gen County:	Not reported
TSD EPA ID:	CAD982042475
TSD County:	Not reported
Waste Category:	Asbestos containing waste
Disposal Method:	Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons:	17.6
Facility County:	Alameda

Year:	2011
Gepaid:	CAC002669290
Contact:	TOM STOLLER
Telephone:	5102510711
Mailing Name:	Not reported
Mailing Address:	300 FRANK H OGAWA PLZ
Mailing City,St,Zip:	OAKLAND, CA 946122037
Gen County:	Not reported
TSD EPA ID:	CAD980887418
TSD County:	Not reported
Waste Category:	Unspecified oil-containing waste
Disposal Method:	Discharge To Sewer/Potw Or Npdes(With Prior Storage--With Or Without Treatment)
Tons:	0.56295
Facility County:	Alameda

A9 **OAK KNOLL NAVAL HOSPITAL/SUNCAL OAK KNOLL LLC** **HAZNET** **S113151028**
Target **8750 MOUNTAIN BLVD** **N/A**
Property **OAKLAND, CA 94605**

Site 9 of 11 in cluster A

Actual:
313 ft.

HAZNET:

Year:	2009
Gepaid:	CAL000328052
Contact:	KIETH SWETT
Telephone:	5102510711
Mailing Name:	Not reported
Mailing Address:	300 FRANK H OGAWA PLZ STE 342
Mailing City,St,Zip:	OAKLAND, CA 946122059
Gen County:	Not reported
TSD EPA ID:	CAD981382732
TSD County:	Not reported
Waste Category:	Asbestos containing waste
Disposal Method:	Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons:	12

OAK KNOLL NAVAL HOSPITAL/SUNCAL OAK KNOLL LLC (Continued) **S113151028**

Facility County: Alameda

Year: 2008
Gepaid: CAL000328052
Contact: KIETH SWETT
Telephone: 5102510711
Mailing Name: Not reported
Mailing Address: 300 FRANK H OGAWA PLZ STE 342
Mailing City,St,Zip: OAKLAND, CA 946122059
Gen County: Not reported
TSD EPA ID: CAD028409019
TSD County: Not reported
Waste Category: Asbestos containing waste
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 2.75
Facility County: Alameda

Year: 2008
Gepaid: CAL000328052
Contact: KIETH SWETT
Telephone: 5102510711
Mailing Name: Not reported
Mailing Address: 300 FRANK H OGAWA PLZ STE 342
Mailing City,St,Zip: OAKLAND, CA 946122059
Gen County: Not reported
TSD EPA ID: CAD981382732
TSD County: Not reported
Waste Category: Not reported
Disposal Method: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons: 50.568
Facility County: Alameda

Year: 2008
Gepaid: CAL000328052
Contact: KIETH SWETT
Telephone: 5102510711
Mailing Name: Not reported
Mailing Address: 300 FRANK H OGAWA PLZ STE 342
Mailing City,St,Zip: OAKLAND, CA 946122059
Gen County: Not reported
TSD EPA ID: CAD981382732
TSD County: Not reported
Waste Category: Asbestos containing waste
Disposal Method: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons: 5752
Facility County: Alameda

Year: 2008
Gepaid: CAL000328052
Contact: KIETH SWETT
Telephone: 5102510711
Mailing Name: Not reported
Mailing Address: 300 FRANK H OGAWA PLZ STE 342
Mailing City,St,Zip: OAKLAND, CA 946122059

OAK KNOLL NAVAL HOSPITAL/SUNCAL OAK KNOLL LLC (Continued) **S113151028**

Gen County: Not reported
TSD EPA ID: CAD982382732
TSD County: Not reported
Waste Category: Asbestos containing waste
Disposal Method: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons: 12
Facility County: Alameda

Click this hyperlink while viewing on your computer to access
2 additional CA_HAZNET: record(s) in the EDR Site Report.

A10 Target Property **STEVEN M SPEIER TRUSTEE OF SUNCAL OAK LLC** **HAZNET** **S113459896**
8750 MOUNTAIN BLVD **N/A**
OAKLAND, CA 94605

Site 10 of 11 in cluster A

Actual: 313 ft.

HAZNET:
Year: 2010
Gepaid: CAC002652875
Contact: JENNIEF HEGG
Telephone: 9492222999
Mailing Name: Not reported
Mailing Address: 4100 NEWPORT PLACE DR FL 3
Mailing City,St,Zip: NEWPORT BEACH, CA 926602423
Gen County: Not reported
TSD EPA ID: AZ0000337360
TSD County: Not reported
Waste Category: Polychlorinated biphenyls and material containing PCBs
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 10.07779
Facility County: Alameda

Year: 2010
Gepaid: CAC002652875
Contact: JENNIEF HEGG
Telephone: 9492222999
Mailing Name: Not reported
Mailing Address: 4100 NEWPORT PLACE DR FL 3
Mailing City,St,Zip: NEWPORT BEACH, CA 926602423
Gen County: Not reported
TSD EPA ID: CAD981382732
TSD County: Not reported
Waste Category: Asbestos containing waste
Disposal Method: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons: 1650
Facility County: Alameda

Year: 2010
Gepaid: CAC002652875
Contact: JENNIEF HEGG
Telephone: 9492222999
Mailing Name: Not reported
Mailing Address: 4100 NEWPORT PLACE DR FL 3
Mailing City,St,Zip: NEWPORT BEACH, CA 926602423

STEVEN M SPEIER TRUSTEE OF SUNCAL OAK LLC (Continued) **S113459896**

Gen County: Not reported
TSD EPA ID: CAD981382732
TSD County: Not reported
Waste Category: Asbestos containing waste
Disposal Method: Not reported
Tons: 20
Facility County: Alameda

A11 **NAVAL HOSPITAL OAKLAND** **LUCIS** **1009526422**
Target Property **, CA** **N/A**

Site 11 of 11 in cluster A

Actual: 313 ft.

LUCIS:
BRACMIS facility ID: 140
Facility name: Naval Hospital Oakland
State: CA
Status code: Not reported
EFD abbreviation: SWESTDIV
Caretaker: Not reported
BRAC Year: 93
Recommendation: Closure
Total acres to transfer: 183
Acres transferred: 9.80000
Closure date: 09/30/96
UIC: Not reported
Last deed transferred by: / /
Acres owned: 0
Zip Code: Not reported
Record update date: / /
Record creation date: 02/20/01
Last update date: 05/09/03

LUCIS Deed Details:
Deed ID: 2
Deed name: Credit Union
NEPA code: Not reported
Acreage: 1.26000
Transfer type: Negotiated Sale
Sign date of deed: 05/03/02
Property transferee: Sea West Credit Union
Cleanup date: / /
FOST date: 09/30/99
EBS date: / /
NEPA complete date: / /
Early transfer authority: No
Restriction term: Not reported
Date record created: 12/19/03
Date rec. last updated: 12/19/03

Deed ID: 1
Deed name: Seneca Center
NEPA code: Not reported
Acreage: 8.54000
Transfer type: Public Benefit Conveyance
Sign date of deed: 09/27/01

NAVAL HOSPITAL OAKLAND (Continued) **1009526422**

Property transferee: U.S. Department of Education
Cleanup date: / /
FOST date: 09/01/99
EBS date: / /
NEPA complete date: / /
Early transfer authority: No
Restriction term: Not reported
Date record created: 05/17/02
Date rec. last updated: 05/17/02

LUCIS Base Description:

The Naval Medical Center Oakland (NMCO) is located in the east Oakland foothills between San Leandro and central Oakland in California. Located on 183 acres in a hilly, park-like setting, the 9-story medical complex is surrounded by five modern bui ldings, two older buildings, 24 miscellaneous structures and 38 family housing units. Residential areas bound the property to the north, a golf course and residential area to the south, Skyline Boulevard to the east, and by Mountain Boulevard and I nterstate Rout 580 to the west. The 183 total acres have been section into 63 parcels to be reused as a golf course, parks and recreation, Native American land, and other uses. NMCA was commission on July 1, 1942 as a naval hospital to assist to the treatment of wounded service personnel from World War II. The Base Realignment and Closure Commission recommended the closure of NMCO as part of the ongoing nationwide military base closure effort.

LUCIS Document Details:

Document code: Deed Area
Document ID: 475.00000
Document title: Assignment Letter for the Seneca Center to the U.S. Department of Education
Author: William Carsillo, Real Estate Contracting Officer
Author city: EFA West, Base Realignment & Closure Office
Author address: Naval Facilities Engineering Command, 1220 Pacific Highway, San Diego, CA 92132-5190
Document name: 140asgltr_oakldnavhosp_seneca.pdf
Document number: 20.00000
Source ID: Not Available
Point of contact: Dept. of the Navy, Southwest Division
Contact Telephone: Not reported
Contact email: Not Available
Document abbreviation: Not reported
Version number: Not reported
Document date: 09/27/01
Date record created: 05/17/02
Date rec. last update: 07/24/02

Document code: Deed Area
Document ID: 476.00000
Document title: Final Finding of Suitability to Transfer for Naval Medical Center Oakland, CA
Author: G. J. Buchanan, CPT, CEC, USN, CO
Author city: EFA West, Naval Facilities Engineering Command
Author address: Naval Facilities Engineering Command, 1220 Pacific Highway, San Diego, CA 92132-5190
Document name: 140fost_oakldnavhosp_seneca.pdf
Document number: 59.00000
Source ID: Not Available
Point of contact: Dept. of the Navy, Southwest Division

NAVAL HOSPITAL OAKLAND (Continued) **1009526422**

Contact Telephone: Not reported
Contact email: Not Available
Document abbreviation: Not reported
Version number: Not reported
Document date: 09/30/99
Date record created: 05/17/02
Date rec. last update: 07/24/02

Document code: Deed Area
Document ID: 789.00000
Document title: Quitclaim Deed for the Credit Union Parcel at the Former Naval Regional Medical Center Oakland
Author: William R. Carsillo
Author city: Base Realignment and Closure Office
Author address: Naval Facilities Engineering Command, 1220 Pacific Highway, San Diego, CA 92132-5190
Document name: 414Deed_Oakland_NavHosp_Credit_Union.pdf
Document number: 8.00000
Source ID: Not Available
Point of contact: NAVFACENGCOM
Contact Telephone: Not reported
Contact email: Not reported
Document abbreviation: Not reported
Version number: Not reported
Document date: 05/03/02
Date record created: 12/19/03
Date rec. last update: 10/15/04

Document code: Deed Area
Document ID: 790.00000
Document title: Final FOST for Naval Medical Center, Oakland, California
Author: G.J. Buchanan Captian, CEC, USN
Author city: NAVFACENGCOM
Author address: 900 Commodore Drive San Bruno, CA 94066-5006
Document name: 414FOST_Oakland_NavHosp_Credit_Union.pdf
Document number: 59.00000
Source ID: Not Available
Point of contact: NAVFACENGCOM
Contact Telephone: Not reported
Contact email: Not Available
Document abbreviation: Not reported
Version number: Not reported
Document date: 09/30/99
Date record created: 12/22/03
Date rec. last update: 10/15/04

Document code: Deed Area
Document ID: 791.00000
Document title: Final EBS/Community Environmental Response Facilitation Act Report for Nav Medical Center Oakland
Author: ERM-WEST, INC
Author city: 1777 Botelho Dr. Suite 260 Walnut Creek, CA 94596
Author address: 900 Commodore Drive San Bruno, CA 94066-5006
Document name: 414EBS_Oakland_NavHosp_Credit_Union.pdf
Document number: 622.00000
Source ID: N62474-92-D-3607 Order 0004
Point of contact: NAVFACENGCOM
Contact Telephone: Not reported
Contact email: Not Available
Document abbreviation: Not reported

NAVAL HOSPITAL OAKLAND (Continued) **1009526422**

Version number: Not reported
Document date: 12/01/94
Date record created: 12/22/03
Date rec. last update: 10/15/04

12
North
1/8-1/4
0.228 mi.
1204 ft.

Relative:
Higher

Actual:
354 ft.

4400 KELLER AVE
OAKLAND, CA 94605

EDR US Hist Cleaners **1015061638**
N/A

EDR Historical Cleaners:

Name: RIDGEMONT CLEANERS
Year: 2001
Address: 4400 KELLER AVE

Name: RIDGEMONT CLEANERS
Year: 2002
Address: 4400 KELLER AVE

Name: RIDGEMONT CLEANERS
Year: 2010
Address: 4400 KELLER AVE

Name: RIDGEMONT CLEANERS
Year: 2011
Address: 4400 KELLER AVE

Name: RIDGEMONT CLEANERS
Year: 2012
Address: 4400 KELLER AVE

13
WNW
1/4-1/2
0.422 mi.
2230 ft.

Relative:
Lower

Actual:
301 ft.

EXXON SERVICE STATION
8008 MOUNTAIN BLVD
OAKLAND, CA 94605

HIST CORTESE **1000337875**
LUST **N/A**
CA FID UST
Alameda County CS
HIST UST
SWEEPS UST

CORTESE:
Region: CORTESE
Facility County Code: 1
Reg By: LTNKA
Reg Id: 01-0601

LUST:
Region: STATE
Global Id: T0600100554
Latitude: 37.77087
Longitude: -122.15432
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 01/08/1996
Lead Agency: ALAMEDA COUNTY LOP
Case Worker: JS

EXXON SERVICE STATION (Continued) **1000337875**

Local Agency: ALAMEDA COUNTY LOP
RB Case Number: 01-0601
LOC Case Number: RO0000520
File Location: Stored electronically as an E-file
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0600100554
Contact Type: Local Agency Caseworker
Contact Name: JULIET SHIN
Organization Name: ALAMEDA COUNTY LOP
Address: 1131 HARBOR BAY PARKWAY
City: ALAMEDA
Email: Not reported
Phone Number: Not reported

Global Id: T0600100554
Contact Type: Regional Board Caseworker
Contact Name: Cherie McCaulou
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY STREET, SUITE 1400
City: OAKLAND
Email: cmccaulou@waterboards.ca.gov
Phone Number: Not reported

Status History:
Global Id: T0600100554
Status: Completed - Case Closed
Status Date: 01/08/1996

Global Id: T0600100554
Status: Open - Case Begin Date
Status Date: 02/22/1990

Regulatory Activities:
Global Id: T0600100554
Action Type: Other
Date: 01/01/1950
Action: Leak Reported

Global Id: T0600100554
Action Type: REMEDIATION
Date: 01/01/1950
Action: Pump & Treat (P&T) Groundwater

LUST REG 2:
Region: 2
Facility Id: 01-0601
Facility Status: Case Closed
Case Number: 1127
How Discovered: Tank Closure

EXXON SERVICE STATION (Continued) **1000337875**

Leak Cause: Structure Failure
Leak Source: Tank
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: 7/12/1989
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

CA FID UST:
Facility ID: 01000726
Regulated By: UTNKI
Regulated ID: 00024089
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 4156360471
Mail To: Not reported
Mailing Address: 4550 DACOMA
Mailing Address 2: Not reported
Mailing City,St,Zip: OAKLAND 94605
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Inactive

Alameda County CS:
Status: Case Closed
Record Id: RO0000520
PE: 5602

HIST UST:
Region: STATE
Facility ID: 00000024089
Facility Type: Gas Station
Other Type: Not reported
Total Tanks: 0008
Contact Name: AHMAD AGHEL
Telephone: 4156360471
Owner Name: EXXON COMPANY U.S.A.
Owner Address: 16945 NORTHCHASE BLVD.
Owner City,St,Zip: HOUSTON, TX 77210

Tank Num: 001
Container Num: 1
Year Installed: 1969
Tank Capacity: 00005000
Tank Used for: PRODUCT
Type of Fuel: PREMIUM
Tank Construction: Not reported
Leak Detection: Stock Inventor

EXXON SERVICE STATION (Continued) **1000337875**

Tank Num: 002
Container Num: 2
Year Installed: 1967
Tank Capacity: 00008000
Tank Used for: PRODUCT
Type of Fuel: REGULAR
Tank Construction: Not reported
Leak Detection: Stock Inventor

Tank Num: 003
Container Num: 3
Year Installed: 1967
Tank Capacity: 00008000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Tank Construction: Not reported
Leak Detection: Stock Inventor

Tank Num: 004
Container Num: 4
Year Installed: 1970
Tank Capacity: 00000000
Tank Used for: PRODUCT
Type of Fuel: WASTE OIL
Tank Construction: Not reported
Leak Detection: Stock Inventor

Tank Num: 005
Container Num: 1
Year Installed: 1969
Tank Capacity: 00005000
Tank Used for: PRODUCT
Type of Fuel: PREMIUM
Tank Construction: Not reported
Leak Detection: Stock Inventor

Tank Num: 006
Container Num: 2
Year Installed: 1967
Tank Capacity: 00008000
Tank Used for: PRODUCT
Type of Fuel: REGULAR
Tank Construction: Not reported
Leak Detection: Stock Inventor

Tank Num: 007
Container Num: 3
Year Installed: 1967
Tank Capacity: 00008000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Tank Construction: Not reported
Leak Detection: Stock Inventor

Tank Num: 008
Container Num: 4
Year Installed: 1970

EXXON SERVICE STATION (Continued) **1000337875**

Tank Capacity: 00001000
Tank Used for: PRODUCT
Type of Fuel: WASTE OIL
Tank Construction: Not reported
Leak Detection: Stock Inventor

SWEEPS UST:
Status: Not reported
Comp Number: 24089
Number: Not reported
Board Of Equalization: 44-000285
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Tank Status: Not reported
Owner Tank Id: Not reported
Swrcb Tank Id: 01-000-024089-000001
Actv Date: Not reported
Capacity: 5000
Tank Use: M.V. FUEL
Stg: PRODUCT
Content: REG UNLEADED
Number Of Tanks: 11

Status: Not reported
Comp Number: 24089
Number: Not reported
Board Of Equalization: 44-000285
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Tank Status: Not reported
Owner Tank Id: Not reported
Swrcb Tank Id: 01-000-024089-000002
Actv Date: Not reported
Capacity: 8000
Tank Use: M.V. FUEL
Stg: PRODUCT
Content: LEADED
Number Of Tanks: Not reported

Status: Not reported
Comp Number: 24089
Number: Not reported
Board Of Equalization: 44-000285
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Tank Status: Not reported
Owner Tank Id: Not reported
Swrcb Tank Id: 01-000-024089-000003
Actv Date: Not reported
Capacity: 8000
Tank Use: M.V. FUEL
Stg: PRODUCT
Content: REG UNLEADED
Number Of Tanks: Not reported

EXXON SERVICE STATION (Continued) **1000337875**

Status:	Not reported
Comp Number:	24089
Number:	Not reported
Board Of Equalization:	44-000285
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Tank Status:	Not reported
Owner Tank Id:	Not reported
Swrcb Tank Id:	01-000-024089-000004
Actv Date:	Not reported
Capacity:	1
Tank Use:	OIL
Stg:	WASTE
Content:	WASTE OIL
Number Of Tanks:	Not reported

Status:	Not reported
Comp Number:	24089
Number:	Not reported
Board Of Equalization:	44-000285
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Tank Status:	Not reported
Owner Tank Id:	Not reported
Swrcb Tank Id:	01-000-024089-000005
Actv Date:	Not reported
Capacity:	5000
Tank Use:	M.V. FUEL
Stg:	PRODUCT
Content:	REG UNLEADED
Number Of Tanks:	Not reported

Status:	Not reported
Comp Number:	24089
Number:	Not reported
Board Of Equalization:	44-000285
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Tank Status:	Not reported
Owner Tank Id:	Not reported
Swrcb Tank Id:	01-000-024089-000006
Actv Date:	Not reported
Capacity:	8000
Tank Use:	M.V. FUEL
Stg:	PRODUCT
Content:	LEADED
Number Of Tanks:	Not reported

Status:	Not reported
Comp Number:	24089
Number:	Not reported
Board Of Equalization:	44-000285
Referral Date:	Not reported
Action Date:	Not reported

EXXON SERVICE STATION (Continued) **1000337875**

Created Date:	Not reported
Tank Status:	Not reported
Owner Tank Id:	Not reported
Swrcb Tank Id:	01-000-024089-000007
Actv Date:	Not reported
Capacity:	8000
Tank Use:	M.V. FUEL
Stg:	PRODUCT
Content:	REG UNLEADED
Number Of Tanks:	Not reported

Status:	Not reported
Comp Number:	24089
Number:	Not reported
Board Of Equalization:	44-000285
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Tank Status:	Not reported
Owner Tank Id:	Not reported
Swrcb Tank Id:	01-000-024089-000008
Actv Date:	Not reported
Capacity:	1000
Tank Use:	OIL
Stg:	WASTE
Content:	WASTE OIL
Number Of Tanks:	Not reported

Status:	Not reported
Comp Number:	24089
Number:	Not reported
Board Of Equalization:	44-000285
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Tank Status:	Not reported
Owner Tank Id:	Not reported
Swrcb Tank Id:	01-000-024089-000009
Actv Date:	Not reported
Capacity:	8000
Tank Use:	M.V. FUEL
Stg:	PRODUCT
Content:	REG UNLEADED
Number Of Tanks:	Not reported

Status:	Not reported
Comp Number:	24089
Number:	Not reported
Board Of Equalization:	44-000285
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Tank Status:	Not reported
Owner Tank Id:	Not reported
Swrcb Tank Id:	01-000-024089-000010
Actv Date:	Not reported
Capacity:	5000

EXXON SERVICE STATION (Continued) **1000337875**

Tank Use:	M.V. FUEL
Stg:	PRODUCT
Content:	REG UNLEADED
Number Of Tanks:	Not reported
Status:	Not reported
Comp Number:	24089
Number:	Not reported
Board Of Equalization:	44-000285
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Tank Status:	Not reported
Owner Tank Id:	Not reported
Swrcb Tank Id:	01-000-024089-000011
Actv Date:	Not reported
Capacity:	8000
Tank Use:	M.V. FUEL
Stg:	PRODUCT
Content:	REG UNLEADED
Number Of Tanks:	Not reported

Count: 9 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
OAKLAND	1010313504	ALA COUNTY STORM WATER TRTMT SYS P	ROUTE 80 KP 1.6 TO 3.5	94619	RCRA-LQG
OAKLAND	1001226976	SF0BB EAST SPAN	HWY 80, SFOBB		RCRA-SQG, FINDS
OAKLAND	1001217595	CALTRANS	HWY 880 DAVIS ST TO 5TH AVE		RCRA-SQG, FINDS
OAKLAND	S103881512	UPTOWN THEATER DISTRICT	BORDERED BY 20TH ST SAN PABLO		SLIC
OAKLAND	1001404270	LEONA HEIGHTS SULPHUR MINE	END OF MCDONNELL AVE NEAR	94619	CERCLIS, FINDS
OAKLAND	1003879523	LAKE CHABOT LANDFILL	GOLF LINKS ROAD	94605	CERC-NFRAP
OAKLAND	S111023258	FORMER BASALT ROCK COMPANY	MCDONELL ST		Cortese, ENF
OAKLAND	1010727989	OAK STREET TO 9TH AVENUE	OAK STREET TO 9TH AVENUE		FINDS
OAKLAND	1014674022	CHILDREN'S HOSPITAL OAKLAND	UNKNOWN		FINDS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 10/11/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 10/11/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 10/11/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/29/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 72

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 10/09/2012
Date Made Active in Reports: 12/20/2012
Number of Days to Update: 72

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 10/11/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/29/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 72

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 104

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 104

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/15/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/17/2013
Date Made Active in Reports: 02/15/2013
Number of Days to Update: 29

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 09/05/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 09/05/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/19/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 50

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/19/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 02/06/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 65

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 11/01/2012
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 162

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/02/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/27/2012
Date Data Arrived at EDR: 08/28/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 49

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 09/12/2011
Date Data Arrived at EDR: 09/13/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 59

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 02/08/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Semi-Annually

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/28/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 43

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 03/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

State and tribal registered storage tank lists

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 02/06/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 65

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 02/21/2013
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 45

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 08/27/2012
Date Data Arrived at EDR: 08/28/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 49

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/28/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 43

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/10/2011
Date Data Arrived at EDR: 05/11/2011
Date Made Active in Reports: 06/14/2011
Number of Days to Update: 34

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 08/02/2012
Date Data Arrived at EDR: 08/03/2012
Date Made Active in Reports: 11/05/2012
Number of Days to Update: 94

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 02/08/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 11/07/2012
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 156

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/02/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27
Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 09/05/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 35
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 10/02/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 14
Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/24/2013
Date Data Arrived at EDR: 06/25/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 45
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/24/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30
Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/19/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 28
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 04/26/2013
Date Made Active in Reports: 05/16/2013
Number of Days to Update: 20
Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 07/31/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 08/06/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 22

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 09/04/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 09/05/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 09/03/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 37

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 04/25/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 06/14/2013
Date Data Arrived at EDR: 06/17/2013
Date Made Active in Reports: 08/21/2013
Number of Days to Update: 65

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 09/11/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/11/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 55

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 03/12/2013
Date Data Arrived at EDR: 05/01/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 55

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 08/02/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 15

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 08/07/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 57
Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 12/18/2012
Date Data Arrived at EDR: 03/13/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 30
Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/13/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146
Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 28
Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/05/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/31/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 44
Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/30/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64
Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/24/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Every 4 Years

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/20/2011
Date Data Arrived at EDR: 11/10/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 10/09/2014
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2012
Date Data Arrived at EDR: 01/16/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 114

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/14/2013
Date Data Arrived at EDR: 03/20/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 112

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/09/2013
Date Data Arrived at EDR: 04/11/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 29

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 03/08/2013
Date Data Arrived at EDR: 03/21/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 111

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/11/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 05/08/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/19/2013
Number of Days to Update: 52

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/26/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 08/19/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 50

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/19/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Quarterly

UIC: UIC Listing

A listing of underground control injection wells.

Date of Government Version: 08/21/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 30

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Varies

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 07/05/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 08/26/2013
Number of Days to Update: 52
Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List
The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 35
Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Annually

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 08/09/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 56
Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 07/16/2013
Date Made Active in Reports: 08/26/2013
Number of Days to Update: 41

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/15/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 06/25/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 58

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/27/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/15/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 09/27/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Quarterly

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/02/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/19/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 28
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 08/29/2013
Date Data Arrived at EDR: 09/13/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 31
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 09/11/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 10/15/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/13/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 07/15/2013
Date Data Arrived at EDR: 07/16/2013
Date Made Active in Reports: 08/12/2013
Number of Days to Update: 27
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/15/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/28/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 44
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/27/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/12/2013
Date Data Arrived at EDR: 08/20/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 49

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/15/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 08/27/2013
Number of Days to Update: 19

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/25/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 01/29/2013
Date Data Arrived at EDR: 02/14/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 09/24/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

2020 COR ACTION: 2020 Corrective Action Program List
The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 11/11/2011
Date Data Arrived at EDR: 05/18/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/16/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: N/A

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 04/15/2013
Date Data Arrived at EDR: 07/03/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 72

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 10/04/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

EPA WATCH LIST: EPA WATCH LIST
EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Proprietary Historic Dry Cleaners - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Auto Stat: EDR Proprietary Historic Gas Stations - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 07/25/2013
Date Data Arrived at EDR: 07/26/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 14

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 07/25/2013
Date Data Arrived at EDR: 07/26/2013
Date Made Active in Reports: 08/20/2013
Number of Days to Update: 25

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List

Cupa Facility List

Date of Government Version: 06/20/2013
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 08/21/2013
Number of Days to Update: 61

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/02/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 20

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing

Cupa Facility Listing

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 07/24/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 16

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/20/2013
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 39

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 10/04/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/20/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 46

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 08/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 01/09/2013
Date Data Arrived at EDR: 01/10/2013
Date Made Active in Reports: 02/25/2013
Number of Days to Update: 46

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 09/20/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 08/20/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 46

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 08/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 07/16/2013
Date Made Active in Reports: 07/24/2013
Number of Days to Update: 8

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 08/09/2013
Date Data Arrived at EDR: 08/09/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 13

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/09/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 07/26/2013
Date Data Arrived at EDR: 08/09/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 13

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/22/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 42

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/25/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 33

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 03/28/2013
Date Data Arrived at EDR: 06/17/2013
Date Made Active in Reports: 08/21/2013
Number of Days to Update: 65

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/22/2013
Date Data Arrived at EDR: 07/22/2013
Date Made Active in Reports: 08/26/2013
Number of Days to Update: 35

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/22/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/17/2013
Next Scheduled EDR Contact: 11/04/2013
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/30/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 03/25/2013
Number of Days to Update: 32

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 07/31/2013
Date Data Arrived at EDR: 08/01/2013
Date Made Active in Reports: 08/27/2013
Number of Days to Update: 26

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank

Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Annually

City of Torrance Underground Storage Tank

Underground storage tank sites located in the city of Torrance.

Date of Government Version: 07/15/2013
Date Data Arrived at EDR: 07/18/2013
Date Made Active in Reports: 08/20/2013
Number of Days to Update: 33

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List

A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 09/20/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/18/2013
Number of Days to Update: 24

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites

Currently permitted USTs in Marin County.

Date of Government Version: 11/26/2012
Date Data Arrived at EDR: 11/28/2012
Date Made Active in Reports: 01/21/2013
Number of Days to Update: 54

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 08/23/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 42

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 09/04/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 39

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 09/11/2013
Date Data Arrived at EDR: 09/12/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 32

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 12/05/2011
Date Data Arrived at EDR: 12/06/2011
Date Made Active in Reports: 02/07/2012
Number of Days to Update: 63

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 05/29/2013
Date Data Arrived at EDR: 05/30/2013
Date Made Active in Reports: 07/15/2013
Number of Days to Update: 46

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 08/15/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 56

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 56

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 56

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 08/22/2013
Date Data Arrived at EDR: 08/22/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 49

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/20/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 07/18/2013
Date Data Arrived at EDR: 07/18/2013
Date Made Active in Reports: 07/24/2013
Number of Days to Update: 6

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 07/18/2013
Date Data Arrived at EDR: 07/18/2013
Date Made Active in Reports: 08/20/2013
Number of Days to Update: 33

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 05/03/2013
Date Data Arrived at EDR: 07/08/2013
Date Made Active in Reports: 07/24/2013
Number of Days to Update: 16

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 05/03/2013
Date Data Arrived at EDR: 07/08/2013
Date Made Active in Reports: 08/23/2013
Number of Days to Update: 46

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 09/03/2013
Date Data Arrived at EDR: 09/03/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 37

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 08/08/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/23/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 23

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2012
Date Data Arrived at EDR: 11/06/2012
Date Made Active in Reports: 11/30/2012
Number of Days to Update: 24

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24
Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10
Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 09/25/2013
Date Data Arrived at EDR: 09/27/2013
Date Made Active in Reports: 10/18/2013
Number of Days to Update: 21
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/26/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 44
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 07/02/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 08/23/2013
Number of Days to Update: 49

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/13/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Annually

Fuel Leak List

A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing

CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List

Cupa facility list

Date of Government Version: 09/03/2013
Date Data Arrived at EDR: 09/04/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 36

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 09/03/2013
Date Data Arrived at EDR: 09/06/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 38

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Annually

Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/14/2013
Date Data Arrived at EDR: 08/16/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 53

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 08/08/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 08/22/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 44

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 09/09/2013
Date Data Arrived at EDR: 09/10/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 34

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 09/18/2013
Date Data Arrived at EDR: 09/20/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 27

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/18/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/18/2013
Number of Days to Update: 24

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 07/05/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 08/21/2013
Number of Days to Update: 47

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 07/02/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 08/12/2013
Number of Days to Update: 38

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Semi-Annually

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/14/2013
Date Data Arrived at EDR: 01/16/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 42

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 08/19/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 44

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/19/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/19/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 05/28/2013
Date Data Arrived at EDR: 06/24/2013
Date Made Active in Reports: 08/12/2013
Number of Days to Update: 49
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/30/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 08/29/2013
Date Data Arrived at EDR: 09/18/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 28
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 06/24/2013
Date Data Arrived at EDR: 06/26/2013
Date Made Active in Reports: 08/20/2013
Number of Days to Update: 55
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/05/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 17
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 07/31/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45
Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/19/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/28/2012
Number of Days to Update: 40

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/07/2013
Date Made Active in Reports: 09/10/2013
Number of Days to Update: 34

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 07/24/2013
Date Made Active in Reports: 08/19/2013
Number of Days to Update: 26

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 08/05/2013
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/23/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 08/09/2013
Date Made Active in Reports: 09/27/2013
Number of Days to Update: 49

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

FORMER OAK KNOLL NAVAL HOSPITAL
8750 MOUNTAIN BLVD
OAKLAND, CA 94605

TARGET PROPERTY COORDINATES

Latitude (North):	37.768 - 37° 46' 4.80''
Longitude (West):	122.1478 - 122° 8' 52.08''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	575058.6
UTM Y (Meters):	4180211.5
Elevation:	313 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	37122-G2 OAKLAND EAST, CA
Most Recent Revision:	1980

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

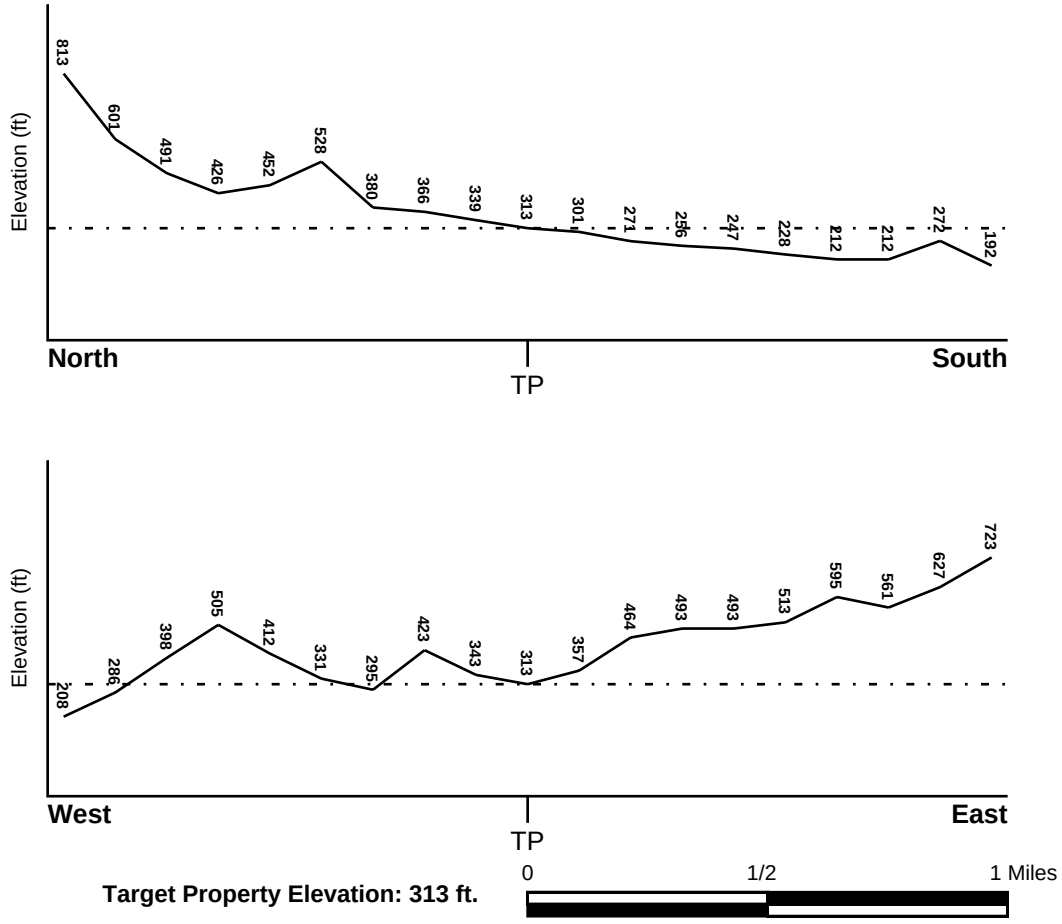
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 313 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
ALAMEDA, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06001C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
OAKLAND EAST	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius: 1.25 miles
Status: Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
A1	1/4 - 1/2 Mile WNW	NE
A2	1/4 - 1/2 Mile WNW	NE
B3	1/2 - 1 Mile ESE	N
B4	1/2 - 1 Mile ESE	N
6	1/2 - 1 Mile WNW	E

For additional site information, refer to Physical Setting Source Map Findings.

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

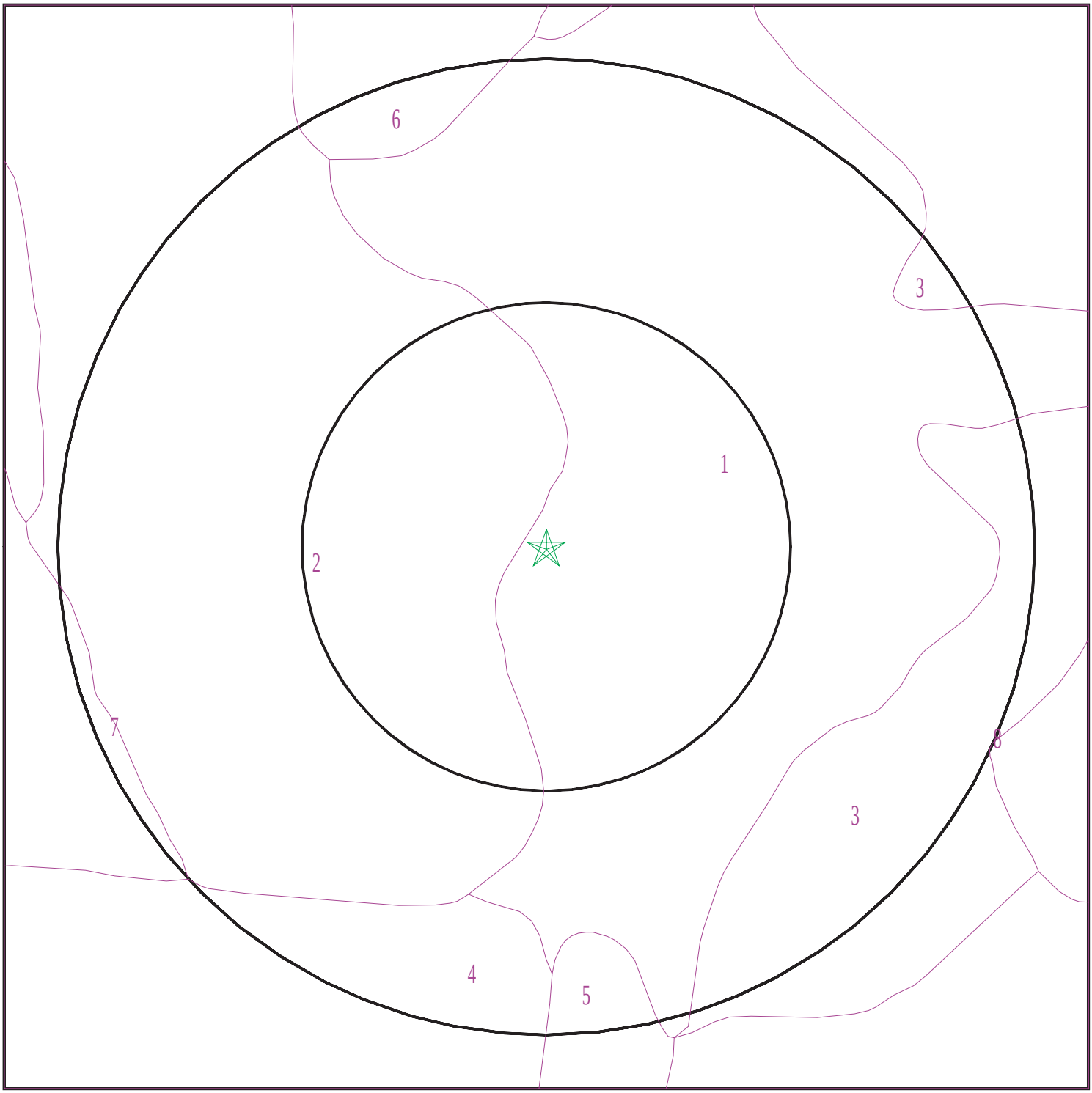
Era:	Mesozoic
System:	Cretaceous
Series:	Upper Cretaceous
Code:	uK *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3768145.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Former Oak Knoll Naval Hospital	CLIENT:	WEST
ADDRESS:	8750 Mountain Blvd Oakland CA 94605	CONTACT:	Peter Morris
LAT/LONG:	37.768 / 122.1478	INQUIRY #:	3768145.2s
		DATE:	October 28, 2013 11:55 am

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Xerorthents

Soil Surface Texture: silt loam

Hydrologic Group: Not reported

Soil Drainage Class:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 51 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	59 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 7.8 Min: 5.6

Soil Map ID: 2

Soil Component Name: Xerorthents

Soil Surface Texture: loam

Hydrologic Group: Not reported

Soil Drainage Class:

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 51 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	59 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 7.8 Min: 5.6

Soil Map ID: 3

Soil Component Name: Millsholm

Soil Surface Texture: silt loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 51 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 7.3 Min: 5.6
2	20 inches	24 inches	unweathered bedrock	Not reported	Not reported	Max: 0 Min: 0	Max: Min:

Soil Map ID: 4

Soil Component Name: Climara

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 84 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	27 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
2	27 inches	33 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 7.9

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
3	33 inches	37 inches	unweathered bedrock	Not reported	Not reported	Max: 0 Min: 0	Max: Min:

Soil Map ID: 5

Soil Component Name: Botella

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.6
2	9 inches	33 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.8 Min: 6.6
3	33 inches	59 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4

Soil Map ID: 6

Soil Component Name: Maymen

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 48 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 4.5
2	18 inches	22 inches	unweathered bedrock	Not reported	Not reported	Max: 0 Min: 0	Max: Min:

Soil Map ID: 7

Soil Component Name: Xerorthents

Soil Surface Texture: material

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	59 inches	material	Not reported	Not reported	Max: Min:	Max: Min:

Soil Map ID: 8

Soil Component Name: Los Osos

Soil Surface Texture: silty clay loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 51 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 6.5 Min: 5.6
2	7 inches	29 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 1.4 Min: 0.42	Max: 7.3 Min: 5.6
3	29 inches	33 inches	weathered bedrock	Not reported	Not reported	Max: 0 Min: 0	Max: Min:

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

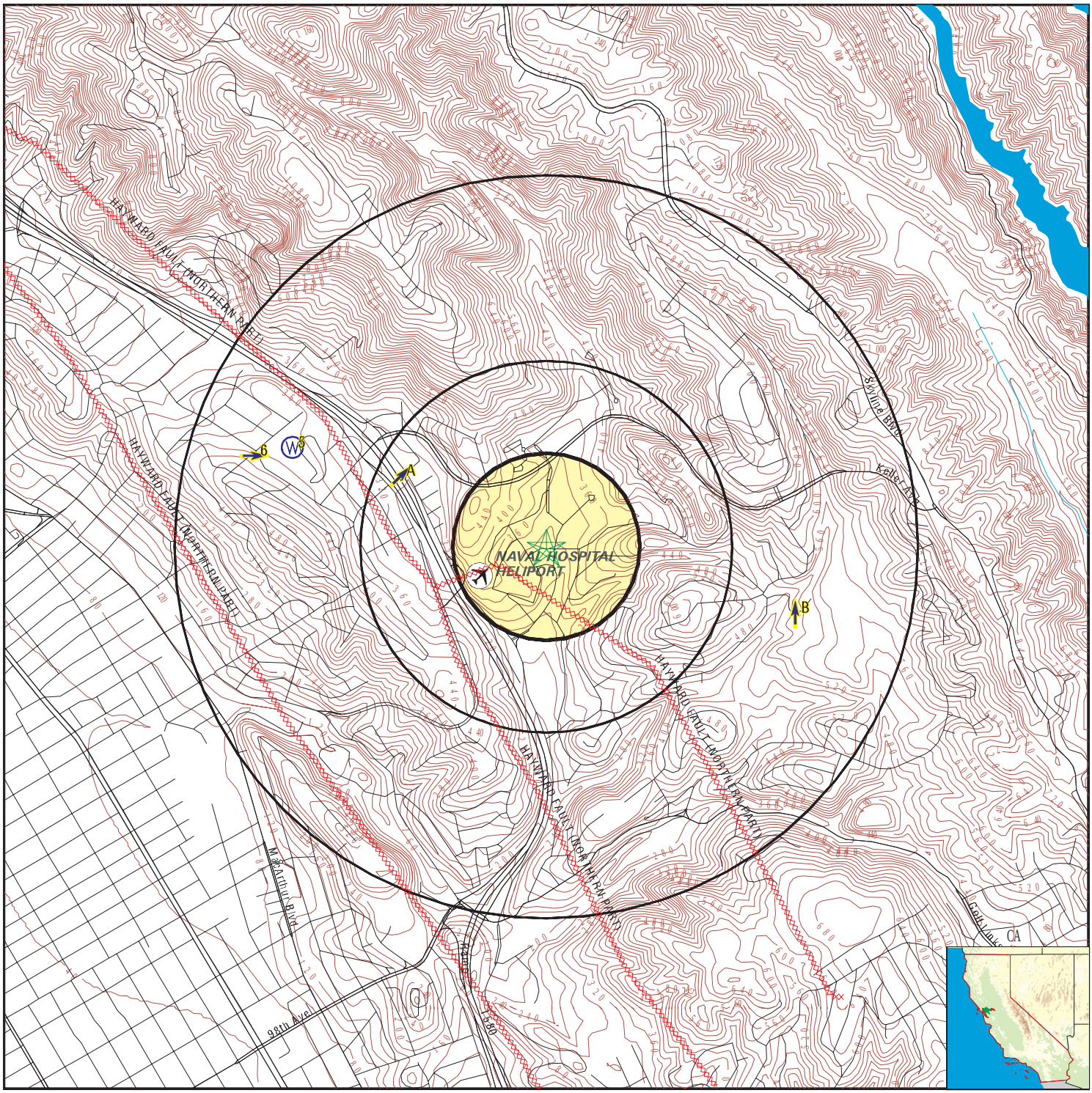
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
5	22298	1/2 - 1 Mile WNW

PHYSICAL SETTING SOURCE MAP - 3768145.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Former Oak Knoll Naval Hospital	CLIENT:	WEST
ADDRESS:	8750 Mountain Blvd Oakland CA 94605	CONTACT:	Peter Morris
		INQUIRY #:	3768145.2s
LAT/LONG:	37.768 / 122.1478	DATE:	October 28, 2013 11:55 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID / Direction / Distance / Elevation			Database	EDR ID Number
A1 **WNW** **1/4 - 1/2 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	01-0601 NE Not Reported Not Reported 10'ft 08/28/1989	**AQUIFLOW**	**51852**
A2 **WNW** **1/4 - 1/2 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	01-0601 NE 90.0 94.0 Not Reported 01/08/1996	**AQUIFLOW**	**51853**
B3 **ESE** **1/2 - 1 Mile** **Higher**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	01-1320 N Not Reported Not Reported 10 ft 06/09/1990	**AQUIFLOW**	**51876**
B4 **ESE** **1/2 - 1 Mile** **Higher**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	01-1320 N Not Reported Not Reported 14 ft 03/15/1999	**AQUIFLOW**	**51875**
5 **WNW** **1/2 - 1 Mile** **Higher**			**CA WELLS**	**22298**

Water System Information:

Prime Station Code:	D01/005-USL TR	User ID:	ENG
FRDS Number:	0110005011	County:	Alameda
District Number:	04	Station Type:	LAKE/AMBNT/MUN/INTAKE
Water Type:	Surface Water	Well Status:	Active Treated
Source Lat/Long:	374619.7 1220933.8	Precision:	1,000 Feet (10 Seconds)
Source Name:	UPPER SAN LEANDRO WTP-USL WATER-TREATED		
System Number:	0110005		
System Name:	EAST BAY MUD		
Organization That Operates System:			
	P.O. BOX 24055		
	OAKLAND, CA 94623		
Pop Served:	1300000	Connections:	356200
Area Served:	W ALAMEDA/CONTRA COSTA CO		

Sample Collected:	03/20/2013	Findings:	53.4 UG/L
Chemical:	ALUMINUM		
Sample Collected:	03/20/2013	Findings:	0.93 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	04/02/2013	Findings:	130. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04/02/2013	Findings:	140. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04/02/2013	Findings:	31.4 MG/L
Chemical:	CALCIUM		
Sample Collected:	04/02/2013	Findings:	13.5 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04/02/2013	Findings:	26.2 MG/L
Chemical:	SODIUM		
Sample Collected:	04/02/2013	Findings:	2.15 MG/L
Chemical:	POTASSIUM		
Sample Collected:	04/02/2013	Findings:	16. MG/L
Chemical:	CHLORIDE		
Sample Collected:	04/02/2013	Findings:	53.9 UG/L
Chemical:	ALUMINUM		
Sample Collected:	04/02/2013	Findings:	250. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04/02/2013	Findings:	1.5e-002 MG/L
Chemical:	BROMIDE		
Sample Collected:	04/02/2013	Findings:	0.84 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	06/29/2011	Findings:	130. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06/29/2011	Findings:	150. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06/29/2011	Findings:	33.3 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/29/2011	Findings:	14.1 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/29/2011	Findings:	30.4 MG/L
Chemical:	SODIUM		
Sample Collected:	06/29/2011	Findings:	1.4 MG/L
Chemical:	POTASSIUM		
Sample Collected:	06/29/2011	Findings:	0.99 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	07/05/2011	Findings:	130. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07/05/2011	Findings:	120. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	07/05/2011	Findings:	33.6 MG/L
Chemical:	CALCIUM		
Sample Collected:	07/05/2011	Findings:	14.3 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07/05/2011	Findings:	30.5 MG/L
Chemical:	SODIUM		
Sample Collected:	07/05/2011	Findings:	1.63 MG/L
Chemical:	POTASSIUM		
Sample Collected:	07/05/2011	Findings:	57.3 UG/L
Chemical:	ALUMINUM		
Sample Collected:	07/05/2011	Findings:	0.97 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	07/26/2011	Findings:	2. UNITS
Chemical:	COLOR		
Sample Collected:	07/26/2011	Findings:	382. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	07/26/2011	Findings:	8.71
Chemical:	PH, FIELD		
Sample Collected:	07/26/2011	Findings:	140. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07/26/2011	Findings:	130. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07/26/2011	Findings:	6.4 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	07/26/2011	Findings:	140. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07/26/2011	Findings:	32. MG/L
Chemical:	CALCIUM		
Sample Collected:	07/26/2011	Findings:	13.6 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07/26/2011	Findings:	29.1 MG/L
Chemical:	SODIUM		
Sample Collected:	07/26/2011	Findings:	1.98 MG/L
Chemical:	POTASSIUM		
Sample Collected:	07/26/2011	Findings:	16. MG/L
Chemical:	CHLORIDE		
Sample Collected:	07/26/2011	Findings:	116. UG/L
Chemical:	BORON		
Sample Collected:	07/26/2011	Findings:	240. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07/26/2011	Findings:	0.26 MG/L
Chemical:	HYDROXIDE ALKALINITY		
Sample Collected:	07/26/2011	Findings:	0.11 NTU
Chemical:	TURBIDITY, LABORATORY		

Sample Collected:	07/26/2011	Findings:	0.94 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	08/02/2011	Findings:	140. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	08/02/2011	Findings:	140. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	08/02/2011	Findings:	32.3 MG/L
Chemical:	CALCIUM		
Sample Collected:	08/02/2011	Findings:	13.9 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	08/02/2011	Findings:	29.6 MG/L
Chemical:	SODIUM		
Sample Collected:	08/02/2011	Findings:	2.02 MG/L
Chemical:	POTASSIUM		
Sample Collected:	08/02/2011	Findings:	0.91 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	09/06/2011	Findings:	150. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	09/06/2011	Findings:	160. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	09/06/2011	Findings:	35. MG/L
Chemical:	CALCIUM		
Sample Collected:	09/06/2011	Findings:	13.6 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	09/06/2011	Findings:	31.4 MG/L
Chemical:	SODIUM		
Sample Collected:	09/06/2011	Findings:	1.9 MG/L
Chemical:	POTASSIUM		
Sample Collected:	09/06/2011	Findings:	0.92 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	05/15/2012	Findings:	130. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05/15/2012	Findings:	130. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05/15/2012	Findings:	30.9 MG/L
Chemical:	CALCIUM		
Sample Collected:	05/15/2012	Findings:	13.1 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05/15/2012	Findings:	30.4 MG/L
Chemical:	SODIUM		
Sample Collected:	05/15/2012	Findings:	1.67 MG/L
Chemical:	POTASSIUM		
Sample Collected:	05/15/2012	Findings:	17. MG/L
Chemical:	CHLORIDE		

Sample Collected:	05/15/2012	Findings:	64.1 UG/L
Chemical:	ALUMINUM		
Sample Collected:	05/15/2012	Findings:	230. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05/15/2012	Findings:	0.81 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	06/12/2012	Findings:	140. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06/12/2012	Findings:	130. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06/12/2012	Findings:	32. MG/L
Chemical:	CALCIUM		
Sample Collected:	06/12/2012	Findings:	12.9 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/12/2012	Findings:	31. MG/L
Chemical:	SODIUM		
Sample Collected:	06/12/2012	Findings:	1.4 MG/L
Chemical:	POTASSIUM		
Sample Collected:	06/12/2012	Findings:	16. MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/12/2012	Findings:	53.9 UG/L
Chemical:	ALUMINUM		
Sample Collected:	06/12/2012	Findings:	230. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/12/2012	Findings:	0.86 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	07/03/2012	Findings:	140. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07/03/2012	Findings:	140. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07/03/2012	Findings:	34.6 MG/L
Chemical:	CALCIUM		
Sample Collected:	07/03/2012	Findings:	14.6 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07/03/2012	Findings:	34. MG/L
Chemical:	SODIUM		
Sample Collected:	07/03/2012	Findings:	2.24 MG/L
Chemical:	POTASSIUM		
Sample Collected:	07/03/2012	Findings:	17. MG/L
Chemical:	CHLORIDE		
Sample Collected:	07/03/2012	Findings:	30.6 UG/L
Chemical:	MANGANESE		
Sample Collected:	07/03/2012	Findings:	56.7 UG/L
Chemical:	ALUMINUM		

Sample Collected:	07/03/2012	Findings:	240. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07/03/2012	Findings:	0.85 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	07/18/2012	Findings:	3. UNITS
Chemical:	COLOR		
Sample Collected:	07/18/2012	Findings:	369. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	07/18/2012	Findings:	8.7
Chemical:	PH, FIELD		
Sample Collected:	07/18/2012	Findings:	140. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07/18/2012	Findings:	140. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07/18/2012	Findings:	6.5 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	07/18/2012	Findings:	140. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07/18/2012	Findings:	34.8 MG/L
Chemical:	CALCIUM		
Sample Collected:	07/18/2012	Findings:	13.8 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07/18/2012	Findings:	34.2 MG/L
Chemical:	SODIUM		
Sample Collected:	07/18/2012	Findings:	1.88 MG/L
Chemical:	POTASSIUM		
Sample Collected:	07/18/2012	Findings:	17. MG/L
Chemical:	CHLORIDE		
Sample Collected:	07/18/2012	Findings:	123. UG/L
Chemical:	BORON		
Sample Collected:	07/18/2012	Findings:	51.3 UG/L
Chemical:	ALUMINUM		
Sample Collected:	07/18/2012	Findings:	240. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07/18/2012	Findings:	0.25 MG/L
Chemical:	HYDROXIDE ALKALINITY		
Sample Collected:	07/18/2012	Findings:	0.16 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	07/18/2012	Findings:	0.87 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	08/07/2012	Findings:	150. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	08/07/2012	Findings:	150. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	08/07/2012	Findings:	35.4 MG/L
Chemical:	CALCIUM		
Sample Collected:	08/07/2012	Findings:	13.7 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	08/07/2012	Findings:	33.7 MG/L
Chemical:	SODIUM		
Sample Collected:	08/07/2012	Findings:	1.68 MG/L
Chemical:	POTASSIUM		
Sample Collected:	08/07/2012	Findings:	18. MG/L
Chemical:	CHLORIDE		
Sample Collected:	08/07/2012	Findings:	230. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	08/07/2012	Findings:	0.84 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	09/04/2012	Findings:	140. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	09/04/2012	Findings:	140. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	09/04/2012	Findings:	30.6 MG/L
Chemical:	CALCIUM		
Sample Collected:	09/04/2012	Findings:	13.3 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	09/04/2012	Findings:	31.6 MG/L
Chemical:	SODIUM		
Sample Collected:	09/04/2012	Findings:	1.92 MG/L
Chemical:	POTASSIUM		
Sample Collected:	09/04/2012	Findings:	17. MG/L
Chemical:	CHLORIDE		
Sample Collected:	09/04/2012	Findings:	50.3 UG/L
Chemical:	ALUMINUM		
Sample Collected:	09/04/2012	Findings:	240. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	09/04/2012	Findings:	1.9e-002 MG/L
Chemical:	BROMIDE		
Sample Collected:	09/04/2012	Findings:	0.87 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	03/19/2013	Findings:	8.63
Chemical:	PH, FIELD		
Sample Collected:	03/19/2013	Findings:	1. UNITS
Chemical:	COLOR		
Sample Collected:	03/19/2013	Findings:	384. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	03/19/2013	Findings:	130. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		

Sample Collected:	03/19/2013	Findings:	120. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03/19/2013	Findings:	5.3 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	03/19/2013	Findings:	190. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03/19/2013	Findings:	32.6 MG/L
Chemical:	CALCIUM		
Sample Collected:	03/19/2013	Findings:	13.7 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03/19/2013	Findings:	27.4 MG/L
Chemical:	SODIUM		
Sample Collected:	03/19/2013	Findings:	2.03 MG/L
Chemical:	POTASSIUM		
Sample Collected:	03/19/2013	Findings:	17. MG/L
Chemical:	CHLORIDE		
Sample Collected:	03/19/2013	Findings:	137. UG/L
Chemical:	BORON		
Sample Collected:	03/19/2013	Findings:	61.7 UG/L
Chemical:	ALUMINUM		
Sample Collected:	03/19/2013	Findings:	250. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03/19/2013	Findings:	0.23 MG/L
Chemical:	HYDROXIDE ALKALINITY		
Sample Collected:	03/19/2013	Findings:	0.12 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	03/19/2013	Findings:	0.84 MG/L
Chemical:	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)		
Sample Collected:	03/19/2013	Findings:	8.66
Chemical:	PH, FIELD		
Sample Collected:	03/20/2013	Findings:	120. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03/20/2013	Findings:	150. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03/20/2013	Findings:	32.6 MG/L
Chemical:	CALCIUM		
Sample Collected:	03/20/2013	Findings:	13.6 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03/20/2013	Findings:	27.6 MG/L
Chemical:	SODIUM		
Sample Collected:	03/20/2013	Findings:	1.97 MG/L
Chemical:	POTASSIUM		

6
WNW
1/2 - 1 Mile
Higher

Site ID:	01-2232
Groundwater Flow:	E
Shallow Water Depth:	Not Reported
Deep Water Depth:	Not Reported
Average Water Depth:	20-40
Date:	06/06/1986

AQUIFLOW **51543**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
94605	29	0

Federal EPA Radon Zone for ALAMEDA County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 94605

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	-0.250 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Former Oak Knoll Naval Hospital
8750 Mountain Blvd
Oakland, CA 94605

Inquiry Number: 3768145.7
November 10, 2013

EDR Environmental Lien and AUL Search

Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Environmental Lien and AUL Search

The EDR Environmental Lien and AUL Search Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied address information to:

- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR Environmental Lien and AUL Search

TARGET PROPERTY INFORMATION

ADDRESS

8750 Mountain Blvd
Former Oak Knoll Naval Hospital
Oakland, CA 94605

RESEARCH SOURCE

Source 1:

Alameda Recorder
Alameda, CA

PROPERTY INFORMATION

Deed 1:

Type of Deed:	deed
Title is vested in:	LV Oak Knoll LLC
Title received from:	Suncal Oak Knoll LLC
Deed Dated	4/27/2012
Deed Recorded:	4/30/2012
Book:	NA
Page:	na
Volume:	na
Instrument:	na
Docket:	NA
Land Record Comments:	
Miscellaneous Comments:	
Legal Description:	See Exhibit
Legal Current Owner:	LV Oak Knoll LLC
Parcel # / Property Identifier:	043a-4675-003-21, 043a-6870-001-00, 043a-6865-002-03
Comments:	See Exhibit

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

OTHER ACTIVITY AND USE LIMITATIONS (AULs)

AULs: Found ☐ Not Found ☒

Deed Exhibit 1

3.

Oak Knoll

RECORDING REQUESTED BY,
WHEN RECORDED MAIL TO AND
MAIL TAX STATEMENTS TO:

LV Oak Knoll LLC
c/o Lehman Brothers Holdings Inc.
1271 Avenue of the Americas, 39th Floor
New York, New York 10020



2012140125 04/30/2012 03:59 PM
OFFICIAL RECORDS OF ALAMEDA COUNTY
PATRICK O'CONNELL
RECORDING FEE: 57.00



15 PGS

15
HT

(Space Above Line for Recorder's Use Only)

GRANT DEED

11923: CONVEYANCE UNDER BANKRUPTCY

FOR VALUE RECEIVED, SunCal Oak Knoll, LLC, a Delaware limited liability company, through its chapter 11 estate for which Steven M. Speier is the court-appointed Liquidating Trustee ("**Grantor**"), hereby grants to LV Oak Knoll LLC, a Delaware limited liability company ("**Grantee**"), all that certain real property situated in the City of Oakland, County of Alameda, State of California, and more particularly described on Exhibit "A" attached hereto and made a part hereof (the "**Property**").

This Grant Deed is being delivered pursuant to the (i) *Fifth Amended Joint Chapter 11 Plan for Eight Trustee Debtors Proposed by the Trustee and Subject Lehman Creditors [Docket No. 3336]* (the "**Plan**") filed in the United States Bankruptcy Court for the Central District of California (Santa Ana Division) (the "**Bankruptcy Court**") in *In re Palmdale Hills Property, LLC, et al.*, Case No. 08-17206 (ES), (ii) *Order Confirming for All TD Plan Debtors the Fifth Amended Joint Chapter 11 Plan for Eight Trustee Debtors Proposed by the Trustee and Subject Lehman Creditors [Docket No. 3525]* (the "**Confirmation Order**") entered by the Bankruptcy Court on January 6, 2012, (iii) *Declaration of Robert B. Orgel Re Sale Order Conveying Oak Knoll Project [Docket No. 3599]* filed in the Bankruptcy Court on February 2, 2012, and (iv) *Order Conveying Oak Knoll Project and Related Assets Free and Clear of Encumbrances Other Than Permitted Liens [Docket No. 3809]* entered by the Bankruptcy Court on March 27, 2012. Pursuant to section 17.13 of the Plan, the Confirmation Order, and 11 U.S.C. §1146(a), the transfer of the Property hereunder will not be subject to any documentary transfer tax or similar tax, or filing or recording fee. Pursuant to the Confirmation Order, state and local governmental officials or agents shall forego the collection of any such tax or fee and accept for filing and recordation this Grant Deed or other related documents without the payment of any such tax or fee.

THE PROPERTY IS GRANTED TO GRANTEE SUBJECT TO the matters described on Exhibit "B" attached hereto and made a part hereof which are taken subject to, but without any assumption by Grantee, and without intent to reimpose any of them; provided, however, that the provisions of this sentence shall not affect or limit Grantee's rights to challenge or question the validity or effectiveness of any such matters as to any third party.

This Grant Deed is an absolute conveyance of title in effect as well as in form and is intended to include and unconditionally convey all equitable and redemptive rights of Grantor and is not intended as a mortgage or security device of any kind.

NEITHER GRANTOR NOR GRANTEE INTEND THAT THERE BE, AND THERE SHALL NOT IN ANY EVENT BE, A MERGER OF THE DEED OF TRUST WITH ABSOLUTE ASSIGNMENT OF LEASES AND RENTS, SECURITY AGREEMENT AND FIXTURE FINANCING STATEMENT AMONG SUNCAL OAK KNOLL, LLC, AS TRUSTOR, FIDELITY NATIONAL TITLE COMPANY, AS TRUSTEE AND LEHMAN ALI INC., AS BENEFICIARY, RECORDED ON DECEMBER 1, 2006, INSTRUMENT NO. 2006-442564, WITH THE TITLE OR OTHER INTEREST OF GRANTEE IN AND TO THE PROPERTY HEREBY CONVEYED, AND THE GRANTOR EXPRESSLY INTENDS THAT THE INTERESTS OF THE BENEFICIARY IN THE DEED OF TRUST AND GRANTEE'S TITLE TO THE PROPERTY BE AND REMAIN AT ALL TIMES SEPARATE AND DISTINCT. THIS DEED IS NOT INTENDED TO NOR SHALL IT RELEASE THE LIENS AND SECURITY INTERESTS CONTAINED IN THE DEED OF TRUST.

(Signature on Following Page)

IN WITNESS WHEREOF, Grantor has duly executed and delivered this Grant Deed as of April 27, 2012.

SUNCAL OAK KNOLL, LLC,
a Delaware limited liability company

By: _____
STEVEN M. SPEIER, as the Court-appointed Liquidating Trustee of its Chapter 11 Estate

ACKNOWLEDGMENT

STATE OF CA)
) ss:
COUNTY OF Orange)

On April 4, 2012, before me, Linda Morvant, Notary Public, personally appeared STEVEN M. SPEIER, proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Linda Morvant
Signature of Notary Public

[Seal]

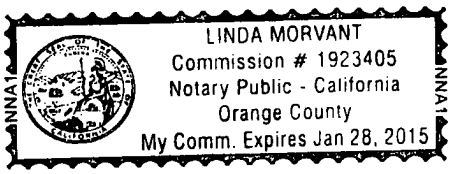

EXHIBIT A

LEGAL DESCRIPTION

THE LAND IS SITUATED IN THE CITY OF OAKLAND, COUNTY OF ALAMEDA, STATE OF CALIFORNIA AND IS DESCRIBED AS FOLLOWS:

PARCEL 1:

CIVIL NO. 22087-R (FINAL JUDGMENT FILED JANUARY 16, 1943 IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA SOUTHERN DIVISION)

PORTION OF THE 349 ACRE TRACT OF LAND IN THE PORTION OF THE RANCHO SAN ANTONIO FINALLY CONFIRMED TO YGNACIO PERALTA, WHICH WAS CONVEYED BY SAID YGNACIO PERALTA AND RAFAELA S. DE PERALTA TO LUDEVINA IVEY, BY DEED DATED SEPTEMBER 4, 1871, RECORDED SEPTEMBER 7, 1871, IN BOOK 69 OF DEEDS, AT PAGE 457, ALAMEDA COUNTY RECORDS (WHICH TRACT IS DESIGNATED IN SAID DEED AS BEING DESCRIBED ACCORDING TO A SURVEY OF THE HILLS OF THE RANCHO OF SAID YGNACIO PERALTA ON AUGUST 28, 1871 BY LUIS CASTRO, SURVEYOR OF SAID COUNTY, AND BEING MARKED AND KNOWN IN SAID SURVEY AS DIVISION NO. 2), AND A PORTION OF THE 349 ACRE TRACT IN SAID PORTION OF THE RANCHO SAN ANTONIO WHICH WAS CONVEYED BY SAID YGNACIO PERALTA AND RAFAELA S. DE PERALTA TO RAFAEL MARTINEZ, ET AL, BY DEED DATED SEPTEMBER 4, 1871, RECORDED OCTOBER 7, 1871, IN BOOK 69 OF DEEDS, AT PAGE 468, ALAMEDA COUNTY RECORDS (WHICH TRACT IS DESIGNATED IN SAID DEED AS BEING DESCRIBED ACCORDING TO SAID SURVEY AND BEING MARKED AND KNOWN IN SAID SURVEY AS DIVISION NO. 3), DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTHWESTERN LINE OF THE 349 ACRE TRACT, FIRSTLY ABOVE REFERRED TO, WITH THE NORTHEASTERN LINE OF MOUNTAIN BOULEVARD, AS DESCRIBED IN THE DEED BY ARTHUR D. KING AND FLORENCE J. KING TO CITY OF OAKLAND, DATED APRIL 30, 1937, RECORDED OCTOBER 5, 1937, IN BOOK 3523 OF OFFICIAL RECORDS OF ALAMEDA COUNTY, AT PAGE 329; AND RUNNING THENCE ALONG SAID LINE OF MOUNTAIN BOULEVARD, AS FOLLOWS:

SOUTH 24° 22' 40" EAST, 622.17 FEET; THENCE SOUTHEASTERLY, TANGENT TO THE LAST NAMED COURSE, ON A CURVE TO THE LEFT WITH A RADIUS OF 1040 FEET, A DISTANCE OF 420.03 FEET; THENCE SOUTH 47° 31' 05" EAST, 584.75 FEET; THENCE SOUTHEASTERLY, TANGENT WITH THE LAST NAMED COURSE, ON A CURVE TO THE RIGHT WITH A RADIUS OF 1060 FEET, A DISTANCE OF 760.47 FEET; THENCE SOUTH 6° 24' 46" EAST, 307.83 FEET; THENCE SOUTHEASTERLY, TANGENT WITH THE LAST NAMED COURSE, ON A CURVE TO THE LEFT WITH A RADIUS OF 1140 FEET, A DISTANCE OF 301.44 FEET; THENCE SOUTH 21° 33' 46" EAST, 268.85 FEET TO THE NORTHWESTERN LINE OF THE 29.017 ACRE TRACT OF LAND DESCRIBED IN THE DEED BY ARTHUR D. KING AND FLORENCE L. KING TO OAK KNOLL LAND CORPORATION, DATED DECEMBER 11, 1928, RECORDED FEBRUARY 16, 1929, IN BOOK 2086 OF SAID OFFICIAL RECORDS OF ALAMEDA COUNTY, AT PAGE 47; THENCE ALONG THE LAST NAMED LINE, NORTH 77° 23' 20" EAST, 181.06 FEET TO

THE NORTHERN LINE OF OAK KNOLL BOULEVARD, AS SAID BOULEVARD IS SHOWN ON THE MAP OF "FAIRWAY ESTATES IN OAK KNOLL, OAKLAND, ALAMEDA COUNTY, CALIFORNIA", FILED MARCH 14, 1929, IN BOOK 18 OF MAPS, AT PAGES 59, 60 AND 61, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY; THENCE ALONG THE LAST NAMED LINE AND ALONG THE WESTERN LINE OF BARCELONA STREET, FORMERLY OAK KNOLL BOULEVARD, AS SHOWN ON SAID MAP, AS FOLLOWS:

NORTHEASTERLY ON A CURVE TO THE LEFT WITH A RADIUS OF 200 FEET, A DISTANCE OF 60.13 FEET; THENCE NORTH 44° 15' EAST, 108.39 FEET; THENCE EASTERLY, TANGENT TO THE LAST NAMED COURSE, ON A CURVE TO THE RIGHT WITH A RADIUS OF 150 FEET, A DISTANCE OF 158.46 FEET; THENCE SOUTH 75° 13' 20" EAST, 36.79 FEET; THENCE EASTERLY, TANGENT WITH THE LAST NAMED COURSE, ON A CURVE TO THE LEFT, WITH A RADIUS OF 200 FEET, A DISTANCE OF 238.33 FEET; THENCE NORTH 36° 30' EAST, 162.17 FEET; THENCE NORTHERLY, TANGENT WITH THE LAST NAMED COURSE, ON A CURVE TO THE LEFT WITH A RADIUS OF 90.64 FEET, A DISTANCE OF 108 FEET; THENCE NORTH 31° 46' 15" WEST, 907.58 FEET, TO THE NORTHWESTERN LINE OF SAID "FAIRWAY ESTATES IN OAK KNOLL", AS SHOWN ON SAID MAP THEREOF; THENCE ALONG THE LAST NAMED LINE AND ALONG THE NORTHWESTERN LINE OF THE 58.16 ACRE TRACT OF LAND DESCRIBED IN THE DEED BY WILLIAM H. IVEY TO FRANCISCO PERALTA, DATED JULY 3, 1873, RECORDED JULY 3, 1873, IN BOOK 92 OF DEEDS, AT PAGE 115, ALAMEDA COUNTY RECORDS, NORTH 58° 13' 45" EAST, 4700 FEET; THENCE NORTH 31° 46' 15" WEST, 2250 FEET, MORE OR LESS, TO THE NORTHWESTERN LINE OF SAID 349 ACRE TRACT CONVEYED TO RAFAEL MARTINEZ, ET AL; THENCE ALONG THE LAST NAMED LINE, SOUTH 58° 10' 38" WEST, 2600 FEET, MORE OR LESS, TO THE EASTERN LINE OF THE 1 ACRE PARCEL OF LAND DESCRIBED IN THE DEED BY ARTHUR D. KING AND FLORENCE L. KING TO EAST BAY WATER COMPANY, DATED SEPTEMBER 17, 1924 AND RECORDED SEPTEMBER 19, 1924, IN BOOK 766 OF SAID OFFICIAL RECORDS, AT PAGE 472; THENCE ALONG THE LAST NAMED LINE, SOUTH 12° 10' 38" WEST, 252.32 FEET; THENCE SOUTH 58° 10' 38" WEST, 240 FEET; THENCE NORTH 12° 10' 38" EAST, 252.32 FEET TO THE NORTHWESTERN LINE OF THE LAST MENTIONED 349 ACRE TRACT; THENCE ALONG THE LAST NAMED LINE AND EXTENSION THEREOF, SOUTH 58° 10' 38" WEST, 2500 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

PARCEL 2:

CIVIL NO. 22276-S (AMENDED FINAL JUDGMENT FILED AUGUST 1, 1944 IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA SOUTHERN DIVISION. A COPY OF WHICH RECORDED ON OCTOBER 21, 1944 IN LIBER 4582, PAGE 486, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA)

A PORTION OF PARCEL 10 AS DESCRIBED IN THE DEED FROM ELSIE LAIRD TO HUTCHINSON REALTY COMPANY, DATED NOVEMBER 28, 1933, RECORDED FEBRUARY 28, 1934, IN BOOK 2995 OF OFFICIAL RECORDS OF ALAMEDA COUNTY, PAGE 409, DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTHEASTERN LINE OF MOUNTAIN BOULEVARD, AS SAID LINE OF MOUNTAIN BOULEVARD IS DEFINED IN THE DEED BY HUTCHINSON REALTY COMPANY TO THE CITY OF OAKLAND, DATED JUNE 18, 1937, RECORDED JULY 23, 1937, IN BOOK 3489 OF OFFICIAL RECORDS OF ALAMEDA COUNTY, PAGE 346, WITH THE NORTHERN LINE OF SAID PARCEL 10; RUNNING THENCE ALONG SAID LINE OF SAID PARCEL 10, NORTH 77° 23' 20" EAST, 181.06 FEET TO THE MOST EASTERN CORNER OF SAID PARCEL 10; THENCE ALONG THE NORTHWESTERN LINE OF OAK KNOLL BOULEVARD, AS SAID BOULEVARD IS SHOWN ON THE MAP OF "FAIRWAY ESTATES IN OAK KNOLL, OAKLAND, ALAMEDA COUNTY, CALIFORNIA", FILED MARCH 14, 1929, IN BOOK 18 OF MAPS, PAGES 59, 60 AND 61, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY, AS FOLLOWS: SOUTHWESTERLY ON THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 200 FEET, A DISTANCE OF 15.30 FEET; THENCE ON THE ARC OF A REVERSE CURVE TO THE LEFT WITH A RADIUS OF 200 FEET, A DISTANCE OF 50.70 FEET; THENCE TANGENT WITH THE LAST NAMED COURSE, SOUTH 51° 20' WEST, 51.37 FEET TO THE MOST EASTERN CORNER OF SAID LAND DESCRIBED IN SAID LAST MENTIONED DEED; THENCE ALONG THE NORTHERN LINE OF SAID LAND DESCRIBED IN SAID LAST MENTIONED DEED, WESTERLY AND NORTHWESTERLY ON THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 50 FEET, A DISTANCE OF 93.47 FEET TO A POINT ON SAID LINE OF MOUNTAIN BOULEVARD, FROM WHICH THE CENTER OF SAID CURVE HAVING A RADIUS OF 50 FEET BEARS NORTH 68° 26' 14" EAST, 50 FEET; THENCE ALONG SAID LINE OF MOUNTAIN BOULEVARD, NORTH 21° 33' 46" WEST, 5.40 FEET TO THE POINT OF BEGINNING.

PARCEL 3:

CIVIL NO. 24608-G (JUDGMENT FILED JUNE 4, 1945 IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA SOUTHERN DIVISION. A COPY OF WHICH RECORDED ON JUNE 11, 1945 IN LIBER 4742, PAGE 23, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA)

BEGINNING AT THE INTERSECTION OF THE SOUTHERN LINE OF PLOT LETTERED "P", NOW KNOWN AS ST. ANDREWS ROAD, WITH THE DIVIDING LINE BETWEEN LOTS NUMBERED 175 AND 177, AS SAID PLOT AND LOTS ARE SHOWN ON THE MAP ENTITLED, "MAP OF SUBDIVISION OF SEQUOYAH HILLS, OAKLAND, CALIFORNIA", FILED FOR RECORD APRIL 3, 1914, IN BOOK 28 OF MAPS, AT PAGES 63 AND 64, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY, AND RUNNING THENCE ALONG SAID DIVIDING LINE, SOUTH 11° 13' 40" WEST, 113.00 FEET TO THE CORNER COMMON TO LOTS NUMBERED 175, 176 AND 177, AS SHOWN ON SAID MAP (THE BEARING OF SAID DIVIDING LINE BEING TAKEN AS SOUTH 11° 13' 40" WEST FOR THE PURPOSE OF MAKING THIS DESCRIPTION); THENCE ALONG THE DIVIDING LINE BETWEEN LOTS NUMBERED 175 AND 176, AS SHOWN ON SAID MAP, SOUTH 74° 30' 30" WEST, 186.61 FEET TO THE CORNER COMMON TO LOTS NUMBERED 173, 174, 175 AND 176, AS SHOWN ON SAID MAP; THENCE SOUTH 61° 20' 30" WEST, 312.88 FEET TO THE MOST EASTERN CORNER OF LOT F 12, AS SAID LOT IS SHOWN ON THE MAP ENTITLED, "FAIRWAY ESTATES IN

OAK KNOLL, OAKLAND, ALAMEDA COUNTY, CALIFORNIA", FILED FOR RECORD MARCH 14, 1929, IN BOOK 18 OF MAPS, AT PAGES 59 AND 60, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY; THENCE ALONG THE DIVIDING LINE BETWEEN LOTS F 12 AND F 13, AS SHOWN ON THE LAST-NAMED MAP, SOUTH 58° 13' WEST, 110.00 FEET TO THE NORTHEASTERN LINE OF BARCELONA STREET, FORMERLY OAK KNOLL BOULEVARD, AS SAID BOULEVARD IS SHOWN ON THE LAST-NAMED MAP; THENCE ALONG SAID NORTHEASTERN LINE, SOUTH 31° 47' EAST, 27.58 FEET; THENCE CONTINUING ALONG SAID NORTHEASTERN LINE, ALONG THE ARC OF A CURVE TO THE RIGHT, FROM A TANGENT BEARING SOUTH 31° 47' EAST, WITH A RADIUS OF 140.64 FEET, THROUGH AN ANGLE OF 68° 16' 15", FOR A DISTANCE OF 167.58 FEET; THENCE NORTH 53° 30' 45" WEST, 50.00 FEET TO THE WESTERN LINE OF SAID BOULEVARD; THENCE ALONG THE LAST NAMED LINE, ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING NORTH 36° 29' 15" EAST, WITH A RADIUS OF 90.64 FEET, THROUGH AN ANGLE OF 68° 16' 15", FOR A DISTANCE OF 108.00 FEET; THENCE ALONG THE SOUTHWESTERN LINE OF SAID BOULEVARD, NORTH 31° 47' WEST, 907.58 FEET TO THE INTERSECTION THEREOF WITH THE DIRECT EXTENSION SOUTHWESTERLY OF THE NORTHWESTERN LINE OF LOT F 1, AS SHOWN ON SAID MAP; THENCE ALONG SAID EXTENSION AND ALONG THE NORTHWESTERN LINE OF SAID LOT F 1, NORTH 58° 13' EAST, 160.00 FEET TO THE MOST NORTHERN CORNER OF SAID LOT F 1; THENCE ALONG THE NORTHEASTERN LINE OF LOTS F 1 TO F 9, INCLUSIVE, AS SHOWN ON THE LAST NAMED MAP, SOUTH 31° 47' EAST, 599.89 FEET TO THE INTERSECTION THEREOF WITH THE DIRECT EXTENSION SOUTHWESTERLY OF THE NORTHWESTERN LINE OF LOT NUMBERED 170, AS SAID LOT IS SHOWN ON THE MAP FIRSTLY HEREINABOVE REFERRED TO; THENCE ALONG THE LAST-NAMED EXTENSION, ALONG THE NORTHWESTERN LINE OF SAID LOT NUMBERED 170 AND ALONG THE DIRECT EXTENSION NORTHEASTERLY OF SAID NORTHWESTERN LINE, NORTH 37° 21' EAST, 215.53 FEET TO THE NORTHERN LINE OF SAID PLOT LETTERED "P"; THENCE ALONG THE LAST-NAMED LINE, AS FOLLOWS: EASTERLY ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING SOUTH 52° 39' EAST, WITH A RADIUS OF 210.00 FEET, THROUGH AN ANGLE OF 33° 28' 20", FOR A DISTANCE OF 122.67 FEET; THENCE SOUTH 86° 07' 20" EAST, 284.63 FEET; THENCE ALONG THE ARC OF A CURVE TO THE RIGHT, FROM A TANGENT BEARING SOUTH 86° 07' 20" EAST, WITH A RADIUS OF 792.00 FEET, THROUGH AN ANGLE OF 16° 23' FOR A DISTANCE OF 226.47 FEET; THENCE ALONG THE ARC OF A CURVE TO THE RIGHT, FROM A TANGENT BEARING SOUTH 69° 44' 20" EAST, WITH A RADIUS OF 187.49 FEET, THROUGH AN ANGLE OF 48° 04' 20", FOR A DISTANCE OF 157.30 FEET; THENCE ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING SOUTH 31° 40' EAST, WITH A RADIUS OF 20.00 FEET, THROUGH AN ANGLE OF 73° 39' 20", FOR A DISTANCE OF 25.71 FEET TO THE NORTHERN LINE OF PLOT LETTERED "E", NOW KNOWN AS SEQUOYAH ROAD, AS SAID PLOT "E" IS SHOWN ON THE MAP FIRSTLY HEREINABOVE REFERRED TO; THENCE ALONG THE LAST-NAMED LINE, ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING SOUTH 84° 40' 40" WEST, WITH A RADIUS OF 327.00 FEET, THROUGH AN ANGLE OF 10° 52' 20", FOR A DISTANCE OF 62.05 FEET; THENCE LEAVING THE LAST NAMED LINE

AND RUNNING ALONG THE SOUTHERN LINE OF SAID PLOT LETTERED "P", ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING NORTH 73° 48' 20" EAST, WITH A RADIUS OF 20.00 FEET, THROUGH AN ANGLE OF 100° 26' 50", FOR A DISTANCE OF 35.06 FEET; THENCE CONTINUING ALONG SAID SOUTHERN LINE, ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING NORTH 26° 38' 30" EAST, WITH A RADIUS OF 163.49 FEET, THROUGH AN ANGLE OF 43° 05' 50", FOR A DISTANCE OF 122.98 FEET; THENCE CONTINUING ALONG SAID SOUTHERN LINE, ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING NORTH 69° 44' 20" WEST, WITH A RADIUS OF 768.00 FEET, THROUGH AN ANGLE OF 9° 02', FOR A DISTANCE OF 121.08 FEET TO THE POINT OF BEGINNING.

PARCEL 4:

QUITCLAIM DEED (ANMAR INVESTMENTS INCORPORATED TO UNITED STATES OF AMERICA RECORDED IN OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA, JULY 16, 1980 AS DOCUMENT NO. 80-119199).

A PARCEL OF LAND LYING IN THE CITY OF OAKLAND, COUNTY OF ALAMEDA, STATE OF CALIFORNIA, BEING A PORTION OF THAT CERTAIN PARCEL OF LAND LYING IN PARCEL 2 AS DESCRIBED BY QUIT CLAIM DEED FILED FOR RECORD IN SAID COUNTY AT REEL 5703, IMAGE 51, DATED DECEMBER 4, 1978, DESCRIBED AS FOLLOWS:

COMMENCING FOR POINT OF REFERENCE AT THE SOUTHWESTERLY CORNER OF SAID PARCEL 2;

(I) THENCE ALONG THE WESTERLY AND NORTHERLY BOUNDARY LINE OF SAID PARCEL 2, ALONG A NON-TANGENT CURVE TO THE RIGHT HAVING A RADIAL BEARING OF NORTH 57° 58' 24" EAST FROM THE BEGINNING OF CURVE TO THE POINT OF RADIUS, A RADIUS OF 150.00 FEET, THROUGH A CENTRAL ANGLE OF 73° 30' 00", FOR AN ARC LENGTH OF 192.42 FEET;

(II) THENCE CONTINUING ALONG SAID NORTHERLY BOUNDARY LINE, NORTH 41° 14' 37" EAST, 88.16 FEET TO THE TRUE POINT OF BEGINNING.

1. THENCE LEAVING SAID NORTHERLY BOUNDARY LINE, SOUTH 48° 45' 23" EAST, 22.00 FEET;

2. THENCE PARALLEL WITH SAID NORTHERLY BOUNDARY LINE, NORTH 41° 14' 37" EAST, 93.00 FEET;

3. THENCE NORTH 48° 45' 23" WEST, 22.00 FEET TO SAID NORTHERLY BOUNDARY LINE;

4. THENCE ALONG SAID NORTHERLY BOUNDARY LINE, SOUTH 41° 14' 37" WEST, 93.00 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPTING FROM THE LANDS DESCRIBED HEREINABOVE AS PARCELS 1 THROUGH 4, THE FOLLOWING:

(A) QUITCLAIM DEED TO SEACREST COMPANY, A CO-PARTNERSHIP, ET AL, RECORDED MARCH 8, 1962, IN REEL 531, IMAGE 519, DOCUMENT NO. AT-30784, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(B) QUITCLAIM DEED TO THE CITY OF OAKLAND, A MUNICIPAL CORPORATION, RECORDED SEPTEMBER 26, 1978, IN REEL 5597, IMAGE 223, DOCUMENT NO. 78-187144, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(C) QUITCLAIM DEED TO WILLIAM A. HARDENSTINE, ET UX, RECORDED DECEMBER 4, 1978, IN REEL 5703, IMAGE 51, DOCUMENT NO. 78-236024, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(D) QUITCLAIM DEED TO THE SENECA RESIDENTIAL AND DAY TREATMENT CENTER FOR CHILDREN, RECORDED JANUARY 30, 2002, SERIES NO. 2002048897, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(E) QUITCLAIM DEED TO SEA WEST COAST GUARD FEDERAL CREDIT UNION, RECORDED MAY 7, 2002, SERIES NO. 2002202441, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(F) QUITCLAIM DEED TO THE REDEVELOPMENT AGENCY OF THE CITY OF OAKLAND, A STATE OF CALIFORNIA AGENCY, RECORDED AUGUST 15, 2005, AS SERIES NO. 2005348212 IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY, CALIFORNIA AND SHOWN AS PARCEL A ON PARCEL MAP 8730 FILED OCTOBER 3, 2005 IN BOOK 284 OF MAPS AT PAGES 63-65 IN THE OFFICE OF THE COUNTY RECORDER OF SAID ALAMEDA COUNTY.

ASSESSOR'S PARCEL NO'S:

043A-4675-003-21
048-6865-002-03
048-6870-001

EXHIBIT B

PERMITTED ENCUMBRANCES

1. Any lien for unpaid real property taxes of the Alameda County Treasurer-Tax Collector with respect to penalties and/or interest except the lien shall not be a Permitted Lien either to the extent such amounts are not required to be paid as determined by an unstayed Order of the Bankruptcy Court in the chapter 11 bankruptcy case of Palmdale Hills Property, LLC, et al., jointly administered under Case No. 8:08-bk-17206-ES pending in the United States Bankruptcy Court for the Central District of California, Santa Ana Division with respect to, as applicable, an objection, pending as to the *Fifth Amended Joint Chapter 11 Plan for Eight Trustee Debtors Proposed by the Trustee and Subject Lehman Creditors* [Docket No.3336], as confirmed and modified by the *Order Confirming for All TD Plan Debtors the Fifth Amended Joint Chapter 11 Plan for Eight Trustee Debtors Proposed by the Trustee and Subject Lehman Creditors* [Docket No. 3525], filed by the Alameda Country Treasurer-Tax Collector [Docket No. 2757] (the "Objection") or if the Objection is withdrawn.

2. Easement(s) for the purpose(s) shown below and rights incidental thereto as condemned by Final Decree of Condemnation, Superior Court of Alameda
   In favor of: Bay Counties Power Company
   Purpose: Telephone, telegraph and electric power lines
   Recorded: January 2, 1908, Book 1408 of Deeds, Page 298

3. Easement(s) for the purpose(s) shown below and rights incidental thereto as delineated or as offered for dedication, on the map of said tract.
   Purpose: Pole and wires
   Affects: Southwesterly 40 feet of Lots 170, 171 and 172 (Sequoyah Hills)

4. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
   Granted to: Pacific Gas and Electric Company
   Purpose: Poles and wires
   Recorded: November 30, 1914, Book 2292 of Deeds, Page 248

5. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
   Granted to: East Bay Water Company
   Purpose: Ingress, egress, pipelines and utilities
   Recorded: September 19, 1924, Book 766, Page 472, of Official Records

6. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
   Granted to: Pacific Gas and Electric Company
   Purpose: Poles and wires
   Recorded: September 1, 1928, Book 1940, Page 157, of Official Records

7. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
   Granted to: City of Oakland
   Purpose: Public sewer
   Recorded: January 28, 1929, Book 2047, Page 181, of Official Records

8. Easement(s) for the purpose(s) shown below and rights incidental thereto as delineated or as offered for dedication, on the map of said tract.
   Purpose: Public service
   Affects: The northeasterly, or rear, 5 feet of Lots F1 to F3 (Fairway Estates)

9. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
   Granted to: City of Oakland
   Purpose: Public culvert
   Recorded: August 5, 1938, Book 3662, Page 209, of Official Records

10. Easement(s) for public utilities over that portion lying within St. Andrews Road, as set forth in the Judgment recorded June 11, 1945, Book 4742, Page 23, Official Records.

11. Easement(s) for public utilities over that portion lying within Barcelona Street, Formerly Oak Knoll Boulevard, as set forth in the Judgment recorded June 11, 1945, Book 4742, Page 23, Official Records.

12. Terms, conditions and provisions as set forth in the instrument executed by The United States of America, recorded March 12, 1952, Book 6679, Page 579, Official Records.

13. Terms, conditions and provisions as set forth in Resolution No. 27106, dated August 26, 1957, as disclosed by the Oakland Sewer Maps.

14. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
   Granted to: City of Oakland
   Purpose: Sanitary sewer
   Recorded: April 24, 1953, Book 7011, Page 5, of Official Records

15. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
   Granted to: City of Oakland
   Purpose: Sanitary sewer
   Recorded: October 10, 1957, Book 8491, Page 347, of Official Records

16. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
   Granted to: East Bay Municipal Utility District

Purpose: Water pipelines
Recorded: March 1, 1960, Book (Reel) 36, Page 709, of Official Records

17. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: State of California
Purpose: Controlled access highway
Recorded: November 27, 1962, Instrument No. AT-162098, Book (Reel) 733, Page (Image) 210, of Official Records

18. Lack of Abutter's rights in and to Mountain Boulevard, adjacent to the west line of said property, said rights having been released and relinquished by Deed to the State of California, recorded November 27, 1962. Reel 733, Image 210, Series No. AT-162098, Official Records.

19. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: City of Oakland
Purpose: Sanitary sewer line for a period of 50 years
Recorded: April 5, 1972, Book (Reel) 3099, Page 663, of Official Records

20. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: City of Oakland
Purpose: Sanitary sewer pipeline for a period of 50 years
Recorded: May 10, 1974, Book (Reel) 3676, Page 738, of Official Records

21. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: Pacific Gas and Electric Company
Purpose: Electric power transmission line
Recorded: July 19, 1974, Book (Reel) 3733, Page 404, of Official Records

22. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: East Bay Municipal Utility District
Purpose: Slope easement, for a period of 50 years
Recorded: July 27, 1992, Instrument No. 92-242285, of Official Records

23. Notice by the City Council of the City of Oakland adopting Ordinance No. 12065 C.M.S. on July 14, 1998 for the Oak Knoll Redevelopment Project, recorded August 27, 1998, Series No. 98-297737, Official Records.

24. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: Pacific Gas and Electric Company, a California corporation

Purpose: Overhead electric facilities, including poles, aerial wires, cables, electrical conductors with associated cross-arms, braces, transformers, anchors, guy wires and cables, fixtures and appurtenances
Recorded September 13, 2000, Instrument No. 2000-276744, of Official Records

25. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: Pacific Bell Telephone Company
Purpose: Overhead communication lines
Recorded: October 12, 2001, Instrument No. 2001-390176, of Official Records

26. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: Pacific Gas and Electric Company, a California corporation
Purpose: Overhead electric facilities, including poles, aerial wires, cables, electrical conductors with associated cross-arms, braces, transformers, anchors, guy wires and cables, fixtures and appurtenances
Recorded: December 14, 2001, Instrument No. 2001-488081, of Official Records

27. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: Seneca Residential and Bay Treatment Center for Children
Purpose: Vehicular and pedestrian access
Recorded: January 30, 2002, Instrument No. 2002-048897, of Official Records

28. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: Sea West Coast Guard Federal Credit Union
Purpose: Roadway and utilities
Recorded: May 7, 2002, Instrument No. 2002-202441, of Official Records

29. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: Sea West Coast Guard Federal Credit Union
Purpose: Underground waterline
Recorded: July 23, 2002, Instrument No. 2002-313566, of Official Records

30. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: Sea West Coast Guard Federal Credit Union
Purpose: Underground sanitary sewer line
Recorded: July 23, 2002, Instrument No. 2002-313567, of Official Records

31. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: Seneca Residential and Day Treatment Center for Children

Purpose: Underground sewer line
Recorded: August 7, 2002, Instrument No. 2002-341573, of Official Records

32. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: Seneca Residential and Day Treatment Center for Children
Purpose: Underground waterline
Recorded: August 7, 2002, Instrument No. 2002-341574, of Official Records

33. The terms, provisions, covenants, conditions and restrictions contained in the Quitclaim Deed from the United States of America to the Redevelopment Agency of the City of Oakland, recorded August 15, 2005, Series No. 2005-348212, Official Records of Alameda County.

34. Discrepancies, overlaps, conflicts in boundary lines and/or shortage in area, as disclosed by Parcel Map 8730 filed October 3, 2005, in Book 284 at Pages 63 through 65, inclusive.

35. The terms, provisions, covenants, conditions and restrictions contained in the Quitclaim Deed from the United States of America to SunCal Oak Knoll, LLC, recorded March 30, 2006, Instrument No. 2006-123016, of Official Records of Alameda County

36. The fact that said land is included within a project area of the Redevelopment Agency shown below, and that proceedings for the redevelopment of said project have been instituted under the Redevelopment Law.
Agency: Revised Statement of Institution of Redevelopment For The Oak Knoll Redevelopment Project
Recorded: December 3, 2007, Instr. No. 2007-409571, of Official Records

37. A Deed of Trust described as follows:
Dated: November 30, 2006
Trustor: SunCal Oak Knoll, LLC, a Delaware limited liability company
Trustee: Fidelity Title Insurance Company
Beneficiary: Lehman, ALI, Inc., a Delaware corporation
Recorded: December 1, 2006, Instr. No. 2006-442564, of Official Records

A Notice of Default under the terms of said deed of trust.

Executed by: Lehman ALI, Inc.
Recorded: November 12, 2008, Instrument No. 2008-328355, of Official Records

A Notice of Default under the terms of said deed of trust.

Executed by: Lehman ALI, Inc.
Recorded: November 13, 2008, Instr. No. 2008-329895, of Official Records

38. An assignment of all the moneys due, or to become due, as rental, as additional security for the obligations secured by Deed of Trust recorded December 1, 2006, Instrument No. 2006-442564, Official Records
Assigned to: Lehman, ALI, Inc.
Recorded: December 1, 2006, Instr. No. 2006-442565, of Official Records

39. A claim of mechanic's lien

Amount:	$308,817.34
Claimant:	BKF Engineers
Recorded:	November 12, 2008, Instrument No. 2008-328353, of Official Records

40. A claim of mechanic's lien

Amount:	$3,193,298.60
Claimant:	CST Environmental, Inc.
Recorded:	October 27, 2008, Instrument No. 2008-308822, of Official Records

41. A claim of mechanic's lien

Amount:	$209,250.00
Claimant:	CST Environmental, Inc.
Recorded:	November 24, 2008, Instrument No. 2008-336853, of Official Records

Former Oak Knoll Naval Hospital
8750 Mountain Blvd
Oakland, CA 94605

Inquiry Number: 3768145.8
October 25, 2013

The EDR Property Tax Map Report

EDR® Environmental Data Resources Inc

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Milford, CT 06461
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Former Oak Knoll Naval Hospital
8750 Mountain Blvd
Oakland, CA 94605

Inquiry Number: 3768145.11
October 25, 2013

EDR Building Permit Report

Target Property and Adjoining Properties

Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

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EDR BUILDING PERMIT REPORT

About This Report

The EDR Building Permit Report provides a practical and efficient method to search building department records for indications of environmental conditions. Generated via a search of municipal building permit records gathered from more than 1,600 cities nationwide, this report will assist you in meeting the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05), or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

Building permit data can be used to identify current and/or former operations and structures/features of environmental concern. The data can provide information on a target property and adjoining properties such as the presence of underground storage tanks, pump islands, sumps, drywells, etc., as well as information regarding water, sewer, natural gas, electrical connection dates, and current/former septic tanks.

ASTM and EPA Requirements

ASTM E 1527-05 lists building department records as a "standard historical source," as detailed in § 8.3.4.7: "Building Department Records – The term building department records means those records of the local government in which the property is located indicating permission of the local government to construct, alter, or demolish improvements on the property." ASTM also states that "Uses in the area surrounding the property shall be identified in the report, but this task is required only to the extent that this information is revealed in the course of researching the property itself."

EPA's Standards and Practices for All Appropriate Inquires (AAI) states: "§312.24: Reviews of historical sources of information. (a) Historical documents and records must be reviewed for the purposes of achieving the objectives and performance factors of §312.20(e) and (f). Historical documents and records may include, but are not limited to, aerial photographs, fire insurance maps, building department records, chain of title documents, and land use records."

Methodology

EDR has developed the EDR Building Permit Report through our partnership with BuildFax, the nation's largest repository of building department records. BuildFax collects, updates, and manages building department records from local municipal governments. The database now includes 30 million permits, on more than 10 million properties across 1,600 cities in the United States.

The EDR Building Permit Report comprises local municipal building permit records, gathered directly from local jurisdictions, including both target property and adjoining properties. Years of coverage vary by municipality. Data reported includes (where available): date of permit, permit type, permit number, status, valuation, contractor company, contractor name, and description.

Incoming permit data is checked at seven stages in a regimented quality control process, from initial data source interview, to data preparation, through final auditing. To ensure the building department is accurate, each of the seven quality control stages contains, on average, 15 additional quality checks, resulting in a process of approximately 105 quality control "touch points."

For more information about the EDR Building Permit Report, please contact your EDR Account Executive at (800) 352-0050.

EDR® Environmental Data Resources Inc

BUILDFAX® PROPERTY HISTORY

EXECUTIVE SUMMARY: SEARCH DOCUMENTATION

A search of building department records was conducted by Environmental Data Resources, Inc (EDR) on behalf of WEST on Oct 25, 2013.

TARGET PROPERTY

8750 Mountain Blvd
Oakland, CA 94605

SEARCH METHODS

EDR searches available lists for both the Target Property and Surrounding Properties.

RESEARCH SUMMARY

Building permits identified: **YES**

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Oakland

Year	*Source*	*TP*	*Adjoining*
2012	City of Oakland,Building Services Division		X
2011	City of Oakland,Building Services Division		X
2010	City of Oakland,Building Services Division		X
2009	City of Oakland,Building Services Division		X
2008	City of Oakland,Building Services Division		X
	City of Oakland,Building Services Division	X	
2007	City of Oakland,Building Services Division		X
	City of Oakland,Building Services Division	X	
2006	City of Oakland,Building Services Division		X
	City of Oakland,Building Services Division	X	
2005	City of Oakland,Building Services Division		X
	City of Oakland,Building Services Division	X	
2004	City of Oakland,Building Services Division		X
	City of Oakland,Building Services Division	X	
2003	City of Oakland,Building Services Division		X
	City of Oakland,Building Services Division	X	
2002	City of Oakland,Building Services Division		X
2001	City of Oakland,Building Services Division		X
2000	City of Oakland,Building Services Division		X
1999	City of Oakland,Building Services Division		X
1998	City of Oakland,Building Services Division		X
1997	City of Oakland,Building Services Division		X
1996	City of Oakland,Building Services Division		X
1995	City of Oakland,Building Services Division		X
1994	City of Oakland,Building Services Division		
1993	City of Oakland,Building Services Division		X
1992	City of Oakland,Building Services Division		X
1991	City of Oakland,Building Services Division		X

EXECUTIVE SUMMARY: SEARCH DOCUMENTATION

Year	Source	TP	Adjoining
1990	City of Oakland,Building Services Division		X
	City of Oakland,Building Services Division	X	
1989	City of Oakland,Building Services Division		X
1988	City of Oakland,Building Services Division		X
1987	City of Oakland,Building Services Division		
1986	City of Oakland,Building Services Division		
1985	City of Oakland,Building Services Division		
1984	City of Oakland,Building Services Division		
1983	City of Oakland,Building Services Division		
1982	City of Oakland,Building Services Division		
1981	City of Oakland,Building Services Division		
1980	City of Oakland,Building Services Division		X
1979	City of Oakland,Building Services Division		
1978	City of Oakland,Building Services Division		
1977	City of Oakland,Building Services Division		
1976	City of Oakland,Building Services Division		
1975	City of Oakland,Building Services Division		
1974	City of Oakland,Building Services Division		
1973	City of Oakland,Building Services Division		
1972	City of Oakland,Building Services Division		
1971	City of Oakland,Building Services Division		
1970	City of Oakland,Building Services Division		
1969	City of Oakland,Building Services Division		
1968	City of Oakland,Building Services Division		

BUILDING DEPARTMENT RECORDS SEARCHED

Name: Oakland
Years: 1968-2012
Source: City of Oakland,Building Services Division, Oakland, CA
Phone: (510) 238-3891

Name: Alameda
Years: 2001-2012
Source: City of Alameda, Planning and Building Department, Alameda, CA
Phone: (510) 747-6800

Name: Alameda County Unincorporated Area
Years: 2000-2010
Source: Alameda County, Building Inspection Department, Hayward, CA
Phone: (510) 670-5440

Name: Berkeley
Years: 1992-2012
Source: City of Berkeley, Planning and Development, Berkeley, CA
Phone: (510) 981-7400

Name: Daly City
Years: 1990-2009
Source: Daly City, Building Division, Daly City, CA
Phone: (650) 991-8061

Name: Hayward
Years: 2000-2012
Source: City of Hayward, Development Services Department, Hayward, CA
Phone: (510) 583-4140

Name: Pittsburg
Years: 2000-2010
Source: City of Pittsburg, Building Division , Pittsburg, CA
Phone: (925) 252-4850

Name: San Bernardino
Years: 1996-2010
Source: City of San Bernardino, Building and Safety, San Bernardino, CA
Phone: (909) 384-5071

Name: San Leandro
Years: 1993-2012
Source: City of San Leandro, Building and Safety, San Leandro, CA
Phone: (510) 577-3405

Name: San Bruno
Years: 1997-2011
Source: San Bruno, Building Permits and Inspections, San Bruno, CA
Phone: (650) 616-7076

Name: San Pablo
Years: 1999-2011
Source: San Pablo, Building Permit and Inspection, San Pablo, CA
Phone: (510) -215--3060

TARGET PROPERTY FINDINGS

TARGET PROPERTY DETAIL

8750 Mountain Blvd
Oakland, CA 94605

8750 MOUNTAIN BLVD

Date:	**10/1/2008**
Permit Type:	**RB**
Description:	**Demolition of 35 structures totaling 255,586 sf at what was formally the Oak Knoll Naval Hospital. This demolition will**
Permit Description:	**Residential Comb. Building**
Work Class:	Demolition
Proposed Use:	
Permit Number:	RB0705388
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	C S T ENVIRONMENTAL INC

Date:	**10/1/2008**
Permit Type:	**RB**
Description:	**Demolition of 2 structures totaling 93,316 sf at what was formerly the Oak Knoll Naval Hospital. This demolition will**
Permit Description:	**Residential Comb. Building**
Work Class:	Demolition
Proposed Use:	
Permit Number:	RB0705389
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	C S T ENVIRONMENTAL INC

TARGET PROPERTY FINDINGS

Date:	**10/1/2008**
Permit Type:	**RB**
Description:	**Demolition of 28 structures totaling 75,015 sf at what was formerly the Oak Knoll Naval Hospital. This demolition will**
Permit Description:	**Residential Comb. Building**
Work Class:	Demolition
Proposed Use:	
Permit Number:	RB0705390
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	C S T ENVIRONMENTAL INC

Date:	**8/14/2007**
Permit Type:	**E**
Description:	**Temporary Power Pole for One double wide trailer to be used as a construction office by Suncal Oak Knoll LLC.**
Permit Description:	**Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	E0702760
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	BRAY CORP DBA POWER PLUS TEMP

Date:	**1/6/2006**
Permit Type:	**E**
Description:	**add computer panel & receptacles**
Permit Description:	**Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	E0600097
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	GILL'S ELECTRIC CO. INC.

TARGET PROPERTY FINDINGS

Date:	**6/16/2005**
Permit Type:	**E**
Description:	**Install 40 electrical outlets in Building 69B.**
Permit Description:	**Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	E0502115
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	GILL'S ELECTRIC CO. INC.

Date:	**3/1/2004**
Permit Type:	**B**
Description:	**drywall repair**
Permit Description:	**Building DSD**
Work Class:	Alteration
Proposed Use:	
Permit Number:	B0400893
Status:	APPLICATION EXPIRED
Valuation:	$750.00
Contractor Company:	
Contractor Name:	BETTER HOME REMODELING

Date:	**4/24/2003**
Permit Type:	**E**
Description:	**UPGRADE SERVICE TO 400AMP AND 1 CIR**
Permit Description:	**Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	E0301484
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	BROADMOOR ELECTRIC

TARGET PROPERTY FINDINGS

Date:	**3/7/2003**
Permit Type:	**E**
Description:	**INSTALL DISCONNECT FOR ROOF A/C & RECEPTACLE**
Permit Description:	**Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	E0300795
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	BROADMOOR ELECTRIC

Date:	**2/20/1990**
Permit Type:	**E**
Description:	**INSTALL FUEL DISPENER CONTROLLER**
Permit Description:	**Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	E9000571
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	PETROLEUM ENGINEERING, INC.

ADJOINING PROPERTY FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

EARL ST

8100 EARL ST

Date:	**6/24/2009**
Permit Type:	**RB**
Description:	**remove & replace 21 windows for single family residence openings to meet safety glazing & proximity requirement per**
Permit Description:	**Residential Comb. Building**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RB0902205
Status:	FINALED
Valuation:	$11,000.00
Contractor Company:	
Contractor Name:	ARMSTRONGPAINTNGROOFING&WINDOW

Date:	**12/18/2008**
Permit Type:	**RE**
Description:	**200 amp service upgrade**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RE0803836
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

8108 EARL ST

Date:	**8/31/2010**
Permit Type:	**RB**
Description:	**Master bedroom addition 297 sq. ft. to rear of (e) s.f.d..**
Permit Description:	**Residential Comb. Building**
Work Class:	Addition
Proposed Use:	
Permit Number:	RB1002447
Status:	EXPIRED
Valuation:	$23,000.00
Contractor Company:	
Contractor Name:	LIGHT FRAME CONSTRUCTION INC

8116 EARL ST

Date:	**5/20/1988**
Permit Type:	**B**
Description:	**TERMITE REPAIR**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B8802192
Status:	EXPIRED
Valuation:	$3,700.00
Contractor Company:	
Contractor Name:	OAKLAND, CA

ADJOINING PROPERTY FINDINGS

8119 EARL ST

Date:	**10/12/2007**
Permit Type:	**RP**
Description:	**gas pipe/test**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RP0702876
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**12/8/2006**
Permit Type:	**RE**
Description:	**Electrical for bedroom addition & expand (E)kitchen wall.**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Addition
Proposed Use:	
Permit Number:	RE0604104
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**12/8/2006**
Permit Type:	**RP**
Description:	**Plumbing for bedroom addition & expand (E)kitchen wall.**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Addition
Proposed Use:	
Permit Number:	RP0603374
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

Date: **10/27/2006**
Permit Type: **RB**
Description: **(E)SFD:New 250 SF bedroom addition & expand (E)kitchen wall.**

Permit Description: **Residential Comb. Building**
Work Class: Addition
Proposed Use:
Permit Number: RB0604136
Status: FINALED
Valuation: $27,000.00
Contractor Company:
Contractor Name:

Date: **2/25/2004**
Permit Type: **ZC**
Description: **home office for a property rental service**

Permit Description:
Work Class:
Proposed Use:
Permit Number: ZC040557
Status:
Valuation: $0.00
Contractor Company:
Contractor Name:

Date: **10/9/2003**
Permit Type: **E**
Description: **Electrical for bath remodel, indoor spa.**

Permit Description: **Electrical**
Work Class: Alteration
Proposed Use:
Permit Number: E0303686
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name:

ADJOINING PROPERTY FINDINGS

Date:	**10/9/2003**
Permit Type:	**RB**
Description:	**Add tub to existing half-bath.**
Permit Description:	**Residential Comb. Building**
Work Class:	Repair
Proposed Use:	
Permit Number:	RB0304906
Status:	FINALED
Valuation:	$700.00
Contractor Company:	
Contractor Name:	

Date:	**9/12/2003**
Permit Type:	**RP**
Description:	**1 tub, waste/vent alt, water alteration**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RP0302717
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**4/19/1995**
Permit Type:	**RB**
Description:	**RESIDENTIAL SUBSTRUCTURAL STRENGTHENING; MUDSILL BOLTS, PLYWOOD BRACING ON CRIPPLE WALLS, STEEL STRUTS FROM FLOOR**
Permit Description:	**Residential Comb. Building**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RB9501451
Status:	FINALED
Valuation:	$3,564.00
Contractor Company:	
Contractor Name:	EARTHQUAKE SAFETY INC

ADJOINING PROPERTY FINDINGS

Date:	**12/16/1992**
Permit Type:	**B**
Description:	**REPLACE A PORTION OF THE EXISTING FOOTINGS AT THE FRONT OF T HE HOUSE**
Permit Description:	**Building DSD**
Work Class:	Alteration
Proposed Use:	
Permit Number:	B9205013
Status:	FINALED
Valuation:	$12,728.00
Contractor Company:	
Contractor Name:	CLYDE, NED CONSTRUCTION, INC.

8124 EARL ST

Date:	**12/1/2011**
Permit Type:	**R**
Description:	**RE-ROOFING PERMIT**
Permit Description:	**Reroofing**
Work Class:	
Proposed Use:	
Permit Number:	R1100632
Status:	ISSUED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	PETERSEN-DEAN INC.

ADJOINING PROPERTY FINDINGS

Date:	**11/20/2003**
Permit Type:	**RP**
Description:	**Install water heater.**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Repair
Proposed Use:	
Permit Number:	RP0303374
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	PYRAMIDS HEATING AND AIR

Date:	**9/10/2003**
Permit Type:	**RM**
Description:	**Install heating unit**
Permit Description:	**Residential Combination Mechanical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RM0301617
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	PYRAMIDS HEATING AND AIR

Date:	**7/29/1997**
Permit Type:	**RB**
Description:	**Replace 4 windows per 1994 UBC chg from steel to vinyl.**
Permit Description:	**Residential Comb. Building**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RB9702979
Status:	FINALED
Valuation:	$2,996.00
Contractor Company:	
Contractor Name:	KITCHEN WORKS INC.

ADJOINING PROPERTY FINDINGS

8125 EARL ST

Date:	**9/2/2011**
Permit Type:	**R**
Description:	**RE-ROOFING PERMIT**
Permit Description:	**Reroofing**
Work Class:	
Proposed Use:	
Permit Number:	R1100406
Status:	ISSUED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	PRESIDENTIAL ROOFING

Date:	**12/12/2003**
Permit Type:	**RM**
Description:	**Furnace replacement**
Permit Description:	**Residential Combination Mechanical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RM0302285
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	BEST HEATING & A/C

Date:	**6/12/1995**
Permit Type:	**RE**
Description:	**SERVICE UPGRADE**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RE9501632
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	CROWE ELECTRIC COMPANY

ADJOINING PROPERTY FINDINGS

8129 EARL ST

Date:	**4/8/2010**
Permit Type:	**RB**
Description:	**Replace kitchen countertop, tile to replace linoleum; dry rot repair as needed. No structural or exterior changes.**
Permit Description:	**Residential Comb. Building**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RB1001264
Status:	EXPIRED
Valuation:	$3,000.00
Contractor Company:	
Contractor Name:	D T G CONSTRUCTION

Date:	**4/8/2010**
Permit Type:	**RE**
Description:	**100 amp service upgrade; kitchen remodel.**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RE1001062
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	D T G CONSTRUCTION

ADJOINING PROPERTY FINDINGS

Date:	**4/8/2010**
Permit Type:	**RP**
Description:	**Replace kitchen sink and garbage disposal.**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RP1000844
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	D T G CONSTRUCTION

Date:	**11/6/2008**
Permit Type:	**RB**
Description:	**Foundation bolting, plywood panels, connection hardware. NOT part of Rebate Program.**
Permit Description:	**Residential Comb. Building**
Work Class:	Retrofit
Proposed Use:	
Permit Number:	RB0804799
Status:	FINALED
Valuation:	$5,000.00
Contractor Company:	
Contractor Name:	GEN-TECH CONSTRUCTION

Date:	**10/29/2008**
Permit Type:	**RB**
Description:	**Foundation replacement; part of front and right side, piers, termite repairs #3A, 3B, 3C, 3D.**
Permit Description:	**Residential Comb. Building**
Work Class:	Repair
Proposed Use:	
Permit Number:	RB0804681
Status:	FINALED
Valuation:	$14,000.00
Contractor Company:	
Contractor Name:	GEN-TECH CONSTRUCTION

ADJOINING PROPERTY FINDINGS

Date: **9/12/2008**
Permit Type: **RP**
Description: **water heater repair and repiping of sfr**

Permit Description: **Residential Combination Plumbing**
Work Class: Repair
Proposed Use:
Permit Number: RP0802291
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name: TOM MARTIN PLUMBING

Date: **8/5/2008**
Permit Type: **RP**
Description: **Replace waterline to SFD**

Permit Description: **Residential Combination Plumbing**
Work Class: Alteration
Proposed Use:
Permit Number: RP0801960
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name: TOM MARTIN PLUMBING

Date: **2/18/1999**
Permit Type: **RM**
Description: **REPLACE FURNACE**

Permit Description: **Residential Combination Mechanical**
Work Class: Alteration
Proposed Use:
Permit Number: RM9900253
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name: KEL-AIRE

ADJOINING PROPERTY FINDINGS

Date: **2/24/1988**
Permit Type: **B**
Description: **TERMITE REPAIRS**

Permit Description: **Building DSD**
Work Class: Repair
Proposed Use:
Permit Number: B8800713
Status: EXPIRED
Valuation: $4,500.00
Contractor Company:
Contractor Name: LINDSTROM, GARY CO.

Date: **2/24/1988**
Permit Type: **P**
Description: **INSTALL SHOWER PAN & REPAIR LEAK AT DRAIN BELOW BATH TUB**

Permit Description: **Plumbing**
Work Class: Repair
Proposed Use:
Permit Number: P8800577
Status: EXPIRED
Valuation: $0.00
Contractor Company:
Contractor Name: LINDSTROM, GARY CO.

8130 EARL ST

Date: **3/15/2007**
Permit Type: **RB**
Description: **Add 384 sq ft to rear of SFD, remodel kitchen; remove attached garage.**

Permit Description: **Residential Comb. Building**
Work Class: Addition
Proposed Use:
Permit Number: RB0700286
Status: EXPIRED
Valuation: $56,000.00
Contractor Company:
Contractor Name:

ADJOINING PROPERTY FINDINGS

Date: **3/15/2007**
Permit Type: **RE**
Description: **Electrical: Add 384 sq ft to rear of SFD, remodel kitchen; Remove attached garage.**

Permit Description: **Residential Comb. Electrical**
Work Class: Addition
Proposed Use:
Permit Number: RE0700920
Status: EXPIRED
Valuation: $0.00
Contractor Company:
Contractor Name:

Date: **3/15/2007**
Permit Type: **RP**
Description: **New Bathrm: Add 384 sq ft to rear of SFD; remodel kitchen;**

Permit Description: **Residential Combination Plumbing**
Work Class: Addition
Proposed Use:
Permit Number: RP0700835
Status: EXPIRED
Valuation: $0.00
Contractor Company:
Contractor Name:

Date: **1/24/2006**
Permit Type: **RE**
Description: **200 amp service upgrade, 8 circuits final work started under RE0302585**

Permit Description: **Residential Comb. Electrical**
Work Class: Alteration
Proposed Use:
Permit Number: RE0600269
Status: EXPIRED
Valuation: $0.00
Contractor Company:
Contractor Name: J L D ELECTRIC

ADJOINING PROPERTY FINDINGS

Date:	**7/15/2003**
Permit Type:	**RE**
Description:	**UPGRADE SERVICE TO 200AMP AND 8 CIR**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RE0302585
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	J L D ELECTRIC

Date:	**1/12/1995**
Permit Type:	**RB**
Description:	**INSTALL ANCHOR BOLTS HOLD DOWNS ANGLE STEEL**
Permit Description:	**Residential Comb. Building**
Work Class:	Repair
Proposed Use:	
Permit Number:	RB9500113
Status:	FINALED
Valuation:	$1,560.00
Contractor Company:	
Contractor Name:	ADVANCED BUILDING SERCICES INC

ADJOINING PROPERTY FINDINGS

FONTAINE CT

4102 FONTAINE CT

Date:	**7/17/1998**
Permit Type:	**RE**
Description:	**upgrade service to 125 amp circuit and plug.**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RE9801952
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	GILL'S ELECTRIC CO. INC.

4103 FONTAINE CT

Date:	**7/2/1992**
Permit Type:	**B**
Description:	**GARAGE FROM PERMIT B9200567**
Permit Description:	**Building DSD**
Work Class:	Addition
Proposed Use:	
Permit Number:	B9202653
Status:	FINALED
Valuation:	$1.00
Contractor Company:	
Contractor Name:	REDWALL BUILDERS

ADJOINING PROPERTY FINDINGS

Date: **6/25/1992**
Permit Type: **E**
Description: **KITCHEN REMODEL SERVICE UPGRADE, NEW GARAGE**

Permit Description: **Electrical**
Work Class: New Construction
Proposed Use:
Permit Number: E9202034
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name: LUTZ ELECTRIC

Date: **6/16/1992**
Permit Type: **P**
Description:

Permit Description: **Plumbing**
Work Class: Addition
Proposed Use:
Permit Number: P9202127
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name: PACIFIC PLUMBING SYSTEMS

Date: **5/6/1992**
Permit Type: **B**
Description: **DEMO 1 CAR GARAGE**

Permit Description: **Building DSD**
Work Class: Demolition
Proposed Use:
Permit Number: B9200460
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name: REDWALL BUILDERS

ADJOINING PROPERTY FINDINGS

Date: **5/6/1992**
Permit Type: **B**
Description: **ADDN OF 150SF LIVING SPACE AND 2 CAR GARAGE**

Permit Description: **Building DSD**
Work Class: Addition
Proposed Use:
Permit Number: B9200567
Status: FINALED
Valuation: $48,000.00
Contractor Company:
Contractor Name: REDWALL BUILDERS

Date: **7/29/1991**
Permit Type: **B**
Description: **TERMITE REPORT**

Permit Description: **Building DSD**
Work Class: Alteration
Proposed Use:
Permit Number: B9103814
Status: FINALED
Valuation: $1,500.00
Contractor Company:
Contractor Name: ALAMEDA STRUCTRUAL, INC.

4108 FONTAINE CT

Date: **7/14/2010**
Permit Type: **ZC**
Description: **Home office for off site sales of fashion accessories.**

Permit Description:
Work Class:
Proposed Use:
Permit Number: ZC101638
Status:
Valuation: $0.00
Contractor Company:
Contractor Name:

ADJOINING PROPERTY FINDINGS

Date: **3/7/2007**
Permit Type: **RE**
Description: **Electrical for heating & air conditioning installation**

Permit Description: **Residential Comb. Electrical**
Work Class: Alteration
Proposed Use:
Permit Number: RE0700822
Status: EXPIRED
Valuation: $0.00
Contractor Company:
Contractor Name: LAVINE & COMPANY A CALIF CORP

Date: **3/7/2007**
Permit Type: **RM**
Description: **Install furnace and air conditioning.**

Permit Description: **Residential Combination Mechanical**
Work Class: Alteration
Proposed Use:
Permit Number: RM0700509
Status: EXPIRED
Valuation: $0.00
Contractor Company:
Contractor Name: LAVINE & COMPANY A CALIF CORP

4109 FONTAINE CT

Date: **10/29/2003**
Permit Type: **RE**
Description: **Electrical service upgrade, misc. fixtures, ground circuits.**

Permit Description: **Residential Comb. Electrical**
Work Class: Alteration
Proposed Use:
Permit Number: RE0303922
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name:

ADJOINING PROPERTY FINDINGS

Date:	**10/15/2003**
Permit Type:	**RE**
Description:	**Install new 125 amp service, various outlets & circuits**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RE0303729
Status:	CANCELLED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	ROBERTS ELECTRIC CO INC

Date:	**7/27/1989**
Permit Type:	**P**
Description:	
Permit Description:	**Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	P8902568
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	PLUMBING MASTER

ADJOINING PROPERTY FINDINGS

FONTAINE ST

8081 FONTAINE ST

Date:	**1/19/2011**
Permit Type:	**ZC**
Description:	**Home office for off site recreational services.**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	ZC110189
Status:	
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**3/7/2006**
Permit Type:	**RE**
Description:	**Electrical/Furnace replacement and a/c add-on**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RE0600694
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	SERVICE CHAMPIONS

ADJOINING PROPERTY FINDINGS

Date: **3/7/2006**
Permit Type: **RM**
Description: **Furnace replacement and a/c add-on**

Permit Description: **Residential Combination Mechanical**
Work Class: Alteration
Proposed Use:
Permit Number: RM0600405
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name: SERVICE CHAMPIONS

Date: **7/30/2003**
Permit Type: **ZC**
Description: **Home occupation to sell soap, oil, jewelry and related produ cts.**

Permit Description:
Work Class:
Proposed Use:
Permit Number: ZC032136
Status:
Valuation: $0.00
Contractor Company:
Contractor Name:

8089 FONTAINE ST

Date: **5/22/2007**
Permit Type: **RE**
Description: **Electrical for addition of new 2nd story and new game room**

Permit Description: **Residential Comb. Electrical**
Work Class: Alteration
Proposed Use:
Permit Number: RE0701765
Status: EXPIRED
Valuation: $0.00
Contractor Company:
Contractor Name:

ADJOINING PROPERTY FINDINGS

Date:	**5/22/2007**
Permit Type:	**RM**
Description:	**Mechanical for addition of new 2nd story and new game room**
Permit Description:	**Residential Combination Mechanical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RM0700996
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**5/22/2007**
Permit Type:	**RP**
Description:	**Plumbing for addition of new 2nd story and new game room**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RP0701542
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**11/1/2006**
Permit Type:	**RB**
Description:	**(E) 1 story SFD: 1100SF addition for new 2nd story and add new game room and stairs in back on 1st floor.**
Permit Description:	**Residential Comb. Building**
Work Class:	Addition
Proposed Use:	
Permit Number:	RB0604568
Status:	EXPIRED
Valuation:	$90,000.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

Date:	**3/27/2000**
Permit Type:	**RB**
Description:	**Remove (e) shed structure at the rear of the house. Inspec- tion to be coordinated code compliance inspector.**
Permit Description:	**Residential Comb. Building**
Work Class:	Addition
Proposed Use:	
Permit Number:	RB0000271
Status:	EXPIRED
Valuation:	$1,000.00
Contractor Company:	
Contractor Name:	

8105 FONTAINE ST

Date:	**3/22/1989**
Permit Type:	**E**
Description:	**METER RESET & STRAP SERVICE**
Permit Description:	**Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	E8900844
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	HATHORN, GEORGE WAYNE

ADJOINING PROPERTY FINDINGS

8109 FONTAINE ST

Date:	**1/16/1990**
Permit Type:	**P**
Description:	**BATH REMODEL NEW TOILET BASIN TUB SHOWER DIVERTER**
Permit Description:	**Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	P9000222
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	NEW AGE CONSTRUCTION

Date:	**1/16/1990**
Permit Type:	**B**
Description:	**NEW ROOF**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B9000243
Status:	FINALED
Valuation:	$14,000.00
Contractor Company:	
Contractor Name:	NEW AGE CONSTRUCTION

Date:	**1/16/1990**
Permit Type:	**E**
Description:	**NEW 100A SERVICE NEW GFICS KITCHEN,BATH,LAUNDRY NEW BATH FAN**
Permit Description:	**Electrical**
Work Class:	New Construction
Proposed Use:	
Permit Number:	E9000153
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	NEW AGE CONSTRUCTION

ADJOINING PROPERTY FINDINGS

8115 FONTAINE ST

Date:	**7/18/1996**
Permit Type:	**E**
Description:	**emergency lighting for daycare**
Permit Description:	**Electrical**
Work Class:	Repair
Proposed Use:	
Permit Number:	E9602149
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

MOUNTAIN BLVD

8550 MOUNTAIN BLVD

Date:	**8/21/2010**
Permit Type:	**RB**
Description:	**Demolition of OAK KNOLL NAVAL HOSPITAL TO ABATE #0903525**
Permit Description:	**Residential Comb. Building**
Work Class:	Demolition
Proposed Use:	
Permit Number:	RB1003221
Status:	APPLICATION EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

Date:	**2/14/2008**
Permit Type:	**E**
Description:	**Temporary power**
Permit Description:	**Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	E0800508
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	BRAY CORP DBA POWER PLUS TEMP

Date:	**6/27/2007**
Permit Type:	**B**
Description:	**One double wide trailer to be used as a construction office by Suncal Oak Knoll LLC. Trailer is 24ft x 60ft**
Permit Description:	**Building DSD**
Work Class:	New Construction
Proposed Use:	
Permit Number:	B0700796
Status:	EXPIRED
Valuation:	$50,000.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

8601 MOUNTAIN BLVD

Date:	**6/22/2007**
Permit Type:	**ZC**
Description:	**ZONING CLEARANCE FOR HOME OCCUPATION: ACCESSORY ACTIVITY INC :CUSTOM MFG (PAINTING/PRINTMAKING), COMM ADMIN (OFFICE), GEN**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	ZC071560
Status:	
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**5/19/2005**
Permit Type:	**E**
Description:	**Replace garage and post light fixtures with new energy efficient flourscent fixtures and install 11 new energy**
Permit Description:	**Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	E0501749
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	HEIN LIGHTING AND ELEC INC

ADJOINING PROPERTY FINDINGS

8607 MOUNTAIN BLVD

Date:	**5/9/1995**
Permit Type:	**E**
Description:	**NEW SERVICE TO CONDO UNIT GARAGE**
Permit Description:	**Electrical**
Work Class:	Repair
Proposed Use:	
Permit Number:	E9501294
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	RAINIER ELECTRIC & SERVICE INC

8609 MOUNTAIN BLVD

Date:	**7/24/2003**
Permit Type:	**B**
Description:	**Voluntary balcony repairs - like kind/decking.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0303505
Status:	EXPIRED
Valuation:	$13,065.00
Contractor Company:	
Contractor Name:	THE G B GROUP INC

ADJOINING PROPERTY FINDINGS

8611 MOUNTAIN BLVD

Date:	**11/2/2001**
Permit Type:	**B**
Description:	**Decay repairs to existing stairs. ADD 1-29-02; deck repair.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0104998
Status:	FINALED
Valuation:	$4,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

8629 MOUNTAIN BLVD

Date:	**12/2/2008**
Permit Type:	**RP**
Description:	**Replace gas water heater in same location.**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RP0802967
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	FAST WATER HEATERS INC

ADJOINING PROPERTY FINDINGS

Date: **3/21/1989**
Permit Type: **P**
Description:

Permit Description: **Plumbing**
Work Class: Repair
Proposed Use:
Permit Number: P8900738
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name:

8631 MOUNTAIN BLVD

Date: **10/29/2008**
Permit Type: **RP**
Description: **Replace hot water heater in same location.**

Permit Description: **Residential Combination Plumbing**
Work Class: Alteration
Proposed Use:
Permit Number: RP0802729
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name: DESKINS PLUMBING

Date: **3/30/1990**
Permit Type: **P**
Description: **REPAIR LEAKING**

Permit Description: **Plumbing**
Work Class: Alteration
Proposed Use:
Permit Number: P9001184
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name: COON MERL

ADJOINING PROPERTY FINDINGS

Date: **3/30/1990**
Permit Type: **B**
Description: **REPAIR LEAKING SHOWER DRAIN,SHEETROCK CEILING OF BATHRM**

Permit Description: **Building DSD**
Work Class: Repair
Proposed Use:
Permit Number: B9001537
Status: FINALED
Valuation: $500.00
Contractor Company:
Contractor Name: COON MERL

8633 MOUNTAIN BLVD

Date: **3/15/2004**
Permit Type: **ZC**
Description: **Home office for interior designer**

Permit Description:
Work Class:
Proposed Use:
Permit Number: ZC040782
Status:
Valuation: $0.00
Contractor Company:
Contractor Name:

Date: **10/16/2001**
Permit Type: **RB**
Description: **Residential Condo's: Dryrot Repair of existing deck.**

Permit Description: **Residential Comb. Building**
Work Class: Alteration
Proposed Use:
Permit Number: RB0104275
Status: FINALED
Valuation: $2,000.00
Contractor Company:
Contractor Name: DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

8635 MOUNTAIN BLVD

Date:	**4/23/2008**
Permit Type:	**RP**
Description:	**Replace existing 40 gallon water heater at same location in closet.**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RP0801036
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	AFFORDABLE WATER HEATERS

8637 MOUNTAIN BLVD

Date:	**7/24/2003**
Permit Type:	**B**
Description:	**Voluntary balcony repairs - like kind/decking.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0303503
Status:	EXPIRED
Valuation:	$13,065.00
Contractor Company:	
Contractor Name:	THE G B GROUP INC

ADJOINING PROPERTY FINDINGS

8639 MOUNTAIN BLVD

Date:	**11/2/2001**
Permit Type:	**B**
Description:	**Decay repairs to existing stairs. ADD 1-29-02; deck repair.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0104999
Status:	FINALED
Valuation:	$4,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

8657 MOUNTAIN BLVD

Date:	**7/24/2003**
Permit Type:	**B**
Description:	**Voluntary balcony repairs - like kind/decking.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0303504
Status:	EXPIRED
Valuation:	$13,065.00
Contractor Company:	
Contractor Name:	THE G B GROUP INC

ADJOINING PROPERTY FINDINGS

8659 MOUNTAIN BLVD

Date:	**11/2/2001**
Permit Type:	**B**
Description:	**Decay repairs to existing stairs. ADD 1-29-02; deck repair.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0105000
Status:	FINALED
Valuation:	$4,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

Date:	**9/21/2001**
Permit Type:	**RB**
Description:	**Residential Condo's--Dryrot Repair of an existing deck.**
Permit Description:	**Residential Comb. Building**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RB0104277
Status:	FINALED
Valuation:	$2,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

8669 MOUNTAIN BLVD

Date:	**2/17/2012**
Permit Type:	**P**
Description:	**Replace 40 gallon water heater in same location.**
Permit Description:	**Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	P1200405
Status:	ISSUED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	GENERAL PLUMBING & ROOTER

Date:	**1/31/2002**
Permit Type:	**B**
Description:	**Change existing secondary stairs from wood to steel & concrete stairs.**
Permit Description:	**Building DSD**
Work Class:	Alteration
Proposed Use:	
Permit Number:	B0104997
Status:	EXPIRED
Valuation:	$10,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

8673 MOUNTAIN BLVD

Date:	**12/5/2001**
Permit Type:	**B**
Description:	**Decay repairs to existing stairs.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0105424
Status:	FINALED
Valuation:	$3,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

8675 MOUNTAIN BLVD

Date:	**7/24/2003**
Permit Type:	**B**
Description:	**Voluntary balcony repairs - like kind/decking.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0303502
Status:	EXPIRED
Valuation:	$13,065.00
Contractor Company:	
Contractor Name:	THE G B GROUP INC

ADJOINING PROPERTY FINDINGS

Date:	**2/1/2002**
Permit Type:	**B**
Description:	**Change existing secondary stairs from wood to steel circular stairs.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0200418
Status:	EXPIRED
Valuation:	$10,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

Date:	**4/20/1993**
Permit Type:	**M**
Description:	**REPLACE FURNACE WITH 60,000 BTU UNIT MODEL #TDD060C936A1**
Permit Description:	**Mechanical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	M9300462
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	COMERFORDS SERVICE EXPERTS

8679 MOUNTAIN BLVD

Date:	**7/18/2011**
Permit Type:	**RE**
Description:	**Replace damaged conductor wire in kitchen.**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Repair
Proposed Use:	
Permit Number:	RE1101982
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	NIELSEN ELECTRIC, INC.

ADJOINING PROPERTY FINDINGS

8681 MOUNTAIN BLVD

Date:	**1/9/2006**
Permit Type:	**ZC**
Description:	**Home occupation for a home vendering machine office. All vendering machine will be loacted off-site throughout**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	ZC060075
Status:	
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**1/31/2002**
Permit Type:	**B**
Description:	**Change existing secondary stairs from wood to steel and concrete stairs.**
Permit Description:	**Building DSD**
Work Class:	Alteration
Proposed Use:	
Permit Number:	B0104996
Status:	EXPIRED
Valuation:	$10,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

Date: **12/5/2001**
Permit Type: **B**
Description: **Decay repairs to existing stairs.**

Permit Description: **Building DSD**
Work Class: Repair
Proposed Use:
Permit Number: B0105422
Status: FINALED
Valuation: $3,000.00
Contractor Company:
Contractor Name: DRAEGER CONSTRUCTION CO INC

8687 MOUNTAIN BLVD

Date: **7/24/2003**
Permit Type: **B**
Description: **Voluntary balcony repairs - like kind/decking.**

Permit Description: **Building DSD**
Work Class: Repair
Proposed Use:
Permit Number: B0303500
Status: EXPIRED
Valuation: $13,065.00
Contractor Company:
Contractor Name: THE G B GROUP INC

Date: **1/31/2002**
Permit Type: **B**
Description: **Change existing secondary stairs from wood to steel and concrete stairs.**

Permit Description: **Building DSD**
Work Class: Alteration
Proposed Use:
Permit Number: B0104995
Status: EXPIRED
Valuation: $10,000.00
Contractor Company:
Contractor Name: DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

8689 MOUNTAIN BLVD

Date:	**12/14/2007**
Permit Type:	**ZC**
Description:	**Home occupation: Independant living skill consultant.**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	ZC072919
Status:	
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**9/21/2001**
Permit Type:	**RB**
Description:	**Residential Condo's--Dryrot Repair of an existing deck.**
Permit Description:	**Residential Comb. Building**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RB0104278
Status:	FINALED
Valuation:	$2,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

8707 MOUNTAIN BLVD

Date:	**5/24/2012**
Permit Type:	**RE**
Description:	**ELECTRICAL TO REPLACE TO REPLACE FIRE DAMAGED FIXTURE(S) IN GARAGE**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Repair
Proposed Use:	
Permit Number:	RE1201506
Status:	ISSUED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	HEIN LIGHTING AND ELEC INC

Date:	**4/12/2012**
Permit Type:	**RB**
Description:	**Repair garage structure #1 damaged by fire on 1/6/12.**
Permit Description:	**Residential Comb. Building**
Work Class:	Repair
Proposed Use:	
Permit Number:	RB1200752
Status:	ISSUED
Valuation:	$25,000.00
Contractor Company:	
Contractor Name:	H R KLECKNER CONST. INC

Date:	**4/12/2012**
Permit Type:	**RB**
Description:	**Minor fire repair to 2nd garage structure**
Permit Description:	**Residential Comb. Building**
Work Class:	Repair
Proposed Use:	
Permit Number:	RB1200859
Status:	ISSUED
Valuation:	$10,000.00
Contractor Company:	
Contractor Name:	H R KLECKNER CONST. INC

ADJOINING PROPERTY FINDINGS

Date:	**4/12/2012**
Permit Type:	**RE**
Description:	**Electrical for 8 outlets for garages.**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Repair
Proposed Use:	
Permit Number:	RE1201062
Status:	ISSUED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	H R KLECKNER CONST. INC

Date:	**6/16/2011**
Permit Type:	**SP**
Description:	**Complete SP1003721/add solar panel for swimming pool.**
Permit Description:	**Specialty Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	SP1101325
Status:	EXPIRED
Valuation:	$1,000.00
Contractor Company:	
Contractor Name:	ALLIANCE SOLAR SERVICES

Date:	**9/28/2010**
Permit Type:	**SP**
Description:	**add solar panel for sp**
Permit Description:	**Specialty Plumbing**
Work Class:	
Proposed Use:	
Permit Number:	SP1003721
Status:	EXPIRED
Valuation:	$1,001.00
Contractor Company:	
Contractor Name:	ALLIANCE SOLAR SERVICES

ADJOINING PROPERTY FINDINGS

8715 MOUNTAIN BLVD

Date:	**11/2/2001**
Permit Type:	**B**
Description:	**Decay repairs to existing stairs. ADD 1-29-02; deck repair.**
Permit Description:	**Building DSD**
Work Class:	Alteration
Proposed Use:	
Permit Number:	B0105001
Status:	FINALED
Valuation:	$4,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

8717 MOUNTAIN BLVD

Date:	**3/28/2008**
Permit Type:	**ZC**
Description:	**Home office for a event planning company.**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	ZC080832
Status:	
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

Date:	**7/24/2003**
Permit Type:	**B**
Description:	**Voluntary balcony repairs - like kind/decking. bldg.#6, Voluntary balcony repairs - like kind/decking.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0303499
Status:	EXPIRED
Valuation:	$13,065.00
Contractor Company:	
Contractor Name:	THE G B GROUP INC

8719 MOUNTAIN BLVD

Date:	**11/2/2001**
Permit Type:	**B**
Description:	**Decay repairs to existing stairs. 1-29-02 ADD: deck repair.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0105002
Status:	FINALED
Valuation:	$4,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

8721 MOUNTAIN BLVD

Date:	**1/31/2002**
Permit Type:	**B**
Description:	**Change existing secondary stairs from wood to steel & concrete stairs.**
Permit Description:	**Building DSD**
Work Class:	Alteration
Proposed Use:	
Permit Number:	B0104993
Status:	EXPIRED
Valuation:	$10,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

8727 MOUNTAIN BLVD

Date:	**7/24/2003**
Permit Type:	**B**
Description:	**Voluntary balcony repairs - like kind/decking. bldg.#5, Voluntary balcony repairs - like kind/decking.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0303498
Status:	EXPIRED
Valuation:	$13,065.00
Contractor Company:	
Contractor Name:	THE G B GROUP INC

ADJOINING PROPERTY FINDINGS

Date:	**1/31/2002**
Permit Type:	**B**
Description:	**Change existing secondary stairs from wood to steel & concrete stairs.**
Permit Description:	**Building DSD**
Work Class:	Alteration
Proposed Use:	
Permit Number:	B0104992
Status:	EXPIRED
Valuation:	$10,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

8731 MOUNTAIN BLVD

Date:	**12/5/2001**
Permit Type:	**B**
Description:	**Decay repairs to existing stairs.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0105421
Status:	FINALED
Valuation:	$3,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

8741 MOUNTAIN BLVD

Date:	**1/31/2002**
Permit Type:	**B**
Description:	**Change existing secondary stairs from wood to steel & concrete stairs.**
Permit Description:	**Building DSD**
Work Class:	Alteration
Proposed Use:	
Permit Number:	B0104994
Status:	EXPIRED
Valuation:	$10,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

8743 MOUNTAIN BLVD

Date:	**2/14/1991**
Permit Type:	**Y**
Description:	**METER RESET**
Permit Description:	**Meter Reset/Spec Activity**
Work Class:	New Construction
Proposed Use:	
Permit Number:	Y9100205
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

8745 MOUNTAIN BLVD

Date:	**12/5/2001**
Permit Type:	**B**
Description:	**Decay repairs to existing stairs.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0105423
Status:	FINALED
Valuation:	$3,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

Date:	**11/1/1993**
Permit Type:	**B**
Description:	**REMOVE EXISTING WOOD STEPS AND REPLACE, WITH CONCRETE ALL STAIRS ON GRADE**
Permit Description:	**Building DSD**
Work Class:	Alteration
Proposed Use:	
Permit Number:	B9304208
Status:	FINALED
Valuation:	$3,800.00
Contractor Company:	
Contractor Name:	GSEM

ADJOINING PROPERTY FINDINGS

Date: **12/14/1990**
Permit Type: **Y**
Description: **METER RESET**

Permit Description: **Meter Reset/Spec Activity**
Work Class: New Construction
Proposed Use:
Permit Number: Y9000810
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name:

8747 MOUNTAIN BLVD

Date: **6/27/2012**
Permit Type: **ZC**
Description: **use home as office for interior design consulting related se rvices**

Permit Description:
Work Class:
Proposed Use:
Permit Number: ZC121423
Status:
Valuation: $0.00
Contractor Company:
Contractor Name:

ADJOINING PROPERTY FINDINGS

Date:	**7/24/2003**
Permit Type:	**B**
Description:	**Voluntary balcony repairs - like kind/decking. bldg.# 4, Voluntary balcony repairs - like kind/decking.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0303497
Status:	EXPIRED
Valuation:	$13,065.00
Contractor Company:	
Contractor Name:	THE G B GROUP INC

8749 MOUNTAIN BLVD

Date:	**3/4/2002**
Permit Type:	**B**
Description:	**Exterior stair repair, treads, & 1 board.***Repairs Only*****
Permit Description:	**Building DSD**
Work Class:	Alteration
Proposed Use:	
Permit Number:	B0200518
Status:	FINALED
Valuation:	$1,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

8769 MOUNTAIN BLVD

Date:	**9/3/2004**
Permit Type:	**ZC**
Description:	**Home Occupation**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	ZC042563
Status:	
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**7/24/2003**
Permit Type:	**B**
Description:	**Voluntary balcony repairs - like kind/decking.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0303496
Status:	EXPIRED
Valuation:	$13,065.00
Contractor Company:	
Contractor Name:	THE G B GROUP INC

Date:	**12/31/2002**
Permit Type:	**ZC**
Description:	**OFFICE WORK FOR CONSULTING SERVICES**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	ZC023361
Status:	
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

Date:	**10/10/2002**
Permit Type:	**RB**
Description:	**Residential--Bathroom Remodel: Changing existing tub into a new jacuzzi tub. Replace vanity, basin and flooring.**
Permit Description:	**Residential Comb. Building**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RB0204812
Status:	FINALED
Valuation:	$6,000.00
Contractor Company:	
Contractor Name:	

Date:	**10/10/2002**
Permit Type:	**RE**
Description:	**Residential Electrical for an existing bathroom remodel: Circuits.**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RE0203830
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**10/10/2002**
Permit Type:	**RP**
Description:	**Residential Plumbing for Bathroom Remodel: Tub and Sink.**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RP0203015
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

8771 MOUNTAIN BLVD

Date:	**5/23/2008**
Permit Type:	**RP**
Description:	**repl wtr htr**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Repair
Proposed Use:	
Permit Number:	RP0801301
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	JUST WATER HEATERS, INC.

Date:	**11/2/2001**
Permit Type:	**B**
Description:	**Decay repairs to existing stairs. ADD 1-29-01; deck repair.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0105003
Status:	FINALED
Valuation:	$4,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

Date:	**9/21/2001**
Permit Type:	**RB**
Description:	**Residential Condo's--Dryrot Repair of an existing deck.**
Permit Description:	**Residential Comb. Building**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RB0104279
Status:	FINALED
Valuation:	$2,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

8781 MOUNTAIN BLVD

Date:	**7/24/2003**
Permit Type:	**B**
Description:	**Voluntary balcony repairs - like kind/decking.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0303495
Status:	EXPIRED
Valuation:	$13,065.00
Contractor Company:	
Contractor Name:	THE G B GROUP INC

8783 MOUNTAIN BLVD

Date:	**10/7/2009**
Permit Type:	**RP**
Description:	**Water heater replacement**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RP0902131
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	A J BONO PLUMBING INC

ADJOINING PROPERTY FINDINGS

Date:	**11/2/2001**
Permit Type:	**B**
Description:	**Decay repairs to existing stairs. ADD 1-29-02; deck repair.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0105005
Status:	FINALED
Valuation:	$4,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

8787 MOUNTAIN BLVD

Date:	**11/2/2001**
Permit Type:	**B**
Description:	**Decay repairs to existing stairs. ADD 1-29-02; deck repair.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0105006
Status:	FINALED
Valuation:	$4,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

8791 MOUNTAIN BLVD

Date:	**2/5/2007**
Permit Type:	**ZC**
Description:	**Home occupation, mortage loan processing, work done over the phone and computer.**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	ZC070331
Status:	
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**11/2/2001**
Permit Type:	**B**
Description:	**Decay repairs to existing stairs. ADD 1-29-02; deck repair.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0105007
Status:	FINALED
Valuation:	$4,000.00
Contractor Company:	
Contractor Name:	DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

8795 MOUNTAIN BLVD

Date:	**7/24/2003**
Permit Type:	**B**
Description:	**Voluntary balcony repairs - like kind/decking.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0303494
Status:	EXPIRED
Valuation:	$13,065.00
Contractor Company:	
Contractor Name:	THE G B GROUP INC

Date:	**2/25/2002**
Permit Type:	**B**
Description:	**Gut bathroom and relocate toilet,new shower, basin and whirlpool.**
Permit Description:	**Building DSD**
Work Class:	Repair
Proposed Use:	
Permit Number:	B0200776
Status:	EXPIRED
Valuation:	$3,500.00
Contractor Company:	
Contractor Name:	PENCON

Date:	**2/25/2002**
Permit Type:	**E**
Description:	**Electrical for new spa.**
Permit Description:	**Electrical**
Work Class:	Repair
Proposed Use:	
Permit Number:	E0200670
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

Date: **2/25/2002**
Permit Type: **P**
Description: **Gut bathroom and relocate toilet,new shower, basin and whirlpool.**

Permit Description: **Plumbing**
Work Class: Repair
Proposed Use:
Permit Number: P0200537
Status: EXPIRED
Valuation: $0.00
Contractor Company:
Contractor Name:

8797 MOUNTAIN BLVD

Date: **11/2/2001**
Permit Type: **B**
Description: **Decay repairs to existing stairs. ADD 1-29-02; deck repair.**

Permit Description: **Building DSD**
Work Class: Repair
Proposed Use:
Permit Number: B0105008
Status: FINALED
Valuation: $4,000.00
Contractor Company:
Contractor Name: DRAEGER CONSTRUCTION CO INC

ADJOINING PROPERTY FINDINGS

MOUNTAIN BLVD # 26

8725 MOUNTAIN BLVD # 26

Date:	**6/18/2009**
Permit Type:	**P**
Description:	**Replace 40 gallon water heater in unit #26.**
Permit Description:	**Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	P0901254
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	JUST WATER HEATERS, INC.

SEACOR CT

4103 SEACOR CT

Date:	**5/11/2009**
Permit Type:	**RB**
Description:	**Replace window #0902184**
Permit Description:	**Residential Comb. Building**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RB0901628
Status:	FINALED
Valuation:	$500.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

4116 SEACOR CT

Date:	**6/28/2000**
Permit Type:	**RB**
Description:	**ADD PREFAB ALUM SHED FOR WATER HEATER**
Permit Description:	**Residential Comb. Building**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RB0002745
Status:	FINALED
Valuation:	$300.00
Contractor Company:	
Contractor Name:	

Date:	**6/26/2000**
Permit Type:	**RP**
Description:	**RELOCATE WATER HEATER TO EXTERIOR PREFAB ALUM SHED**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RP0001702
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

4117 SEACOR CT

Date:	**5/20/2003**
Permit Type:	**RB**
Description:	**DIRECT REPLACEMENT OF 11 WINDOWS USING EXISTING HEADERS**
Permit Description:	**Residential Comb. Building**
Work Class:	Repair
Proposed Use:	
Permit Number:	RB0302416
Status:	EXPIRED
Valuation:	$2,500.00
Contractor Company:	
Contractor Name:	GIANT JIM PEST CONTROL

Date:	**10/26/2000**
Permit Type:	**RE**
Description:	**Upgrade service to 200amp**
Permit Description:	**Residential Comb. Electrical**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RE0003778
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	CWE CITYWIDE ELECTRIC

ADJOINING PROPERTY FINDINGS

4128 SEACOR CT

Date:	**9/26/2006**
Permit Type:	**ZC**
Description:	**Home office for outcall consulting work with auto repair and service businesses.**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	ZC062538
Status:	
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**3/16/2006**
Permit Type:	**RP**
Description:	**remove & replace gas water heater**
Permit Description:	**Residential Combination Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RP0600648
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	FAST WATER HEATER CO

Date:	**5/7/2003**
Permit Type:	**RB**
Description:	**change out 12 windows**
Permit Description:	**Residential Comb. Building**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RB0302191
Status:	FINALED
Valuation:	$5,500.00
Contractor Company:	
Contractor Name:	WEATHER MASTER WINDOWS INC

ADJOINING PROPERTY FINDINGS

Date: **9/3/1980**
Permit Type: **E**
Description:

Permit Description: **Electrical**
Work Class: Addition
Proposed Use:
Permit Number: E8093170
Status: EXPIRED
Valuation: $0.00
Contractor Company:
Contractor Name:

4129 SEACOR CT

Date: **5/11/2005**
Permit Type: **RE**
Description: **ENCLOSE REAR CONCRETE SLAB PATIO W/ ICBO APPROVED STRUCT. ICBO#5176.**

Permit Description: **Residential Comb. Electrical**
Work Class: Alteration
Proposed Use:
Permit Number: RE0501635
Status: EXPIRED
Valuation: $0.00
Contractor Company:
Contractor Name: DAVID ROSA INCORPORATED

ADJOINING PROPERTY FINDINGS

Date:	**5/11/2005**
Permit Type:	**RB**
Description:	**ENCLOSE REAR CONCRETE SLAB PATIO W/ ICBO APPROVED STRUCT. ICBO#5176.**
Permit Description:	**Residential Comb. Building**
Work Class:	Alteration
Proposed Use:	
Permit Number:	RB0502092
Status:	FINALED
Valuation:	$7,012.00
Contractor Company:	
Contractor Name:	DAVID ROSA INCORPORATED

Date:	**4/23/2003**
Permit Type:	**ZC**
Description:	**home office for a bath tub repair/ refinishing service**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	ZC031217
Status:	
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**2/19/1993**
Permit Type:	**P**
Description:	
Permit Description:	**Plumbing**
Work Class:	Alteration
Proposed Use:	
Permit Number:	P9300632
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	BELL PLUMBING CO.

ADJOINING PROPERTY FINDINGS

Date:	**7/9/1992**
Permit Type:	**B**
Description:	**ATTACH ANGEL IRON TO BOLT FLOOR PLATFORM TO FOUNDATION WALL**
Permit Description:	**Building DSD**
Work Class:	Alteration
Proposed Use:	
Permit Number:	B9202758
Status:	FINALED
Valuation:	$2,390.00
Contractor Company:	
Contractor Name:	EARTHQUAKE SAFETY INC

GLOSSARY

General Building Department concepts

- **ICC:** The International Code Council. The governing body for the building/development codes used by all jurisdictions who've adopted the ICC guidelines. MOST of the US has done this. Canada, Mexico, and other countries use ICC codes books and guides as well. There are a few states who have added guidelines to the ICC codes to better fit their needs. For example, California has added seismic retrofit requirements for most commercial structures.
- **Building Department (Permitting Authority, Building Codes, Inspections Department, Building and Inspections):** This is the department in a jurisdiction where an owner or contractor goes to obtain permits and inspections for building, tearing down, remodeling, adding to, re-roofing, moving or otherwise making changes to any structure, Residential or Commercial.
- **Jurisdiction:** This is the geographic area representing the properties over which a Permitting Authority has responsibility.
- **GC:** General Contractor. Usually the primary contractor hired for any Residential or Commercial construction work.
- **Sub:** Subordinate contracting companies or subcontractors. Usually a "trades" contractor working for the GC. These contractors generally have an area of expertise in which they are licensed like Plumbing, Electrical, Heating and Air systems, Gas Systems, Pools etc. (called "trades").
- **Journeymen:** Sub contractors who have their own personal licenses in one or more trades and work for different contracting companies, wherever they are needed or there is work.
- **HVAC (Mechanical, Heating & Air companies):** HVAC = Heating, Ventilation, and Air Conditioning.
- **ELEC (Electrical, TempPole, TPole, TPower, Temporary Power, Panel, AMP Change, Power Release):** Electrical permits can be pulled for many reasons. The most common reason is to increase the AMPs of power in an electrical power panel. This requires a permit in almost every jurisdiction. Other commons reason for Electrical permits is to insert a temporary power pole at a new construction site. Construction requires electricity, and in a new development, power has yet to be run to the lot. The temporary power pole is usually the very first permit pulled for new development. The power is released to the home owner when construction is complete and this sometimes takes the form of a Power Release permit or inspection.
- **"Pull" a permit:** To obtain and pay for a building permit.
- **CBO:** Chief Building Official
- **Planning Department:** The department in the development process where the building /structural plans are reviewed for their completeness and compliance with building codes
- **Zoning Department:** The department in the development process where the site plans are reviewed for their compliance with the regulations associated with the zoning district in which they are situated.
- **Zoning District:** A pre-determined geographic boundary within a jurisdiction where certain types of structures are permitted / prohibited. Examples are Residential structure, Commercial/Retail structures, Industrial/Manufacturing structures etc. Each zoning district has regulations associated with it like the sizes of the lots, the density of the structures on the lots, the number of parking spaces required for certain types of structures on the lots etc.
- **PIN (TMS, GIS ID, Parcel#):** Property Identification Number and Tax Map System number.
- **State Card (Business license):** A license card issued to a contractor to conduct business.
- **Building Inspector (Inspector):** The inspector is a building department employee that inspects building construction for compliance to codes.
- **C.O.:** Certificate of Occupancy. This is the end of the construction process and designates that the owners now have permission to occupy a structure after its building is complete. Sometimes also referred to as a Certificate of Compliance.

GLOSSARY

Permit Content Definitions

- Permit Number: The alphanumerical designation assigned to a permit for tracking within the building department system. Sometimes the permit number gives clues to its role, e.g. a "PL" prefix may designate a plumbing permit.
- Description: A field on the permit form that allows the building department to give a brief description of the work being done. More often than not, this is the most important field for EP's to find clues to the prior use(s) of the property.
- Permit Type: Generally a brief designation of the type of job being done. For example BLDG-RES, BLDG-COM, ELEC, MECH etc.

Sample Building Permit Data

Date: Nov 09, 2000
Permit Type: Bldg -
New Permit Number: 101000000405
Status: Valuation: $1,000,000.00
Contractor Company: OWNER-BUILDER
Contractor Name:

Description: New one store retail (SAV-ON) with drive-thru pharmacy. Certificate of Occupancy.

WEST
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PHASE I ENVIRONMENTAL SITE ASSESSMENT
USER RESPONSIBILITY QUESTIONNAIRE
ASTM E 1527-05

Date: 11/4/2013

Name and Address of User: LV OAK KNOLL LLC, 19800 MacArthur, Suite 500 Irvine, CA 92612

Name and Address of Subject Property: 8750 Mountain Ave, Oakland 94605

User's Responsibility: *The purpose of this questionnaire is to identify the possibility of recognized environmental conditions in connection with the subject property known by User of the Phase I ESA.*

Question 1: Checking title records for environmental liens or activity and land use restrictions.

1A. Have recorded land title reports been obtained with regard to the subject property(s)? ☒ Yes ☐ No

Has information been forwarded to Phase I preparer? ☒ Yes ☐ No

1B. Based on a review of the recorded land title report, are their any of the following recorded against the subject property? *(Please check all that apply)*

☐ Environmental liens ☐ Other_____

☐ Activity and land use limitations ☒ None

Has information been forwarded to Phase I preparer? ☒ Yes ☐ No

Question 2: Is the User aware of any of the following that is material to recognized environmental conditions in connection with the subject property?

☐ Specialized knowledge ☐ Other_____

☐ Experience ☒ None

Has information been forwarded to Phase I preparer? ☒ Yes ☐ No

Question 3: The purpose for conducting a Phase I Environmental Site Assessment? *(Please check all that apply)*

☐ Qualify for the innocent landowner defense limitations on CERCLA liability.

☐ Qualify for the bona fide prospective purchaser limitations on CERCLA liability.

☒ To understand potential environmental conditions impacting the property.

☐ Other_____

Question 4: Does the User have *actual knowledge* that the purchase price of the *property* is significantly less than the purchase price of comparable properties? ☐ Yes ☒ No

If yes, provide an explanation for the lower price:_____

_____

_____

Question 5: Is any of the following information available regarding the subject property(s)? *(Please check all that apply)*

- ☒ Site/Base Maps.
- ☒ Assessors Parcel Number(s) [APN].____
- ☒ Environment investigation/remediation/closure documents.
- ☐ Environmental permits (for example, solid waste disposal permits, hazardous waste disposal permits, wastewater permits, NPDES permits).
- ☐ Registrations for underground and aboveground storage tanks.
- ☐ Material safety data sheets.
- ☐ Community right-to-know plan.
- ☐ Safety plans; preparedness and prevention plans; spill prevention, countermeasure, and control plans; etc.
- ☒ Reports regarding hydrogeologic conditions on the property or surrounding area
- ☐ Notices or other correspondence from any government agency relating to past or current violations of environmental laws with respect to the property or relating to environmental liens encumbering the property.
- ☐ Hazardous waste generator notices or reports.
- ☒ Geotechnical studies.
- ☒ Information regarding historical site usage, e.g., aerial photographs, infrastructure drawings, utility maps, topographic maps, operations, waste disposal practices.

Question 6: As the User of this Phase I ESA, based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property? (*If Yes, please forward documentation to Phase I ESA preparer*)

☐ Yes ☐ No ☒ Unknown

Planned future development use:

☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural

Current property zoning/usage:

☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural

Has above information been forwarded to Phase I preparer? ☐ Yes ☒ No

WEST
Environmental Services & Technology
711 Grand Avenue, Suite 220
San Rafael, California 94901
415.460.6770 • Fax 415.460.6771
main@westenvironmental.com

Name/Title of Individual Completing Questionnaire:	Eric Higuchi
Phone No./Email Address:	949 260 4672
Property Name:	Oak Knoll
Property Address:	8750 Mountain Blvd, Oakland, CA 94605

PHASE I ESA INTERVIEW QUESTIONNAIRE

Owner/Occupant/Site Manager Inquiry	Response: Yes	No	Unk
1a. Is the property used for industrial purposes? Specify:		X	
1b. Is any adjoining property used for industrial purposes? Specify:		X	
2a. Did you observe evidence or do you have any prior knowledge that the property has been used for industrial purposes in the past? Specify:		X	
2b. Did you observe evidence or do you have any prior knowledge that any adjoining property has been used for industrial purposes in the past? Specify:			X
3a. Is the property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?			X
3b. Is any adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?		X	
4a. Did you observe evidence or do you have any prior knowledge that the property has been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?			X
4b. Did you observe evidence or do you have any prior knowledge that any adjoining property has been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?			X

PHASE I ESA INTERVIEW QUESTIONNAIRE

Owner/Occupant/Site Manager Inquiry	Response		
	Yes	No	Unk
5a. Are any damaged or discarded automotive or industrial batteries, pesticides, paints, or other chemicals in individual containers of greater than 5 gallons in volume or 50 gallons in the aggregate currently stored on or used at the property or at the facility?	X		X
5b. Did you observe evidence or do you have prior knowledge that any damaged or discarded automotive or industrial batteries, pesticides, paints, or other chemicals in individual containers of greater than 5 gallons in volume or 50 gallons in the aggregate have previously been stored on or used at the property or at the facility?			X
6a. Are any industrial drums (typically, 55 gallons) or sacks of chemicals currently located on the property or at the facility?			X
6b. Did you observe evidence or do you have prior knowledge that any industrial drums (typically, 55 gallons) or sacks of chemicals have previously been located on the property or at the facility?			X
7a. Did you observe evidence or do you have prior knowledge that fill dirt that originated from a contaminated site has been brought into the property?			X
7b. Did you observe evidence or do you have prior knowledge that fill dirt that is of an unknown origin has been brought into the property?			X
8a. Did you observe evidence or do you have prior knowledge that any pits, ponds, or lagoons in connection with waste treatment or waste disposal have previously been located on the property?		X	
8b. Are any pits, ponds, or lagoons in connection with waste treatment or waste disposal currently located on the property?		X	
9a. Is any stained soil currently on the property?			X
9b. Did you observe evidence or do you have prior knowledge that any stained soil has previously been on the property?		X	
10a. Are any registered or unregistered storage tanks (aboveground or underground) currently located on the property?			X
10b. Did you observe evidence or do you have prior knowledge that any registered or unregistered storage tanks (aboveground or underground) have previously been located on the property?			X

PHASE I ESA INTERVIEW QUESTIONNAIRE

Owner/Occupant/Site Manager Inquiry	Response		
	Yes	No	Unk
11a. Are any vent pipes, fill pipes or access ways indicating a fill pipe protruding from the ground currently located on the property or adjacent to any structure located on the property?			X
11b. Did you observe evidence or do you have prior knowledge that any vent pipes, fill pipes or access ways indicating a fill pipe protruding from the ground have previously been located on the property or adjacent to any structure located on the property?			X
12a. Are any flooring, drains, or walls that are stained by substances other than water or are emitting foul odors currently located within the facility?		X	
12b. Did you observe evidence or do you have prior knowledge that any flooring, drains, or walls that are stained by substances other than water or are emitting foul odors have previously been located within the facility?		X	
13a. If the property is served by a private well or nonpublic water system, is there evidence or do you have prior knowledge that contaminants have been identified in the well or system that exceed guidelines applicable to the water system?		X	
13b. If the property is served by a private well or nonpublic water system, is there evidence or do you have prior knowledge that that the well has been designated as contaminated by any government environmental or health agency?		X	
14. Does the owner or occupant of the property have any knowledge of environmental liens or governmental notification relating to past or recurrent violations of environmental laws with respect to the property or any facility located on the property?		X	
15a. Has the owner or occupant of the property been informed of the past existence of hazardous substances or petroleum products with respect to the property or any facility located on the property?	X		
15a. Has the owner or occupant of the property been informed of the current existence of hazardous substances or petroleum products with respect to the property or any facility located on the property?		X	
15c. Has the owner or occupant of the property been informed of the past existence of environmental violations with respect to the property or any facility located on the property?		?	X
15d. Has the owner of occupant of the property been informed of the current existence of environmental violations with respect to the property or any facility located on the property?		X	

PHASE I ESA INTERVIEW QUESTIONNAIRE

Owner/Occupant/Site Manager Inquiry	Response: Yes	No	Unk
16. Does the owner or occupant of the property have any knowledge of environmental site assessment of the property or facility that indicate the presence of hazardous substances or petroleum products on, or contamination of, the property or recommended further assessment of the property?	X		
17. Does the owner or occupant of the property know of any past, threatened or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substance or petroleum product involving the property?		X	
18a. Does the property discharge waste water on or adjacent to the property, other than stormwater into a stormwater system?		X	
18b. Does the property discharge waste water on or adjacent to the property, other than stormwater into a sanitary system?		X	
19. Did you observe evidence or do you have any prior knowledge that any hazardous substances or petroleum products, unidentified waste materials, tires, automotive or industrial batteries, or any other waste materials have been dumped above grade, buried, and/or buried on the property? Transformers	X		
20. Do any records exist indicating the presence of polychlorinated biphenyls (PCBs) for (a transformer,) capacitor, or any hydraulic equipment?	X		
21. Does the owner or occupant have any knowledge of any asbestos-containing materials or presumed asbestos-containing materials on any facility located on the property?	X		

Completed by (Signature)	Title	Date
[signature]	AVP	1/4/13

Plant number	235 A0235
Business name	Naval Hospital, Oakland
Location address	8750 Mountain Blvd, Bldg 63B
City	Oakland, CA 94627
Telephone	(510) 633-6302
Mailing address	8750 Mountain Blvd, Bldg 63B
City	Oakland, CA 94627
Principal product	Medical Services
SIC	
Parent company	U S Navy, Bureau of Medicine & Surgery
Contact	Larry Douchand (00EM)
Title	Environmental Program Manager
Address	8750 Mountain Blvd, Bldg 63B
City	Oakland, CA 94627
Telephone	(510) 633-6302
Permit engr, Current ...	Catherine S Fortney (586)
Former	John C Chiladakis (584)
Ownership type	Federal Government
Number of employees	597
Property area, acres ...	220
Inside city limits	Yes
Ceased operation	Jun 30, 1997, Closed

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          Plant #: 235
     Company name: Naval Hospital, Oakland
         Location: 8750 Mountain Blvd, Bldg 63B, Oakland, CA  94627


    Application #: 31968
    Project title: Boilers
         Engineer: Scott B Lutz [393 ]
         Received: 10/14/86
Final disposition: A/C granted, 05/15/87

    Application #: 32501
       Banking #: 80
    Project title: Banking
         Engineer: Scott B Lutz [393 ]
         Received: 03/17/87
Final disposition: Waived A/C, 09/29/92


    Application #: 1906
    Project title: Sterilizer
         Engineer: Timothy J Smith [433 ]
         Received: 09/28/88
Final disposition: Waived A/C, 02/27/89

    Application #: 9878
    Project title: Sterilizer
         Engineer: John C Chiladakis [584 ]
         Received: 10/08/92
Final disposition: A/C granted, 11/20/92

    Application #: 15240
    Project title: Ethylene Oxide Sterilizer
         Engineer: Catherine S Fortney [586 ]
         Received: 10/04/95
Final disposition: Waived A/C, 02/26/96

    Application #: 17814
       Banking #: 555
    Project title: Banking: shutdown of sources 10,11,12,13
         Engineer: Catherine S Fortney [586 ]
         Received: 08/15/97
Final disposition: Waived A/C, 12/12/97

    Application #: 20031
    Project title: GDF - new facility
         Engineer: Nancy M Yee [297 ]
         Received: 06/23/86
Final disposition: Waived A/C, 10/01/86

    Application #: 20147
    Project title: GDF - new facility
         Engineer: Nancy M Yee [297 ]
         Received: 06/17/86
Final disposition: Waived A/C, 08/18/86

list ALL applic by PLANT NUMBER (options: Current/ Archive) >>
```

City of Oakland
Fire Prevention Bureau
250 Frank H. Ogawa Plaza, Suite 3341
Oakland, CA 94612

Hazardous Materials File Review Request

Date: 10/28/13

Email to: **cpacheco@oaklandnet.com**

If you choose to fax, forward form to Celestina Pacheco at: 510-238-6739

Direct Number: 510-238-7760
Main Fire Prevention Bureau Number: 510-238-3462

Contact Information

Contact First and Last Name: Sue Bartel
Company Name: WEST, Inc.
Company Address: 711 Grand Avenue, Suite 220, San Rafael CA 94901
Contact Phone Numbers: 415/460-6770

Addresses
Oakland Naval Hospital/Oak Knoll Naval Hospital – 8750 Mountain Boulevard

Additional Notes:__West would like to review all available files/plans/permits/hazardous material/UST records for the above mentioned address.

☐ **No files for address(es) listed above.**
Name:
Title:
Phone:
Signature:

Microsoftword:filereviewrequestform2012

Fidelity National Title Company

AMENDED PRELIMINARY REPORT

In response to the application for a policy of title insurance referenced herein, ***Fidelity National Title Company*** *hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a policy or policies of title insurance describing the land and the estate or interest therein hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referred to as an exception herein or not excluded from coverage pursuant to the printed Schedules, Conditions and Stipulations or Conditions of said policy forms.*

The printed Exceptions and Exclusions from the coverage and Limitations on Covered Risks of said policy or policies are set forth in Attachment One. The policy to be issued may contain an arbitration clause. When the Amount of Insurance is less than that set forth in the arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. Limitations on Covered Risks applicable to the CLTA and ALTA Homeowner's Policies of Title Insurance which establish a Deductible Amount and a Maximum Dollar Limit of Liability for certain coverages are also set forth in Attachment One. Copies of the policy forms should be read. They are available from the office which issued this report.

This report (and any supplements or amendments hereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance, a Binder or Commitment should be requested.

The policy(s) of title insurance to be issued hereunder will be policy(s) of Fidelity National Title Insurance Company, a California Corporation.

Please read the exceptions shown or referred to herein and the exceptions and exclusions set forth in Attachment One of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters which are not covered under the terms of the title insurance policy and should be carefully considered.

It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects and encumbrances affecting title to the land.

Countersigned by:

Authorized Signature

BY President

ATTEST Secretary

Authorized Signature

Fidelity National Title Company
1300 Dove Street, Suite 310, Newport Beach, CA 92660
Phone: (949) 622-5000• Fax: (949) 221-4720

PRELIMINARY REPORT

Amended

Title Officer: Patti Porter (BS) Order No.: 996-**23016000**-C-PP1

TO:
Lehman Holdings, Inc
19800 MacArthur Blvd, Suite 50
Irvine, CA 92612

ATTN: .**Lisa Gordon**
YOUR REFERENCE: **OAK KNOLL**

PROPERTY ADDRESS: Oak Knoll, Oakland, CA

EFFECTIVE DATE: September 9, 2013 at 7:30 a.m.

The form of policy or policies of title insurance contemplated by this report is:

CLTA Std. Owner's

1. THE ESTATE OR INTEREST IN THE LAND HEREINAFTER DESCRIBED OR REFERRED TO COVERED BY THIS REPORT IS:

   A FEE

2. TITLE TO SAID ESTATE OR INTEREST AT THE DATE HEREOF IS VESTED IN:

   LV OAK KNOLL LLC, a Delaware limited liability company

3. THE LAND REFERRED TO IN THIS REPORT IS DESCRIBED AS FOLLOWS:

   See Exhibit A attached hereto and made a part hereof.

/jh 10/10/12

LEGAL DESCRIPTION

EXHIBIT "A"

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF OAKLAND, COUNTY OF ALAMEDA, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1:

CIVIL NO. 22087-R (FINAL JUDGMENT FILED JANUARY 16, 1943 IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA SOUTHERN DIVISION)

PORTION OF THE 349 ACRE TRACT OF LAND IN THE PORTION OF THE RANCHO SAN ANTONIO FINALLY CONFIRMED TO YGNACIO PERALTA, WHICH WAS CONVEYED BY SAID YGNACIO PERALTA AND RAFAELA S. DE PERALTA TO LUDEVINA IVEY, BY DEED DATED SEPTEMBER 4, 1871, RECORDED SEPTEMBER 7, 1871, IN BOOK 69 OF DEEDS, AT PAGE 457, ALAMEDA COUNTY RECORDS (WHICH TRACT IS DESIGNATED IN SAID DEED AS BEING DESCRIBED ACCORDING TO A SURVEY OF THE HILLS OF THE RANCHO OF SAID YGNACIO PERALTA ON AUGUST 28, 1871 BY LUIS CASTRO, SURVEYOR OF SAID COUNTY, AND BEING MARKED AND KNOWN IN SAID SURVEY AS DIVISION NO. 2), AND A PORTION OF THE 349 ACRE TRACT IN SAID PORTION OF THE RANCHO SAN ANTONIO WHICH WAS CONVEYED BY SAID YGNACIO PERALTA AND RAFAELA S. DE PERALTA TO RAFAEL MARTINEZ, ET AL, BY DEED DATED SEPTEMBER 4, 1871, RECORDED OCTOBER 7, 1871, IN BOOK 69 OF DEEDS, AT PAGE 468, ALAMEDA COUNTY RECORDS (WHICH TRACT IS DESIGNATED IN SAID DEED AS BEING DESCRIBED ACCORDING TO SAID SURVEY AND BEING MARKED AND KNOWN IN SAID SURVEY AS DIVISION NO. 3), DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTHWESTERN LINE OF THE 349 ACRE TRACT, FIRSTLY ABOVE REFERRED TO, WITH THE NORTHEASTERN LINE OF MOUNTAIN BOULEVARD, AS DESCRIBED IN THE DEED BY ARTHUR D. KING AND FLORENCE J. KING TO CITY OF OAKLAND, DATED APRIL 30, 1937, RECORDED OCTOBER 5, 1937, IN BOOK 3523 OF OFFICIAL RECORDS OF ALAMEDA COUNTY, AT PAGE 329; AND RUNNING THENCE ALONG SAID LINE OF MOUNTAIN BOULEVARD, AS FOLLOWS:

SOUTH 24° 22' 40" EAST, 622.17 FEET; THENCE SOUTHEASTERLY, TANGENT TO THE LAST NAMED COURSE, ON A CURVE TO THE LEFT WITH A RADIUS OF 1040 FEET, A DISTANCE OF 420.03 FEET; THENCE SOUTH 47° 31' 05" EAST, 584.75 FEET; THENCE SOUTHEASTERLY, TANGENT WITH THE LAST NAMED COURSE, ON A CURVE TO THE RIGHT WITH A RADIUS OF 1060 FEET, A DISTANCE OF 760.47 FEET; THENCE SOUTH 6° 24' 46" EAST, 307.83 FEET; THENCE SOUTHEASTERLY, TANGENT WITH THE LAST NAMED COURSE, ON A CURVE TO THE LEFT WITH A RADIUS OF 1140 FEET, A DISTANCE OF 301.44 FEET; THENCE SOUTH 21° 33' 46" EAST, 268.85 FEET TO THE NORTHWESTERN LINE OF THE 29.017 ACRE TRACT OF LAND DESCRIBED IN THE DEED BY ARTHUR D. KING AND FLORENCE L. KING TO OAK KNOLL LAND CORPORATION, DATED DECEMBER 11, 1928, RECORDED FEBRUARY 16, 1929, IN BOOK 2086 OF SAID OFFICIAL RECORDS OF ALAMEDA COUNTY, AT PAGE 47; THENCE ALONG THE LAST NAMED LINE, NORTH 77° 23' 20" EAST, 181.06 FEET TO THE NORTHERN LINE OF OAK KNOLL BOULEVARD, AS SAID BOULEVARD IS SHOWN ON THE MAP OF "FAIRWAY ESTATES IN OAK KNOLL, OAKLAND, ALAMEDA COUNTY, CALIFORNIA", FILED MARCH 14, 1929, IN BOOK 18 OF MAPS, AT PAGES 59, 60 AND 61, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY; THENCE ALONG THE LAST NAMED LINE AND ALONG THE WESTERN LINE OF BARCELONA STREET, FORMERLY OAK KNOLL BOULEVARD, AS SHOWN ON SAID MAP, AS FOLLOWS:

NORTHEASTERLY ON A CURVE TO THE LEFT WITH A RADIUS OF 200 FEET, A DISTANCE OF 60.13 FEET; THENCE NORTH 44° 15' EAST, 108.39 FEET; THENCE EASTERLY, TANGENT TO THE LAST NAMED COURSE, ON A CURVE TO THE RIGHT WITH A RADIUS OF 150 FEET, A DISTANCE OF 158.46 FEET; THENCE SOUTH 75° 13' 20" EAST, 36.79 FEET; THENCE EASTERLY, TANGENT WITH THE LAST NAMED COURSE, ON A CURVE TO THE LEFT, WITH A RADIUS OF 200 FEET, A DISTANCE OF 238.33 FEET; THENCE NORTH 36° 30' EAST, 162.17 FEET; THENCE NORTHERLY, TANGENT WITH THE LAST NAMED

COURSE, ON A CURVE TO THE LEFT WITH A RADIUS OF 90.64 FEET, A DISTANCE OF 108 FEET; THENCE NORTH 31° 46' 15" WEST, 907.58 FEET, TO THE NORTHWESTERN LINE OF SAID "FAIRWAY ESTATES IN OAK KNOLL", AS SHOWN ON SAID MAP THEREOF; THENCE ALONG THE LAST NAMED LINE AND ALONG THE NORTHWESTERN LINE OF THE 58.16 ACRE TRACT OF LAND DESCRIBED IN THE DEED BY WILLIAM H. IVEY TO FRANCISCO PERALTA, DATED JULY 3, 1873, RECORDED JULY 3, 1873, IN BOOK 92 OF DEEDS, AT PAGE 115, ALAMEDA COUNTY RECORDS, NORTH 58° 13' 45" EAST, 4700 FEET; THENCE NORTH 31° 46' 15" WEST, 2250 FEET, MORE OR LESS, TO THE NORTHWESTERN LINE OF SAID 349 ACRE TRACT CONVEYED TO RAFAEL MARTINEZ, ET AL; THENCE ALONG THE LAST NAMED LINE, SOUTH 58° 10' 38" WEST, 2600 FEET, MORE OR LESS, TO THE EASTERN LINE OF THE 1 ACRE PARCEL OF LAND DESCRIBED IN THE DEED BY ARTHUR D. KING AND FLORENCE L. KING TO EAST BAY WATER COMPANY, DATED SEPTEMBER 17, 1924 AND RECORDED SEPTEMBER 19, 1924, IN BOOK 766 OF SAID OFFICIAL RECORDS, AT PAGE 472; THENCE ALONG THE LAST NAMED LINE, SOUTH 12° 10' 38" WEST, 252.32 FEET; THENCE SOUTH 58° 10' 38" WEST, 240 FEET; THENCE NORTH 12° 10' 38" EAST, 252.32 FEET TO THE NORTHWESTERN LINE OF THE LAST MENTIONED 349 ACRE TRACT; THENCE ALONG THE LAST NAMED LINE AND EXTENSION THEREOF, SOUTH 58° 10' 38" WEST, 2500 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

PARCEL 2:

CIVIL NO. 22276-S (AMENDED FINAL JUDGMENT FILED AUGUST 1, 1944 IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA SOUTHERN DIVISION. A COPY OF WHICH RECORDED ON OCTOBER 21, 1944 IN LIBER 4582, PAGE 486, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA)

A PORTION OF PARCEL 10 AS DESCRIBED IN THE DEED FROM ELSIE LAIRD TO HUTCHINSON REALTY COMPANY, DATED NOVEMBER 28, 1933, RECORDED FEBRUARY 28, 1934, IN BOOK 2995 OF OFFICIAL RECORDS OF ALAMEDA COUNTY, PAGE 409, DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTHEASTERN LINE OF MOUNTAIN BOULEVARD, AS SAID LINE OF MOUNTAIN BOULEVARD IS DEFINED IN THE DEED BY HUTCHINSON REALTY COMPANY TO THE CITY OF OAKLAND, DATED JUNE 18, 1937, RECORDED JULY 23, 1937, IN BOOK 3489 OF OFFICIAL RECORDS OF ALAMEDA COUNTY, PAGE 346, WITH THE NORTHERN LINE OF SAID PARCEL 10; RUNNING THENCE ALONG SAID LINE OF SAID PARCEL 10, NORTH 77° 23' 20" EAST, 181.06 FEET TO THE MOST EASTERN CORNER OF SAID PARCEL 10; THENCE ALONG THE NORTHWESTERN LINE OF OAK KNOLL BOULEVARD, AS SAID BOULEVARD IS SHOWN ON THE MAP OF "FAIRWAY ESTATES IN OAK KNOLL, OAKLAND, ALAMEDA COUNTY, CALIFORNIA", FILED MARCH 14, 1929, IN BOOK 18 OF MAPS, PAGES 59, 60 AND 61, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY, AS FOLLOWS: SOUTHWESTERLY ON THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 200 FEET, A DISTANCE OF 15.30 FEET; THENCE ON THE ARC OF A REVERSE CURVE TO THE LEFT WITH A RADIUS OF 200 FEET, A DISTANCE OF 50.70 FEET; THENCE TANGENT WITH THE LAST NAMED COURSE, SOUTH 51° 20' WEST, 51.37 FEET TO THE MOST EASTERN CORNER OF SAID LAND DESCRIBED IN SAID LAST MENTIONED DEED; THENCE ALONG THE NORTHERN LINE OF SAID LAND DESCRIBED IN SAID LAST MENTIONED DEED, WESTERLY AND NORTHWESTERLY ON THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 50 FEET, A DISTANCE OF 93.47 FEET TO A POINT ON SAID LINE OF MOUNTAIN BOULEVARD, FROM WHICH THE CENTER OF SAID CURVE HAVING A RADIUS OF 50 FEET BEARS NORTH 68° 26' 14" EAST, 50 FEET; THENCE ALONG SAID LINE OF MOUNTAIN BOULEVARD, NORTH 21° 33' 46" WEST, 5.40 FEET TO THE POINT OF BEGINNING.

PARCEL 3:

CIVIL NO. 24608-G (JUDGMENT FILED JUNE 4, 1945 IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA SOUTHERN DIVISION. A COPY OF WHICH RECORDED ON JUNE 11, 1945 IN LIBER 4742, PAGE 23, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA)

BEGINNING AT THE INTERSECTION OF THE SOUTHERN LINE OF PLOT LETTERED "P", NOW KNOWN AS ST. ANDREWS ROAD, WITH THE DIVIDING LINE BETWEEN LOTS NUMBERED 175 AND 177, AS SAID

PLOT AND LOTS ARE SHOWN ON THE MAP ENTITLED, "MAP OF SUBDIVISION OF SEQUOYAH HILLS, OAKLAND, CALIFORNIA", FILED FOR RECORD APRIL 3, 1914, IN BOOK 28 OF MAPS, AT PAGES 63 AND 64, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY, AND RUNNING THENCE ALONG SAID DIVIDING LINE, SOUTH 11° 13' 40" WEST, 113.00 FEET TO THE CORNER COMMON TO LOTS NUMBERED 175, 176 AND 177, AS SHOWN ON SAID MAP (THE BEARING OF SAID DIVIDING LINE BEING TAKEN AS SOUTH 11° 13' 40" WEST FOR THE PURPOSE OF MAKING THIS DESCRIPTION); THENCE ALONG THE DIVIDING LINE BETWEEN LOTS NUMBERED 175 AND 176, AS SHOWN ON SAID MAP, SOUTH 74° 30' 30" WEST, 186.61 FEET TO THE CORNER COMMON TO LOTS NUMBERED 173, 174, 175 AND 176, AS SHOWN ON SAID MAP; THENCE SOUTH 61° 20' 30" WEST, 312.88 FEET TO THE MOST EASTERN CORNER OF LOT F 12, AS SAID LOT IS SHOWN ON THE MAP ENTITLED, "FAIRWAY ESTATES IN OAK KNOLL, OAKLAND, ALAMEDA COUNTY, CALIFORNIA", FILED FOR RECORD MARCH 14, 1929, IN BOOK 18 OF MAPS, AT PAGES 59 AND 60, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY; THENCE ALONG THE DIVIDING LINE BETWEEN LOTS F 12 AND F 13, AS SHOWN ON THE LAST-NAMED MAP, SOUTH 58° 13' WEST, 110.00 FEET TO THE NORTHEASTERN LINE OF BARCELONA STREET, FORMERLY OAK KNOLL BOULEVARD, AS SAID BOULEVARD IS SHOWN ON THE LAST-NAMED MAP; THENCE ALONG SAID NORTHEASTERN LINE, SOUTH 31° 47' EAST, 27.58 FEET; THENCE CONTINUING ALONG SAID NORTHEASTERN LINE, ALONG THE ARC OF A CURVE TO THE RIGHT, FROM A TANGENT BEARING SOUTH 31° 47' EAST, WITH A RADIUS OF 140.64 FEET, THROUGH AN ANGLE OF 68° 16' 15", FOR A DISTANCE OF 167.58 FEET; THENCE NORTH 53° 30' 45" WEST, 50.00 FEET TO THE WESTERN LINE OF SAID BOULEVARD; THENCE ALONG THE LAST NAMED LINE, ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING NORTH 36° 29' 15" EAST, WITH A RADIUS OF 90.64 FEET, THROUGH AN ANGLE OF 68° 16' 15", FOR A DISTANCE OF 108.00 FEET; THENCE ALONG THE SOUTHWESTERN LINE OF SAID BOULEVARD, NORTH 31° 47' WEST, 907.58 FEET TO THE INTERSECTION THEREOF WITH THE DIRECT EXTENSION SOUTHWESTERLY OF THE NORTHWESTERN LINE OF LOT F 1, AS SHOWN ON SAID MAP; THENCE ALONG SAID EXTENSION AND ALONG THE NORTHWESTERN LINE OF SAID LOT F 1, NORTH 58° 13' EAST, 160.00 FEET TO THE MOST NORTHERN CORNER OF SAID LOT F 1; THENCE ALONG THE NORTHEASTERN LINE OF LOTS F 1 TO F 9, INCLUSIVE, AS SHOWN ON THE LAST NAMED MAP, SOUTH 31° 47' EAST, 599.89 FEET TO THE INTERSECTION THEREOF WITH THE DIRECT EXTENSION SOUTHWESTERLY OF THE NORTHWESTERN LINE OF LOT NUMBERED 170, AS SAID LOT IS SHOWN ON THE MAP FIRSTLY HEREINABOVE REFERRED TO; THENCE ALONG THE LAST-NAMED EXTENSION, ALONG THE NORTHWESTERN LINE OF SAID LOT NUMBERED 170 AND ALONG THE DIRECT EXTENSION NORTHEASTERLY OF SAID NORTHWESTERN LINE, NORTH 37° 21' EAST, 215.53 FEET TO THE NORTHERN LINE OF SAID PLOT LETTERED "P"; THENCE ALONG THE LAST-NAMED LINE, AS FOLLOWS: EASTERLY ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING SOUTH 52° 39' EAST, WITH A RADIUS OF 210.00 FEET, THROUGH AN ANGLE OF 33° 28' 20", FOR A DISTANCE OF 122.67 FEET; THENCE SOUTH 86° 07' 20" EAST, 284.63 FEET; THENCE ALONG THE ARC OF A CURVE TO THE RIGHT, FROM A TANGENT BEARING SOUTH 86° 07' 20" EAST, WITH A RADIUS OF 792.00 FEET, THROUGH AN ANGLE OF 16° 23' FOR A DISTANCE OF 226.47 FEET; THENCE ALONG THE ARC OF A CURVE TO THE RIGHT, FROM A TANGENT BEARING SOUTH 69° 44' 20" EAST, WITH A RADIUS OF 187.49 FEET, THROUGH AN ANGLE OF 48° 04' 20", FOR A DISTANCE OF 157.30 FEET; THENCE ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING SOUTH 31° 40' EAST, WITH A RADIUS OF 20.00 FEET, THROUGH AN ANGLE OF 73° 39' 20", FOR A DISTANCE OF 25.71 FEET TO THE NORTHERN LINE OF PLOT LETTERED "E", NOW KNOWN AS SEQUOYAH ROAD, AS SAID PLOT "E" IS SHOWN ON THE MAP FIRSTLY HEREINABOVE REFERRED TO; THENCE ALONG THE LAST-NAMED LINE, ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING SOUTH 84° 40' 40" WEST, WITH A RADIUS OF 327.00 FEET, THROUGH AN ANGLE OF 10° 52' 20", FOR A DISTANCE OF 62.05 FEET; THENCE LEAVING THE LAST NAMED LINE AND RUNNING ALONG THE SOUTHERN LINE OF SAID PLOT LETTERED "P", ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING NORTH 73° 48' 20" EAST, WITH A RADIUS OF 20.00 FEET, THROUGH AN ANGLE OF 100° 26' 50", FOR A DISTANCE OF 35.06 FEET; THENCE CONTINUING ALONG SAID SOUTHERN LINE, ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING NORTH 26° 38' 30" EAST, WITH A RADIUS OF 163.49 FEET, THROUGH AN ANGLE OF 43° 05' 50", FOR A DISTANCE OF 122.98 FEET; THENCE CONTINUING ALONG SAID SOUTHERN LINE, ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING NORTH 69° 44' 20" WEST, WITH A RADIUS OF 768.00 FEET, THROUGH AN ANGLE OF 9° 02', FOR A DISTANCE OF 121.08 FEET TO THE POINT OF BEGINNING.

PARCEL 4:

QUITCLAIM DEED (ANMAR INVESTMENTS INCORPORATED TO UNITED STATES OF AMERICA RECORDED IN OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA, JULY 16, 1980 AS DOCUMENT NO. 80-119199).

A PARCEL OF LAND LYING IN THE CITY OF OAKLAND, COUNTY OF ALAMEDA, STATE OF CALIFORNIA, BEING A PORTION OF THAT CERTAIN PARCEL OF LAND LYING IN PARCEL 2 AS DESCRIBED BY QUIT CLAIM DEED FILED FOR RECORD IN SAID COUNTY AT REEL 5703, IMAGE 51, DATED DECEMBER 4, 1978, DESCRIBED AS FOLLOWS:

COMMENCING FOR POINT OF REFERENCE AT THE SOUTHWESTERLY CORNER OF SAID PARCEL 2;

(I) THENCE ALONG THE WESTERLY AND NORTHERLY BOUNDARY LINE OF SAID PARCEL 2, ALONG A NON-TANGENT CURVE TO THE RIGHT HAVING A RADIAL BEARING OF NORTH 57° 58' 24" EAST FROM THE BEGINNING OF CURVE TO THE POINT OF RADIUS, A RADIUS OF 150.00 FEET, THROUGH A CENTRAL ANGLE OF 73° 30' 00", FOR AN ARC LENGTH OF 192.42 FEET;

(II) THENCE CONTINUING ALONG SAID NORTHERLY BOUNDARY LINE, NORTH 41° 14' 37" EAST, 88.16 FEET TO THE TRUE POINT OF BEGINNING.

1. THENCE LEAVING SAID NORTHERLY BOUNDARY LINE, SOUTH 48° 45' 23" EAST, 22.00 FEET;

2. THENCE PARALLEL WITH SAID NORTHERLY BOUNDARY LINE, NORTH 41° 14' 37" EAST, 93.00 FEET;

3. THENCE NORTH 48° 45' 23" WEST, 22.00 FEET TO SAID NORTHERLY BOUNDARY LINE;

4. THENCE ALONG SAID NORTHERLY BOUNDARY LINE, SOUTH 41° 14' 37" WEST, 93.00 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPTING FROM THE LANDS DESCRIBED HEREINABOVE AS PARCELS 1 THROUGH 4, THE FOLLOWING:

(A) QUITCLAIM DEED TO SEACREST COMPANY, A CO-PARTNERSHIP, ET AL, RECORDED MARCH 8, 1962, IN REEL 531, IMAGE 519, DOCUMENT NO. AT-30784, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(B) QUITCLAIM DEED TO THE CITY OF OAKLAND, A MUNICIPAL CORPORATION, RECORDED SEPTEMBER 26, 1978, IN REEL 5597, IMAGE 223, DOCUMENT NO. 78-187144, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(C) QUITCLAIM DEED TO WILLIAM A. HARDENSTINE, ET UX, RECORDED DECEMBER 4, 1978, IN REEL 5703, IMAGE 51, DOCUMENT NO. 78-236024, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(D) QUITCLAIM DEED TO THE SENECA RESIDENTIAL AND DAY TREATMENT CENTER FOR CHILDREN, RECORDED JANUARY 30, 2002, SERIES NO. 2002048897, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(E) QUITCLAIM DEED TO SEA WEST COAST GUARD FEDERAL CREDIT UNION, RECORDED MAY 7, 2002, SERIES NO. 2002202441, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(F) QUITCLAIM DEED TO THE REDEVELOPMENT AGENCY OF THE CITY OF OAKLAND, A STATE OF CALIFORNIA AGENCY, RECORDED AUGUST 15, 2005, AS SERIES NO. 2005348212 IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY, CALIFORNIA AND SHOWN AS PARCEL A ON PARCEL MAP 8730 FILED OCTOBER 3, 2005 IN BOOK 284 OF MAPS AT PAGES 63-65 IN THE OFFICE OF THE COUNTY RECORDER OF SAID ALAMEDA COUNTY.

ASSESSOR'S PARCEL NO'S.

043A-4675-003-21
048-6865-002-03
048-6870-001

NOTE: ASSESSOR PARCEL NUMBERS ARE SHOWN STRICTLY AS AN ACCOMMODATION AND FOR REFERENCE ONLY AND ARE NOT A PART OF THE LEGAL DESCRIPTION. THE LAND BEING INSURED UNDER THE POLICY IS THE LAND SET FORTH AND DESCRIBED IN THE LEGAL DESCRIPTION OF SCHEDULE A. THE COMPANY DISCLAIMS ANY LIABILITY FOR THE ACCURACY OF ASSESSOR PARCEL NUMBERS IN DESCRIBING LAND TO BE INSURED.

AT THE DATE HEREOF, ITEMS TO BE CONSIDERED AND EXCEPTIONS TO COVERAGE IN ADDITION TO THE PRINTED EXCEPTIONS AND EXCLUSIONS IN SAID POLICY FORM WOULD BE AS FOLLOWS:

1. Property taxes, which are a lien not yet due and payable, including any assessments collected with taxes to be levied for the fiscal year 2013-2014.

   Property taxes, including any personal property taxes and any assessments collected with taxes are as follows:

Code Area:	17-038
Tax Identification No.:	043A-4675-003-21
Fiscal Year:	2012-2013
1st Installment:	$828,625.74, Paid
2nd Installment:	$828,625.74, Paid
Land:	$116,361,652.00
Improvements:	$0.00

   Property taxes, including any personal property taxes and any assessments collected with taxes are as follows:

Code Area:	17-038
Tax Identification No.:	048-6865-002-03
Fiscal Year:	2012-2013
1st Installment:	$2,003.52, Paid
2nd Installment:	$2,003.52, Paid
Land:	$245,000.00
Improvements:	$0.00

   Property taxes, including any personal property taxes and any assessments collected with taxes are as follows:

Code Area:	17-038
Tax Identification No.:	048-6870-001-00
Fiscal Year:	2012-2013
1st Installment:	$2,038.66, Paid
2nd Installment:	$2,038.66, Paid
Land:	$250,000.00
Improvements:	$0.00

2. The lien of supplemental taxes, if any, assessed pursuant to the provisions of Chapter 3.5 (commencing with Section 75) of the Revenue and Taxation Code of the State of California, as a result of the transfer of the Title to the vestee named in Schedule A, or as a result of changes in ownership or new construction occurring prior to Date of Policy.

3. Rights of the Public and the City of Oakland over that portion of premises lying within the lines of Barcelona Street, formerly Oak Knoll Boulevard, and St. Andrews Road, as the same now exists.

4. Easement(s) for the purpose(s) shown below and rights incidental thereto as condemned by Final Decree of Condemnation,

Superior Court of:	Alameda
County Case No.:	not shown
In favor of:	Bay Counties Power Company
Purpose:	Telephone, telegraph and electric power lines
Recorded:	January 2, 1908, Book 1408 of Deeds, Page 298,
Affects:	A portion of the premises

5. Easement(s) for the purpose(s) shown below and rights incidental thereto as delineated or as offered for dedication, on the map of said tract.

Purpose:	Pole and wires
Affects:	Southwesterly 40 feet of Lots 170, 171 and 172 (Sequoyah Hills)

6. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	Pacific Gas and Electric Company
Purpose:	Poles and wires
Recorded:	November 30, 1914, Book 2292 of Deeds, Page 248,
Affects:	A portion of the premises

7. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	East Bay Water Company
Purpose:	Ingress, egress, pipelines and utilities
Recorded:	September 19, 1924, Book 766, Page 472, of Official Records
Affects:	Portions of said land

8. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	Pacific Gas and Electric Company
Purpose:	Poles and wires
Recorded:	September 1, 1928, Book 1940, Page 157, of Official Records
Affects:	Portions of the premises

9. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	City of Oakland
Purpose:	Public sewer
Recorded:	January 28, 1929, Book 2047, Page 181, of Official Records

10. Easement(s) for the purpose(s) shown below and rights incidental thereto as delineated or as offered for dedication, on the map of said tract.

Purpose:	Public service
Affects:	The northeasterly, or rear, 5 feet of Lots F1 to F3 (Fairway Estates)

11. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	City of Oakland
Purpose:	Public culvert
Recorded:	August 5, 1938, Book 3662, Page 209, of Official Records

12. Easement(s) for public utilities over that protion lying within St. Andrews Road, as set forth in the Judgment recorded June 11, 1945, Book 4742, Page 23, Official Records.

13. Easement(s) for public utilities over that portion lying within Barcelona Street, Formerly Oak Knoll Boulevard, as set forth in the Judgment recorded June 11, 1945, Book 4742, Page 23, Official Records.

14. Terms, conditions and provisions as set forth in the instrument executed by The United States of America, recorded March 12, 1952, Book 6679, Page 579, Official Records.

15. Terms, conditions and provisions as set forth in Resolution No. 27106, dated August 26, 1957, as disclosed by the Oakland Sewer Maps.

16. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	City of Oakland
Purpose:	Sanitary sewer
Recorded:	April 24, 1953, Book 7011, Page 5, of Official Records
Affects:	A strip of land, 5 feet in width, in the southerly portion of premises

17. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	City of Oakland
Purpose:	Sanitary sewer
Recorded:	October 10, 1957, Book 8491, Page 347, of Official Records
Affects:	A 5-foot strip of land

A notation on the Oakland Sewer Maps states the subject easement has been terminated by the Navy on September 27, 1960 for non use, by terms of the Agreement.

18. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	East Bay Municipal Utility District
Purpose:	Water pipelines, for a period of 50 years
Recorded:	March 1, 1960, Book (Reel) 36, Page (Image) 709, of Official Records
Affects:	Two locations of the northerly line

19. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	State of California
Purpose:	Controlled access highway
Recorded:	November 27, 1962, Instrument No. AT-162098, Book (Reel) 733, Page (Image) 210, of Official Records
Affects:	Two locations adjacent to and easterly of Mountain Boulevard

20. Lack of Abutter's rights in and to Mountain Boulevard, adjacent to the west line of said property, said rights having been released and relinquished by Deed to the State of California, recorded November 27, 1962, Reel 733, Image 210, Series No. AT-162098, Official Records.

21. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	City of Oakland
Purpose:	Sanitary sewer line for a period of 50 years
Recorded:	April 5, 1972, Book (Reel) 3099, Page (Image) 663, of Official Records
Affects:	A strip of land, 5 feet in width, in the westerly portion of premises

22. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	City of Oakland
Purpose:	Sanitary sewer pipeline for a period of 50 years
Recorded:	May 10, 1974, Book (Reel) 3676, Page (Image) 738, of Official Records
Affects:	The westerly portion of premises

23. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	Pacific Gas and Electric Company
Purpose:	Electric power transmission line
Recorded:	July 19, 1974, Book (Reel) 3733, Page (Image) 404, of Official Records
Affects:	A portion of the premises

24. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	East Bay Municipal Utility District
Purpose:	Slope easement, for a period of 50 years
Recorded:	July 27, 1992, Instrument No. 92-242285, of Official Records
Affects:	A strip of land, approximately 10' x 60' , adjacent to the southerly boundary of EBMUD premises

25. Notice by the City Council of the City of Oakland adopting Ordinance No. 12065 C.M.S. on July 14, 1998 for the Oak Knoll Redevelopment Project, recorded August 27, 1998, Series No. 98-297737, Official Records.

26. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	Pacific Gas and Electric Company, a California corporation
Purpose:	Overhead electric facilities, including poles, aerial wires, cables, electrical conductors with associated crossarms, braces, transformers, anchors, guy wires and cables, fixtures and appurtenances
Recorded:	September 13, 2000, Instrument No. 2000-276744, of Official Records
Affects:	A portion of the premises

27. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	Pacific Bell Telephone Company
Purpose:	Overhead communication lines
Recorded:	October 12, 2001, Instrument No. 2001-390176, of Official Records
Affects:	A portion of the premises

28. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	Pacific Gas and Electric Company, a California corporation
Purpose:	Overhead electric facilities, including poles, aerial wires, cables, electrical conductors with associated crossarms, braces, transformers, anchors, guy wires and cables, fixtures and appurtenances
Recorded:	December 14, 2001, Instrument No. 2001-488081, of Official Records
Affects:	A portion of the premises

29. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	Seneca Residential and Bay Treatment Center for Children
Purpose:	Vehicular and pedestrian access
Recorded:	January 30, 2002, Instrument No. 2002-048897, of Official Records
Affects:	A portion of the premises

30. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	Sea West Coast Guard Federal Credit Union
Purpose:	Roadway and utilities
Recorded:	May 7, 2002, Instrument No. 2002-202441, of Official Records
Affects:	A portion of said land

31. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	Sea West Coast Guard Federal Credit Union
Purpose:	Underground waterline
Recorded:	July 23, 2002, Instrument No. 2002-313566, of Official Records
Affects:	A portion of said land

32. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	Sea West Coast Guard Federal Credit Union
Purpose:	Underground sanitary sewer line
Recorded:	July 23, 2002, Instrument No. 2002-313567, of Official Records
Affects:	A portion of said land

33. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	Seneca Residential and Day Treatment Center for Children, a tax exempt corporation
Purpose:	Underground sewer line
Recorded:	August 7, 2002, Instrument No. 2002-341573, of Official Records
Affects:	A portion of said land

34. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.

Granted to:	Seneca Residential and Day Treatment Center for Children, a tax exempt corporation
Purpose:	Underground waterline
Recorded:	August 7, 2002, Instrument No. 2002-341574, of Official Records
Affects:	A portion of said land

35. The terms, provisions, covenants and conditions contained in the Quitclaim Deed from the United States of America to the Redevelopment Agency of the City of Oakland, recorded August 15, 2005, Series No. 2005-348212, Official Records.

36. Discrepancies, overlaps, conflicts in boundary lines and/or shortage in area, as disclosed by Parcel Map 8730 filed October 3, 2005, in Book 284 at Pages 63 through 65, inclusive.

37. Covenants, conditions and restrictions in the declaration of restrictions but omitting any covenants or restrictions, if any, including, but not limited to those based upon race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, or source of income, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law.

Recorded:	March 30, 2006, Instrument No. 2006-123016, of Official Records

38. A deed of trust to secure an indebtedness in the amount shown below, and any other obligations secured thereby

Amount:	$167,700,000.00
Dated:	November 30, 2006
Trustor:	SunCal Oak Knoll, LLC, a Delaware limited liability company
Trustee:	Fidelity National Title Company
Beneficiary:	Lehman, Ali, Inc., a Delaware corporation
Recorded:	December 1, 2006, Instrument No. 2006-442564, of Official Records

A Notice of Default under the terms of said deed of trust.

Executed by:	Lehman ALI, Inc.
Recorded:	November 12, 2008, Instrument No. 2008-328355, of Official Records

A Notice of Default under the terms of said deed of trust.

Executed by:	Lehman ALI, Inc.
Recorded:	November 13, 2008, Instrument No. 2008-329895, of Official Records

39. An assignment of all the moneys due, or to become due, as rental, as additional security for the obligations secured by Deed of Trust recorded December 1, 2006, Instrument No. 2006-442564, Official Records

Assigned to:	Lehman, Ali, Inc.
by Assignment	
Recorded:	December 1, 2006, Instrument No. 2006-442565, of Official Records

40. An unrecorded lease with certain terms, covenants, conditions and provisions set forth therein as disclosed by the document

Entitled:	"Memorandum of Land Lease Agreement"
Lessor:	SunCal Oak Knoll, LLC.
Lessee:	GTE Mobilnet of California Limited Partnership, d/b/a Verizon Wireless
Recorded:	April 2, 2007, Instrument No. 2007-128987, of Official Records
Affects:	A portion of the land described herein.

The Company will require confirmation that the lessee is no longer in possession of a portion of said land.

41. The fact that said land is included within a project area of the Redevelopment Agency shown below, and that proceedings for the redevelopment of said project have been instituted under the Redevelopment Law (such redevelopment to proceed only after the adoption of the redevelopment plan) as disclosed by a document.

Redevelopment Agency:	Revised Statement of Institution of Redevelopment For The Oak Knoll Redevelopment Project
Recorded:	December 3, 2007, Instrument No. 2007-409571, of Official Records

42. A claim of mechanic's lien

Amount:	$3,193,298.60
Claimant:	CST Environmental, Inc.
Recorded:	October 27, 2008, Instrument No. 2008-308822, of Official Records

The Company will require a recorded assignment to Lehman and a writing from Lehman stating that it will not pursue the lien.

43. A claim of mechanic's lien

Amount:	$209,250.00
Claimant:	CST Environmental, Inc.
Recorded:	November 24, 2008, Instrument No. 2008-336853, of Official Records

The Company will require a recorded assignment to Lehman and a writing from Lehman stating that it will not pursue the lien.

44. Intentionally Deleted.

45. Taxes, or assessments which are not shown as existing liens by the records or any taxing authority that levies taxes or assessments on real property or by the public records. Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

46. Any facts, rights, interests or claims, which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

47. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

48. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose and which are not shown by the public records.

49. Any defect which constitutes any "Encumbrance," as such term is defined in the chapter 11 Plans proposed by Lehman Commercial Paper, Inc., Lehman ALI, Inc., Northlake Holdings LLC and/or OVC Holdings LLC ("Lehman") in the chapter 11 cases jointly administered under In re Palmdale Hills Property, LLC, and its Related Debtors, Case No. 8:08-bk-17206-ES, in the U.S. Bankruptcy Court for the Central District of California, and which would otherwise fall (a) outside the Covered Risks or (b) within the Exclusions from Coverage.

50. Any lien, or right to a lien for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the Public Records.

51. The Company will require the following documents for review prior to the issuance of any title assurance predicated upon a conveyance or encumbrance from the entity named below:

    Limited Liability Company: LV OAK KNOLL LLC, a Delaware limited liability company

    a) A copy of its operating agreement, if any, and any and all amendments, supplements and/or modifications thereto, certified by the appropriate manager or member

    b) If a domestic Limited Liability Company, a copy of its Articles of Organization and all amendments thereto with the appropriate filing stamps

    c) If the Limited Liability Company is member-managed, a full and complete current list of members certified by the appropriate manager or member

    d) If the Limited Liability Company was formed in a foreign jurisdiction, evidence, satisfactory to the Company, that it was validly formed, is in good standing and authorized to do business in the state of origin

    e) If less than all members, or managers, as appropriate, will be executing the closing documents, furnish evidence of the authority of those signing.

    The Company reserves the right to add additional items or make further requirements after review of the requested documentation.

52. Any rights of the parties in possession of a portion of, or all of, said Land, which rights are not disclosed by the public records.

    The Company will require, for review, a full and complete copy of any unrecorded agreement, contract, license and/or lease, together with all supplements, assignments and amendments thereto, before issuing any policy of title insurance without excepting this item from coverage.

    The Company reserves the right to except additional items and/or make additional requirements after reviewing said documents.

END OF ITEMS

NOTES

WIRING INSTRUCTIONS

TO: **FNT - Builder Services - Title Department**
1300 Dove Street, Suite 310
Newport Beach, CA 92660

BANK: **Wells Fargo Bank**
420 Montgomery
San Francisco, CA 94104

ROUTING NO: **121000248**

ACCOUNT NO: **4123824971**

PLEASE REFER TO OUR ORDER NO.: 996-**23016000**-C-PP1

ESCROW OFFICER: **Builder Services OAC**

TITLE ORDER NO.**:** **23016000-PP**

END OF NOTES

OWNER'S DECLARATION

The undersigned hereby declares as follows:

1. (Fill in the applicable paragraph and strike the other)

   a. Declarant ("Owner") is the owner or lessee, as the case may be, of certain premises located at _____, further described as follows: See Preliminary Report/Commitment No. 996-**23016000**-C-PP1 for full legal description (the "Land").

   b. Declarant is the _____ of _____ ("Owner"), which is the owner or lessee, as the case may be, of certain premises located at _____, further described as follows: See Preliminary Report/Commitment No. 996-**23016000**-C-PP1 for full legal description (the "Land").

2. (Fill in the applicable paragraph and strike the other)

   a. During the period of six months immediately preceding the date of this declaration no work has been done, no surveys or architectural or engineering plans have been prepared, and no materials have been furnished in connection with the erection, equipment, repair, protection or removal of any building or other structure on the Land or in connection with the improvement of the Land in any manner whatsoever.

   b. During the period of six months immediately preceding the date of this declaration certain work has been done and materials furnished in connection with _____ upon the Land in the approximate total sum of $_____, but no work whatever remains to be done and no materials remain to be furnished to complete the construction in full compliance with the plans and specifications, nor are there any unpaid bills incurred for labor and materials used in making such improvements or repairs upon the Land, or for the services of architects, surveyors or engineers, except as follows: _____. Owner, by the undersigned Declarant, agrees to and does hereby indemnify and hold harmless Fidelity National Title Insurance Company against any and all claims arising therefrom.

3. Owner has not previously conveyed the Land; is not a debtor in bankruptcy (and if a partnership, the general partner thereof is not a debtor in bankruptcy); and has not received notice of any pending court action affecting the title to the Land.

4. Except as shown in the above-referenced Preliminary Report/Commitment, there are no unpaid or unsatisfied mortgages, deeds of trust, Uniform Commercial Code financing statements, claims of lien, special assessments, or taxes that constitute a lien against the Land or that affect the Land but have not been recorded in the public records.

5. The Land is currently in use as _____; _____occupy/occupies the Land; and the following are all of the leases or other occupancy rights affecting the Land:

   _____

6. There are no other persons or entities that assert an ownership interest in the Land, nor are there unrecorded easements, claims of easement, or boundary disputes that affect the Land.

7. There are no outstanding options to purchase or rights of first refusal affecting the Land.

This declaration is made with the intention that Fidelity National Title Insurance Company (the "Company") and its policy issuing agents will rely upon it in issuing their title insurance policies and endorsements. Owner, by the undersigned Declarant, agrees to indemnify the Company against loss or damage (including attorneys fees, expenses, and costs) incurred by the Company as a result of any untrue statement made herein.

I declare under penalty of perjury that the foregoing is true and correct and that this declaration was executed on ____ at _____.

Signature: _____

Fidelity National Financial, Inc.
Privacy Statement

Fidelity National Financial, Inc. and its subsidiaries ("FNF") respect the privacy and security of your non-public personal information ("Personal Information") and protecting your Personal Information is one of our top priorities. This Privacy Statement explains FNF's privacy practices, including how we use the Personal Information we receive from you and from other specified sources, and to whom it may be disclosed. FNF follows the privacy practices described in this Privacy Statement and, depending on the business performed, FNF companies may share information as described herein.

Personal Information Collected
We may collect Personal Information about you from the following sources:

- Information we receive from you on applications or other forms, such as your name, address, social security number, tax identification number, asset information, and income information;
- Information we receive from you through our Internet websites, such as your name, address, email address, Internet Protocol address, the website links you used to get to our websites, and your activity while using or reviewing our websites;
- Information about your transactions with or services performed by us, our affiliates, or others, such as information concerning your policy, premiums, payment history, information about your home or other real property, information from lenders and other third parties involved in such transaction, account balances, and credit card information; and
- Information we receive from consumer or other reporting agencies and publicly recorded documents.

Disclosure of Personal Information
We may provide your Personal Information (excluding information we receive from consumer or other credit reporting agencies) to various individuals and companies, as permitted by law, without obtaining your prior authorization. Such laws do not allow consumers to restrict these disclosures. Disclosures may include, without limitation, the following:

- To insurance agents, brokers, representatives, support organizations, or others to provide you with services you have requested, and to enable us to detect or prevent criminal activity, fraud, material misrepresentation, or nondisclosure in connection with an insurance transaction;
- To third-party contractors or service providers for the purpose of determining your eligibility for an insurance benefit or payment and/or providing you with services you have requested;
- To an insurance regulatory authority, or a law enforcement or other governmental authority, in a civil action, in connection with a subpoena or a governmental investigation;
- To companies that perform marketing services on our behalf or to other financial institutions with which we have joint marketing agreements and/or
- To lenders, lien holders, judgment creditors, or other parties claiming an encumbrance or an interest in title whose claim or interest must be determined, settled, paid or released prior to a title or escrow closing.

We may also disclose your Personal Information to others when we believe, in good faith, that such disclosure is reasonably necessary to comply with the law or to protect the safety of our customers, employees, or property and/or to comply with a judicial proceeding, court order or legal process.

Disclosure to Affiliated Companies – We are permitted by law to share your name, address and facts about your transaction with other FNF companies, such as insurance companies, agents, and other real estate service providers to provide you with services you have requested, for marketing or product development research, or to market products or services to you. We do not, however, disclose information we collect from consumer or credit reporting agencies with our affiliates or others without your consent, in conformity with applicable law, unless such disclosure is otherwise permitted by law.

Disclosure to Nonaffiliated Third Parties – We do not disclose Personal Information about our customers or former customers to nonaffiliated third parties, except as outlined herein or as otherwise permitted by law.

Confidentiality and Security of Personal Information
We restrict access to Personal Information about you to those employees who need to know that information to provide products or services to you. We maintain physical, electronic, and procedural safeguards that comply with federal regulations to guard Personal Information.

Access to Personal Information/Requests for Correction, Amendment, or Deletion of Personal Information
As required by applicable law, we will afford you the right to access your Personal Information, under certain circumstances to find out to whom your Personal Information has been disclosed, and request correction or deletion of your Personal Information. However, FNF's current policy is to maintain customers' Personal Information for no less than your state's required record retention requirements for the purpose of handling future coverage claims.

For your protection, all requests made under this section must be in writing and must include your notarized signature to establish your identity. Where permitted by law, we may charge a reasonable fee to cover the costs incurred in responding to such requests. Please send requests to:

Chief Privacy Officer
Fidelity National Financial, Inc.
601 Riverside Avenue
Jacksonville, FL 32204

Changes to this Privacy Statement
This Privacy Statement may be amended from time to time consistent with applicable privacy laws. When we amend this Privacy Statement, we will post a notice of such changes on our website. The effective date of this Privacy Statement, as stated above, indicates the last time this Privacy Statement was revised or materially changed.

Privacy Policy Effective Date: 5/1/2008

Notice of Available Discounts

Pursuant to Section 2355.3 in Title 10 of the California Code of Regulations Fidelity National Financial, Inc. and its subsidiaries ("FNF") must deliver a notice of each discount available under our current rate filing along with the delivery of escrow instructions, a preliminary report or commitment. Please be aware that the provision of this notice does not constitute a waiver of the consumer's right to be charged the field rate. As such, your transaction may not qualify for the below discounts.

You are encouraged to discuss the applicability of one or more of the below discounts with a Company representative. These discounts are generally described below; consult the rate manual for a full description of the terms, conditions and requirements for each discount. These discounts only apply to transaction involving services rendered by the FNF Family of Companies. This notice only applies to transactions involving property improved with a one-to-four family residential dwelling.

FNF Underwritten Title Company
FNTC - Fidelity National Title Company
FNTCCA –Fidelity National Title Company of California

FNF Underwriter
FNTIC - Fidelity National Title Insurance Company

Available Discounts

CREDIT FOR PRELIMINARY REPORTS AND/OR COMMITMENTS ON SUBSEQUENT POLICIES (FNTIC)
Where no major change in the title has occurred since the issuance of the original report or commitment, the order may be reopened within 12 or 36 months and all or a portion of the charge previously paid for the report or commitment may be credited on a subsequent policy charge.

FEE REDUCTION SETTLEMENT PROGRAM (FNTC, FNTCCA and FNTIC)
Eligible customers shall receive $20.00 reduction in their title and/or escrow fees charged by the Company for each eligible transaction in accordance with the terms of the Final Judgments entered in *The People of the State of California et al. v. Fidelity National Title Insurance Company et al., Sacramento Superior Court Case No. 99AS02793, and related cases*.

DISASTER LOANS (FNTIC)
The charge for a lender's Policy (Standard or Extended coverage) covering the financing or refinancing by an owner of record, within 24 months of the date of a declaration of a disaster area by the government of the United States or the State of California on any land located in said area, which was partially or totally destroyed in the disaster, will be 50% of the appropriate title insurance rate.

CHURCHES OR CHARITABLE NON-PROFIT ORGANIZATIONS (FNTIC)
On properties used as a church or for charitable purposes within the scope of the normal activities of such entities, provided said charge is normally the church's obligation the charge for an owner's policy shall be 50% to 70% of the appropriate title insurance rate, depending on the type of coverage selected. The charge for a lender's policy shall be 40% to 50% of the appropriate title insurance rate, depending on the type of coverage selected.

Notice

You may be entitled to receive a $20.00 discount on escrow services if you purchased, sold or refinanced residential property in California between May 19,1995 and November 1, 2002. If you had more than one qualifying transaction, you may be entitled to multiple discounts.

If your previous transaction involved the same property that is the subject of your current transaction, you do not have to do anything; the Company will provide the discount, provided you are paying for escrow or title services in this transaction.

If your previous transaction involved property different from the property that is the subject of your current transaction, you must inform the Company of the earlier transaction, provide the address of the property involved in the previous transaction, and the date or approximate date that the escrow closed to be eligible for the discount.

Unless you inform the Company of the prior transaction on property that is not the subject of this transaction, the Company has no obligation to conduct an investigation to determine if you qualify for a discount. If you provided the Company information concerning a prior transaction, the Company is required to determine if you qualify for a discount.

Effective through November 1, 2014

ATTACHMENT ONE

AMERICAN LAND TITLE ASSOCIATION
RESIDENTIAL TITLE INSURANCE POLICY (6-1-87) EXCLUSIONS

In addition to the Exceptions in Schedule B, you are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of any law or government regulation. This includes building and zoning ordinances and also laws and regulations concerning:
   - land use
   - improvements on the land
   - land division
   - environmental protection

   This exclusion does not apply to violations or the enforcement of these matters which appear in the public records at Policy Date.

   This exclusion does not limit the zoning coverage described in Items 12 and 13 of Covered Title Risks.
2. The right to take the land by condemning it, unless:
   - a notice of exercising the right appears in the public records on the Policy Date
   - the taking happened prior to the Policy Date and is binding on you if you bought the land without knowing of the taking.
3. Title Risks:
   - that are created, allowed, or agreed to by you
   - that are known to you, but not to us, on the Policy Date—unless they appeared in the public records
   - that result in no loss to you
   - that first affect your title after the Policy Date—this does not limit the labor and material lien coverage in Item 8 of Covered Title Risks
4. Failure to pay value for your title.
5. Lack of a right:
   - to any land outside the area specifically described and referred to in Item 3 of Schedule A

   OR
   - in streets, alleys, or waterways that touch your land

This exclusion does not limit the access coverage in Item 5 of Covered Title Risks

In addition to the Exclusions, you are not insured against loss, costs, attorneys' fees, and the expenses resulting from:

1. Any rights, interests, or claims of parties in possession of the land not shown by the public records.
2. Any easements or liens not shown by the public records. This does not limit the lien coverage in Item 8 of Covered Title Risks.
3. Any facts about the land which a correct survey would disclose and which are not shown by the public records. This does not limit the forced removal coverage in Item 12 of Covered Title Risks.
4. Any water rights or claims or title to water in or under the land, whether or not shown by the public records.

CALIFORNIA LAND TITLE ASSOCIATION STANDARD COVERAGE POLICY - 1990
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy (except to the extent that this policy insures the priority of the lien of the insured mortgage over any statutory lien for services, labor or material or to the extent insurance is afforded herein as to assessments for street improvements under construction or completed at Date of Policy); or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with applicable doing business laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by this policy or the transaction creating the interest of the insured lender, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws.

SCHEDULE B, PART I
EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

PART I

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records. Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.
3. Easements, liens or encumbrances, or claims thereof, not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records.

FORMERLY AMERICAN LAND TITLE ASSOCIATION LOAN POLICY (10-17-92) WITH A.L.T.A. ENDORSEMENT–FORM 1 COVERAGE EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy (except to the extent that this policy insures the priority of the lien of the insured mortgage over any statutory lien for services, labor or material or to the extent insurance is afforded herein as to assessments for street improvements under construction or completed at Date of Policy); or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with applicable doing business laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any statutory lien for services, labor or materials (or the claim of priority of any statutory lien for services, labor or materials over the lien of the insured mortgage) arising from an improvement or work related to the land which is contracted for and commenced subsequent to Date of Policy and is not financed in whole or in part by proceeds of the indebtedness secured by the insured mortgage which at Date of Policy the insured has advanced or is obligated to advance.
7. Any claim, which arises out of the transaction creating the interest of the mortgagee insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the interest of the insured mortgagee being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the subordination of the interest of the insured mortgagee as a result of the application of the doctrine or equitable subordination; or
   (iii) the transaction creating the interest of the insured mortgagee being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records. Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.
3. Easements, liens or encumbrances, or claims thereof, not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records.

2006 AMERICAN LAND TITLE ASSOCIATION LOAN POLICY (06-17-06)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13 or 14); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.
5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.
6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
   (a) a fraudulent conveyance or fraudulent transfer, or
   (b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.
7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) that arise by reason of:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records.

FORMERLY AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY (10-17-92)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.
4. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage Policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records. Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.
3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records.

2006 AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY (06-17-06)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
   (a) a fraudulent conveyance or fraudulent transfer; or
   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) that arise by reason of:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown in the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and that are not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records.

ATTACHMENT ONE
(CONTINUED)

CLTA HOMEOWNER'S POLICY OF TITLE INSURANCE (10-22-03)
ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE (10-22-03)
EXCLUSIONS

In addition to the Exceptions in Schedule B, You are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of any law or government regulation. This includes ordinances, laws and regulations concerning:
   a. building
   b. zoning
   c. Land use
   d. improvements on Land
   e. land division
   f. environmental protection

This Exclusion does not apply to violations or the enforcement of these matters if notice of the violation or enforcement appears in the Public Records at the Policy Date.
This Exclusion does not limit the coverage described in Covered Risk 14, 15, 16, 17 or 24.

2. The failure of Your existing structures, or any part of them, to be constructed in accordance with applicable building codes. This Exclusion does not apply to violations of building codes if notice of the violation appears in the Public Records at the Policy Date.
3. The right to take the Land by condemning it, unless:
   a. notice of exercising the right appears in the Public Records at the Policy Date; or
   b. the taking happened before the Policy Date and is binding on You if You bought the Land without Knowing of the taking.
4. Risks:
   a. that are created, allowed, or agreed to by You, whether or not they appear in the Public Records.
   b. that are Known to You at the Policy Date, but not to Us, unless they appear in the Public Records at the Policy Date;
   c. that result in no loss to You; or
   d. that first occur after the Policy Date—this does not limit the coverage described in Covered Risk 7, 8.d., 22, 23, 24 or 25.
5. Failure to pay value for Your Title.
6. Lack of a right:
   a. to any Land outside the area specifically described and referred to in paragraph 3 of Schedule A; and
   b. in streets, alleys, or waterways that touch the Land.

This Exclusion does not limit the coverage described in Covered Risk 11 or 18.

LIMITATIONS ON COVERED RISKS

Your insurance for the following Covered Risks is limited on the Owner's Coverage Statement as follows:

- For Covered Risk 14, 15, 16, and 18, Your Deductible Amount and Our Maximum Dollar Limit of Liability shown in Schedule A.

The deductible amounts and maximum dollar limits shown on Schedule A are as follows:

	Your Deductible Amount	Our Maximum Dollar Limit of Liability
Covered Risk 14:	1% of Policy Amount or $2,500.00 (whichever is less)	$10,000.00
Covered Risk 15:	1% of Policy Amount or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 16:	1% of Policy Amount or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 18:	1% of Policy Amount or $2,500.00 (whichever is less)	$5,000.00

ATTACHMENT ONE
(CONTINUED)

CLTA HOMEOWNER'S POLICY OF TITLE INSURANCE (02-03-10)
ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE (02-03-10)
EXCLUSIONS

In addition to the Exceptions in Schedule B, You are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of those portions of any law or government regulation concerning:
   a. building;
   b. zoning;
   c. land use;
   d. improvements on the Land;
   e. land division; and
   f. environmental protection.

   This Exclusion does not limit the coverage described in Covered Risk 8.a., 14, 15, 16, 18, 19, 20, 23 or 27.
2. The failure of Your existing structures, or any part of them, to be constructed in accordance with applicable building codes. This Exclusion does not limit the coverage described in Covered Risk 14 or 15.
3. The right to take the Land by condemning it. This Exclusion does not limit the coverage described in Covered Risk 17.
4. Risks:
   a. that are created, allowed, or agreed to by You, whether or not they are recorded in the Public Records;
   b. that are Known to You at the Policy Date, but not to Us, unless they are recorded in the Public Records at the Policy Date;
   c. that result in no loss to You; or
   d. that first occur after the Policy Date—this does not limit the coverage described in Covered Risk 7, 8.e., 25, 26, 27 or 28.
5. Failure to pay value for Your Title.
6. Lack of a right:
   a. to any land outside the area specifically described and referred to in paragraph 3 of Schedule A; and
   b. in streets, alleys, or waterways that touch the Land.

   This Exclusion does not limit the coverage described in Covered Risk 11 or 21.
7. The transfer of the Title to You is invalid as a preferential transfer or as a fraudulent transfer or conveyance under federal bankruptcy, state insolvency, or similar creditors' rights laws.

LIMITATIONS ON COVERED RISKS

Your insurance for the following Covered Risks is limited on the Owner's Coverage Statement as follows:

- For Covered Risk 16, 18, 19, and 21 Your Deductible Amount and Our Maximum Dollar Limit of Liability shown in Schedule A.

The deductible amounts and maximum dollar limits shown on Schedule A are as follows:

	Your Deductible Amount	Our Maximum Dollar Limit of Liability
Covered Risk 16:	1% of Policy Amount Shown in Schedule A or $2,500.00 (whichever is less)	$10,000.00
Covered Risk 18:	1% of Policy Amount Shown in Schedule A or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 19:	1% of Policy Amount Shown in Schedule A or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 21:	1% of Policy Amount Shown in Schedule A or $2,500.00 (whichever is less)	$5,000.00

ATTACHMENT ONE
(CONTINUED)

ALTA EXPANDED COVERAGE RESIDENTIAL LOAN POLICY (10/13/01)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the Land; (ii) the character, dimensions or location of any improvements now or hereafter erected on the Land; (iii) a separation in ownership or a change in the dimensions or areas of the Land or any parcel of which the Land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the Land has been recorded in the Public Records at Date of Policy. This exclusion does not limit the coverage provided under Covered Risks 12, 13, 14 and 16 of this policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the Land has been recorded in the Public Records a Date of Policy. This exclusion does not limit the coverage provided under Covered Risks 12, 13, 14, and 16 of this policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the Public Records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without Knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) created, suffered, assumed or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (this paragraph does not limit the coverage provided under Covered Risks 8, 16, 18, 19, 20, 21, 22, 23, 24, 25 and 26); or
   (e) resulting in loss or damage which would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of the Insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with applicable doing business laws of the state in which the Land is situated.
5. Invalidity or unenforceability of the lien of the Insured Mortgage, or claim thereof, which arises out of the transaction evidenced by the Insured Mortgage and is based upon usury, except as provided in Covered Risk 27, or any consumer credit protection or truth-in-lending law.
6. Real property taxes or assessments of any governmental authority which become a lien on the Land subsequent to date of Policy. This exclusion does not limit the coverage provided under Covered Risks 7, 8(e) and 26.
7. Any claim of invalidity, unenforceability or lack of priority of the lien of the Insured Mortgage as to advances or modifications made after the Insured has Knowledge that the vestee shown in Schedule A is no longer the owner of the estate or interest covered by this policy. This exclusion does not limit the coverage provided in Covered Risk 8.
8. Lack of priority of the lien of the Insured Mortgage as to each and every advance made after Date of Policy, and all interest charged thereon, over liens, encumbrances and other matters affecting the title, the existence of which are Known to the Insured at:
   (a) The time of the advance; or
   (b) The time a modification is made to the terms of the Insured Mortgage which changes the rate of interest charged, if the rate of interest is greater as a result of the modification than it would have been before the modification. This exclusion does not limit the coverage provided in Covered Risk 8.
9. The failure of the residential structure, or any portion thereof to have been constructed before, on or after Date of Policy in accordance with applicable building codes. This exclusion does not apply to violations of building codes if notice of the violation appears in the Public Records at Date of Policy.

ALTA EXPANDED COVERAGE RESIDENTIAL LOAN POLICY (07/26/10)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) created, suffered, assumed or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 16, 17, 18, 19, 20, 21, 22, 23, 24, 27 or 28); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.
5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury, or any consumer credit protection or truth-in-lending law. This Exclusion does not modify or limit the coverage provided in Covered Risk 26.
6. Any claim of invalidity, unenforceability or lack of priority of the lien of the Insured Mortgage as to Advances or modifications made after the Insured has Knowledge that the vestee shown in Schedule A is no longer the owner of the estate or interest covered by this policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11.
7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching subsequent to Date of Policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11(b) or 25.
8. The failure of the residential structure, or any portion of it, to have been constructed before, on or after Date of Policy in accordance with applicable building codes. This Exclusion does not modify or limit the coverage provided in Covered Risk 5 or 6.
9. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
   (a) a fraudulent conveyance or fraudulent transfer, or
   (b) a preferential transfer for any reason not stated in Covered Risk 27(b) of this policy.

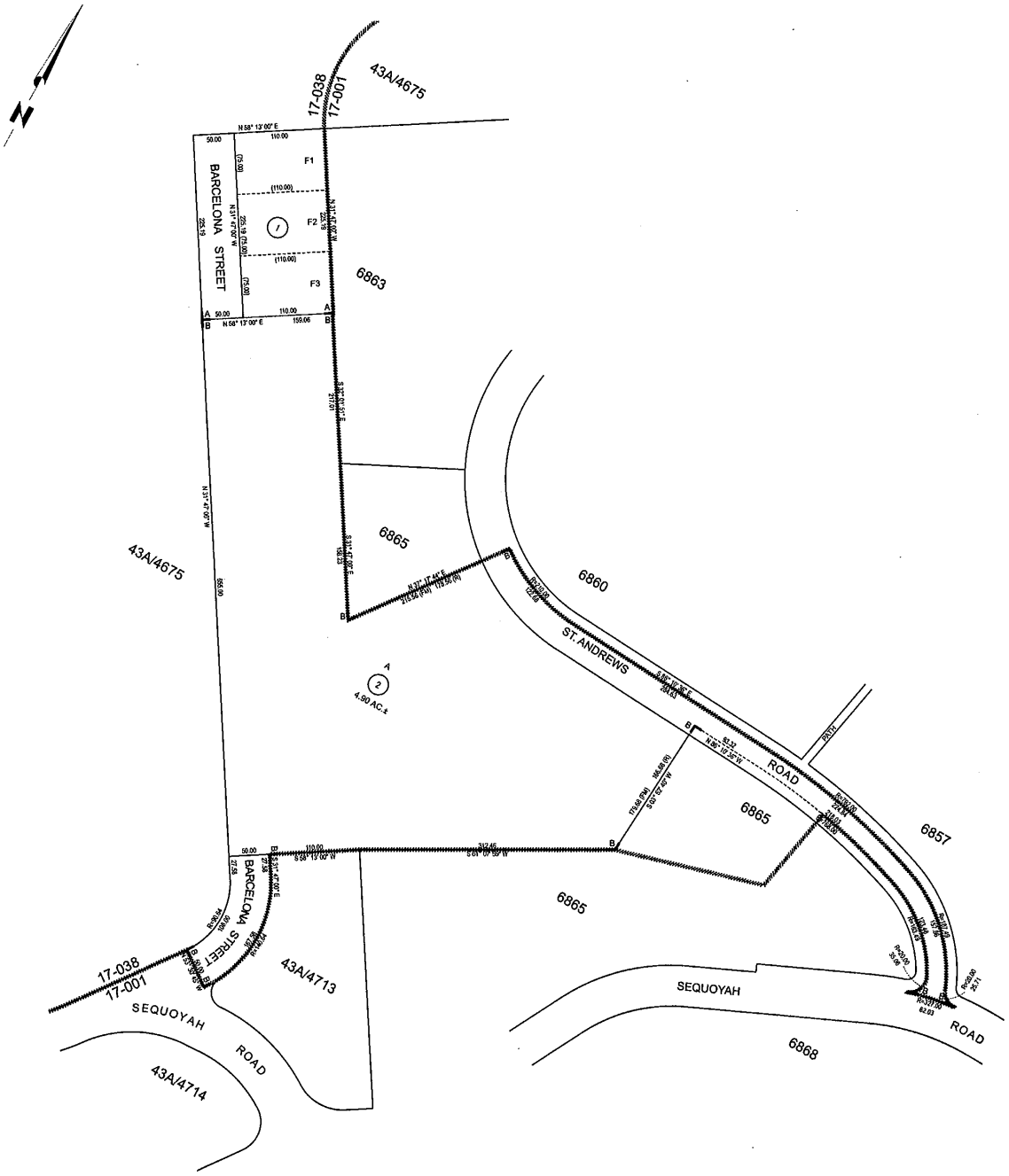
ASSESSOR'S MAP 48

6870 SCALE: 1" = 100'

Code Area Nos. 17-038

(A) FAIRWAY ESTATES IN OAK KNOLL 18/59-61

(B) P.M. 8730 284/83-65



DRAWN: 05-02-06 DL REVISED: 08-28-07 CC

FORMERLY:

ACM: SBE: 32 REF: HPN: 2 IND PG:

6865

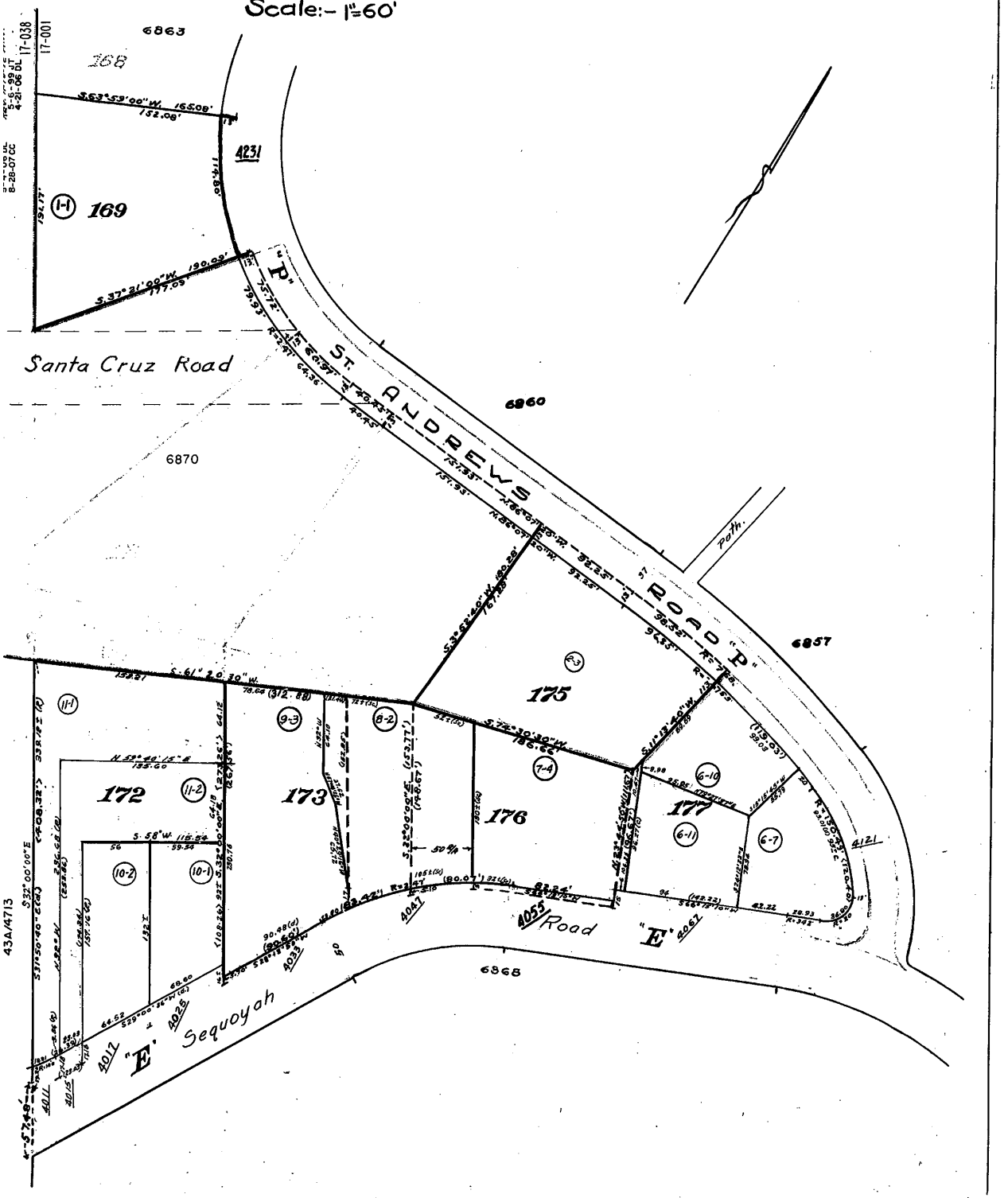
ASSESSOR'S MAP 48

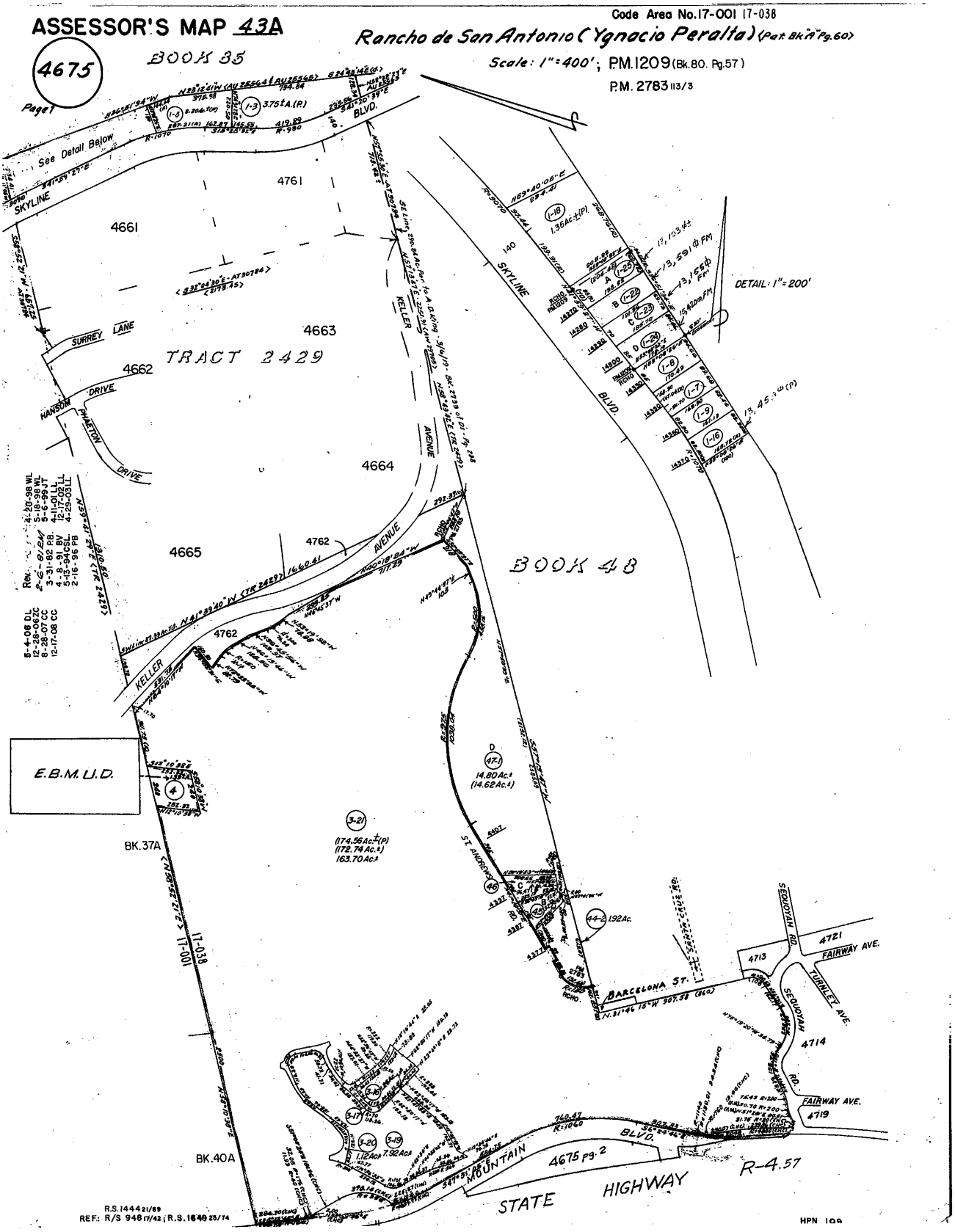
Code Area No. 17-001
17-038

Map of Subdivision

Sequoyah Hills. (Bk 28 Pg. 63-64)

Scale:- 1"=60'




ASSESSOR'S MAP 43A
Code Area No. 17-001 17-038
Rancho de San Antonio (Ygnacio Peralta) (Por. Bk. A Pg. 60)
4675
BOOK 35
Scale: 1"=400'; P.M. 1209 (Bk. 80. Pg. 57)
P.M. 2783 113/3
Page 1
See Detail Below
SKYLINE BLVD.
4761
4661
4663
TRACT 2429
4662
SURREY LANE
HANSON DRIVE
PHALETON DRIVE
4664
4665
4762
KELLER AVENUE
BOOK 48
DETAIL: 1"=200'
E.B.M.U.D.
BK. 37A
BK. 40A
17-038
17-001
14.80 Ac.±
(14.62 Ac.±)
(174.56 Ac.±(P)
(172.74 Ac.±)
163.70 Ac.±
4.192 Ac.
BARCELONA ST.
SEQUOYAH RD.
FAIRWAY AVE.
TURNLEY AVE.
4721
4713
4714
4719
MOUNTAIN BLVD.
4675 Pg. 2
STATE HIGHWAY
R-4.57
R.S. 14442 1/89
REF: R/S 948 17/42; R.S. 1649 25/74
HPN 109

ASSESSOR'S MAP 43A

Code Area No. 17-001

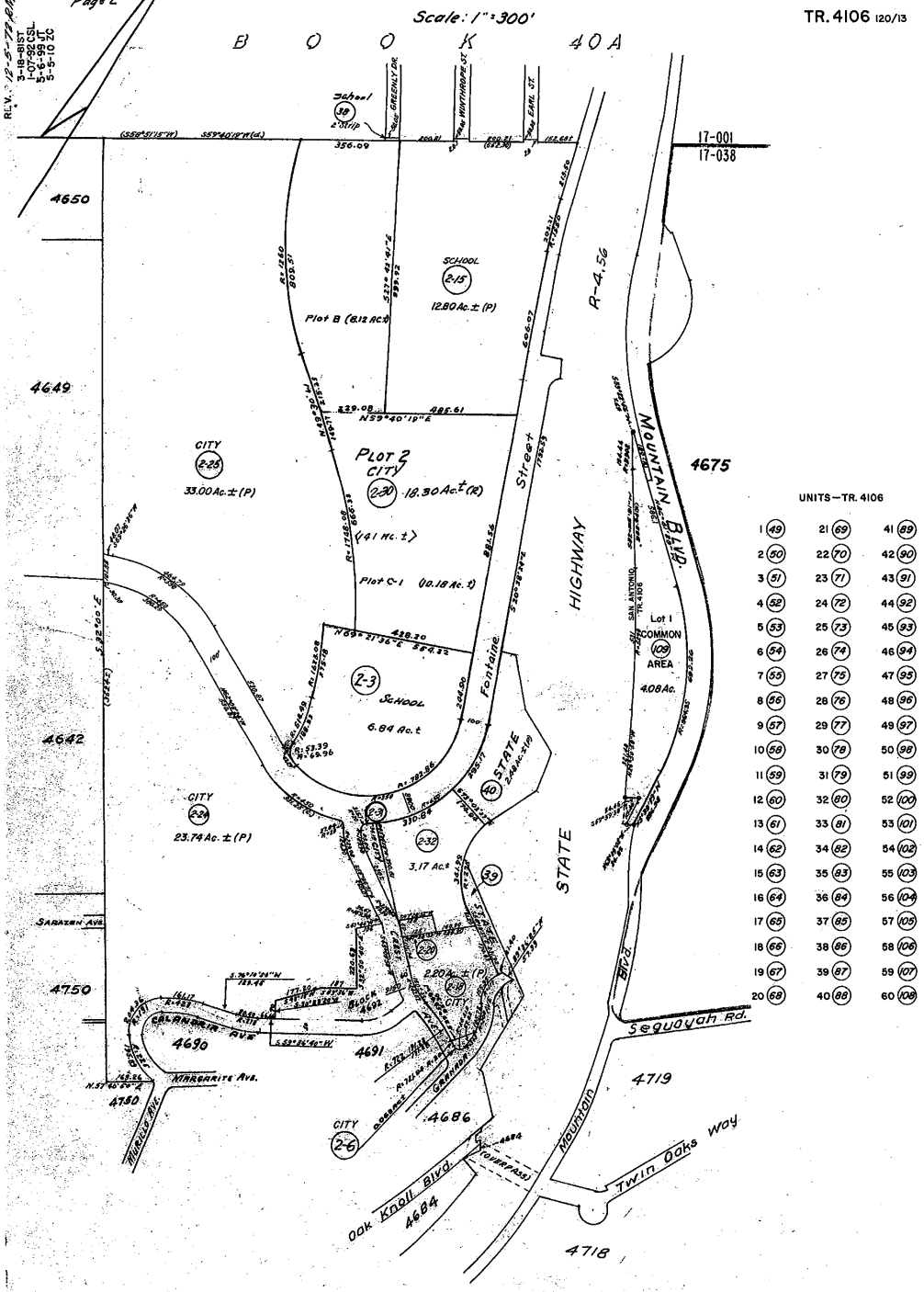
4675

Page 2

Rancho de San Antonio (Ygnacio Peralta) (Pat. Bk "A" Pg 60)

Scale: 1" = 300'

TR. 4106 120/13



UNITS—TR. 4106

1 (49)	21 (69)	41 (89)
2 (50)	22 (70)	42 (90)
3 (51)	23 (71)	43 (91)
4 (52)	24 (72)	44 (92)
5 (53)	25 (73)	45 (93)
6 (54)	26 (74)	46 (94)
7 (55)	27 (75)	47 (95)
8 (56)	28 (76)	48 (96)
9 (57)	29 (77)	49 (97)
10 (58)	30 (78)	50 (98)
11 (59)	31 (79)	51 (99)
12 (60)	32 (80)	52 (100)
13 (61)	33 (81)	53 (101)
14 (62)	34 (82)	54 (102)
15 (63)	35 (83)	55 (103)
16 (64)	36 (84)	56 (104)
17 (65)	37 (85)	57 (105)
18 (66)	38 (86)	58 (106)
19 (67)	39 (87)	59 (107)
20 (68)	40 (88)	60 (108)

HPN 109

Ind. 1.2

ASSESSOR'S MAP 43A

Code Area No 17-001

4675

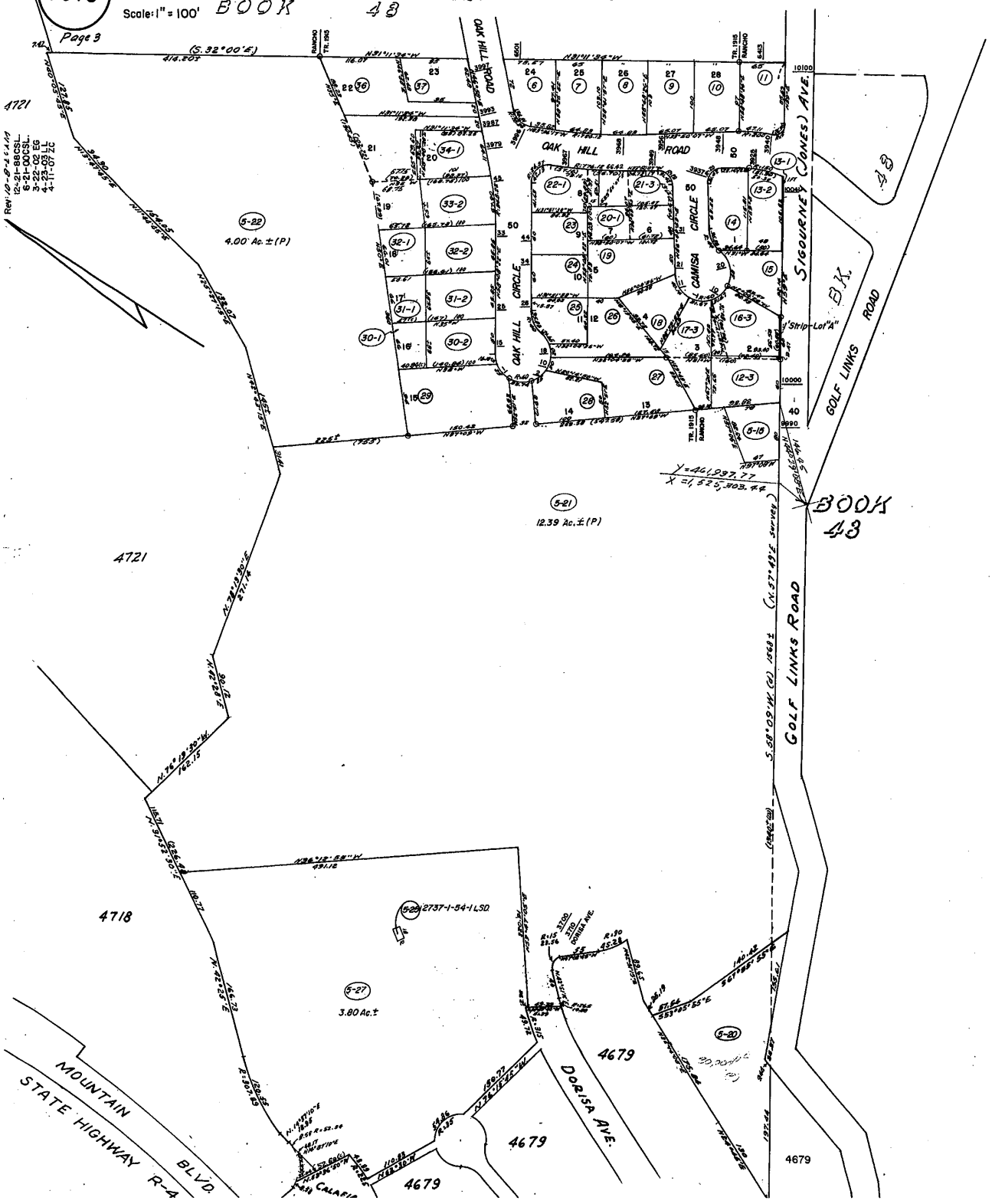
Scale: 1" = 100'

Page 3

Rancho de San Antonio (Ygnacio Peralta) (Bk. A Pat. Pg. 60)

TRACT 1915 (Bk. 39 Pg. 33)

BOOK 43



N4769206RP06P29

Recording Requested by:
Chicago Title Company

RECORDING REQUESTED BY:
SunCal Oak Knoll, LLC
2392 Morse Avenue
Irvine, CA 92614

2006123016 03/30/2006 08:30 AM
OFFICIAL RECORDS OF ALAMEDA COUNTY
PATRICK O'CONNELL
RECORDING FEE: 65.00

20 PGS
PCOR 20.00

WHEN RECORDED MAIL TO:
SunCal Oak Knoll, LLC
c/o SunCal Companies
3715 Atherton Road, Suite 2
Rocklin, CA 95765 158214

chk Kah
RCPT
Apr 30
Cash

Navy Contract No. N4769206RP06P29. Space Above This Line Reserved for Recorder's Use

QUITCLAIM DEED
FORMER NAVAL MEDICAL CENTER OAKLAND
WITH ENVIRONMENTAL RESTRICTIONS PURSUANT TO
CALIFORNIA CIVIL CODE § 1471
Taxes Not Shown

This deed is made this 27th day of March, 2006, by and between the **UNITED STATES OF AMERICA**, acting by and through the Department of the Navy, hereinafter referred to as the "**GRANTOR**", and SunCal Oak Knoll, LLC, a Delaware limited liability company, hereinafter referred to as the "**GRANTEE**".

WITNESSETH:

WHEREAS, in response to GRANTOR'S Invitation For Bids No.9PR-2005-101, as amended, GRANTEE offered to purchase a portion of the former Naval Medical Center Oakland which was closed pursuant to and in accordance with the Defense Base Closure and Realignment Act of 1990, as amended (Public Law 101-510) and which is no longer required for military purposes; and

WHEREAS, the GRANTOR accepted GRANTEE's offer to purchase and is authorized to convey a portion of the former Naval Medical Center Oakland to the GRANTEE pursuant to Section 2905(b)(4) of the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510, 10 U.S.C. 2687 note), as amended;

NOW, THEREFORE, GRANTOR, for good and valuable consideration, the receipt of which is hereby acknowledged, does hereby remise, release and forever quitclaim to GRANTEE, its successors and assigns, all of GRANTOR's right, title and interest in and to that certain real property, comprising approximately 167 acres, more or less (hereinafter "Property"), as more particularly described in Exhibit "A", attached hereto and by this reference made a part hereof.

1. TOGETHER WITH all of GRANTOR's right, title and interest in and to:

A. All buildings, improvements, and utilities located on the Property.

eeh

B. All rights, tenements and hereditaments and appurtenances hereunto belonging.

C. All rights to minerals, gas, oil and water.

II. SUBJECT TO THE FOLLOWING NOTICES, COVENANTS, CONDITIONS AND RESTRICTIONS, which shall be binding upon and enforceable against the GRANTEE, its successors and assigns, in perpetuity:

A. GRANTEE hereby accepts conveyance of the property subject to any and all existing covenants, conditions, restrictions, reservations, easements, right-of-way, rights, agreements, encumbrances, recorded or unrecorded, and to the reservations, rights and covenants set forth herein.

B. GRANTEE covenants on behalf of itself, its successors and assigns, as a covenant running with the land, to comply with the provisions of any health or safety plan in effect during the course of any additional remedial action.

C. LEAD BASED PAINT (LBP)

1. The Property may include improvements that are presumed to contain LBP because they are thought to have been constructed prior to 1978. Lead from paint, paint chips, and dust can pose health hazards if not managed properly. Pursuant to 40 CFR Section 745.113 the following notice is provided: "Every purchaser of any interest in residential real property on which a residential dwelling was built prior to 1978 is notified that such property may present exposure to lead form lead-based paint that may place young children at risk of developing lead poisoning. Lead poisoning in young children may produce permanent neurological damage, including learning disabilities, reduced intelligence quotient, behavioral problems, and impaired memory. Lead poisoning also poses a particular risk to pregnant women. The seller of any interest in residential real property is required to provide the buyer with any information on lead-based paint hazards from risk assessments or inspections in the seller's possession and notify the buyer of any known lead-based paint hazards. A risk assessment or inspection for possible lead-based paint hazards is recommended prior to purchase."

2. Due to the presence of LBP on structures located on the Property, interim use of these structures as residential real property or child occupied facilities prior to demolition is prohibited. The GRANTEE shall be responsible for managing all LBP and potential LBP hazards, including soil lead hazards, in compliance with Title X and all applicable federal, state and local laws and regulations. The GRANTEE covenants and agrees to conduct soil sampling and, if necessary, remediation after demolition and removal of demolition debris and prior to occupancy or any newly constructed dwelling units in a manner consistent with Title X and Department of Housing and Urban Development Guidelines.

3. The GRANTEE covenants and agrees that in its use and occupancy of the Property, it will comply with Title X and all applicable Federal, State, and local laws relating to LBP. The GRANTEE acknowledges that the GRANTOR assumes no liability for damages for personal injury, illness, disability, or death to the GRANTEE, or to any other person, including members of the general public, arising form or incident to the purchase, transportation, removal,

cel

handling, use, disposition, or other activity causing or leading to contact of any kind whatsoever with LBP on the Property, arising after the conveyance of the Property from the GRANTOR to the GRANTEE, whether the GRANTEE has properly warned, or failed to properly warn, the person(s) injured.

4. The GRANTEE covenants that GRANTEE will demolish the structures identified in Exhibit "B", at GRANTEE's own cost, after conveyance of the Property and that the structures identified therein will remain unoccupied.

5. The GRANTEE covenants and agrees that it will comply with all federal, State, local, and any other applicable laws regarding the lead-based paint hazards with respect to the Property. The GRANTEE shall indemnify, protect, defend and hold harmless the United States of America for any claims or losses arising from the GRANTEE's use of improvements built before 1978 that have not been demolished by GRANTEE in accordance with this deed.

D. ASBESTOS AND ASBESTOS CONTAINING MATERIALS

1. GRANTEE is hereby informed and does hereby acknowledge that asbestos and asbestos containing materials (ACM) *have been found and are otherwise presumed to* exist in buildings and structures located on the Property. GRANTEE acknowledges receipt of the FOST disclosing the presence of any known ACM in the buildings and structures on the Property. GRANTEE covenants, on behalf of itself, its successors and assigns, as a covenant running with the land, that it will prohibit occupancy and use of buildings and structures, or portions thereof, containing known asbestos or ACM hazards prior to abatement of the ACM hazard or demolition of the building or structure.

2. GRANTEE has inspected the Property as to its asbestos content and any hazardous condition relating thereto. GRANTEE is deemed to have relied solely on its own judgment in assessing the overall condition of all or any portion of the Property, including any asbestos hazards or concerns. GRANTEE covenants and agrees, on behalf of itself, its successors and assigns, that in connection with its use and occupancy of the Property and the existing buildings and structures it shall be responsible for managing ACM and for complying with all applicable federal, state, and local laws relating to asbestos, and ACM; and that GRANTOR assumes no liability for costs of any kind or for damages for personal injury, illness, disability or death, to the GRANTEE, or to GRANTEE's successors, assigns, employees, invitees, or to any other person, including members of the general public, arising from or incident to the purchase, transportation, removal, handling, use, disposition, or other activity causing or leading to contact of any kind whatsoever with ACM in or about the Property, including but not limited to the utilities (both underground and above-ground), whether the GRANTEE, its successors or assigns have properly warned or failed to properly warn the person(s) injured. GRANTEE acknowledges that if asbestos, or ACM is not managed in compliance with applicable federal, state, and local laws and regulations, it may become a hazard.

E. NO HAZARD TO AIR NAVIGATION. GRANTEE covenants for itself, its successors and assigns and every successor in interest to the Property here described, or any part thereof, that prior to any construction or alteration on the property, it will obtain a determination of no hazard to air navigation issued by the Federal Aviation Administration in accordance with

14 CFR Part 77 entitled "Objects Affecting Navigable Airspace," or under the authority of the Federal Aviation Act of 1958, as amended.

F. NOTICES AND COVENANTS:

1. Notices:

a. Finding of Suitability to Transfer.

Hazardous Substance Notification. Pursuant to CERCLA 42 U.S.C. Section 9620(h), and the provisions of 40 C.F.R. Part 373, notice is hereby provided that information contained in the FOST, provided to the GRANTEE in the Invitation for Bids 9PR-2005-101, identifies hazardous substances that were stored for one year or more, known to have been released, or disposed of on the Property. The GRANTOR has made a complete search of its files and records concerning the Property and found that the FOST provides: (1) a notice of the type and quantity of such hazardous substances, (2) notice of the time the storage, release, or disposal took place, and (3) a description of the remedial action taken, if any. The information contained in this notice is required under the authority of regulations promulgated under Section 120(h) of the Comprehensive Environmental Response, Liability, and Compensation Act (CERCLA or "Superfund") 42 U.S.C. 9620(h).

b. Notification of Pesticide Use:

The GRANTOR shall have no obligation under the covenants provided pursuant to section 120(h)(3)(A)(ii) or section 120(h)(3)(D) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. §§ 9620(h)(3)(A)(ii) and 9620(h)(3)(D), for the removal or remediation of pesticides, either at the site of their application or if moved from that site for any purpose, or from the application of any other pesticide product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. § 136 et seq.).

2. Grant of Covenant [CERCLA 42 U.S.C. Section 9620 (h)(3)(A)(ii)(I)].

GRANTOR covenants and warrants that all remedial action necessary to protect human health and the environment with respect to any hazardous substance remaining on the Property has been taken before the date of transfer.

3. Additional Remediation Obligation [CERCLA 42 U.S.C. Section 9620 (h)(3)(A)(ii)(II)].

GRANTOR covenants and warrants that GRANTOR shall conduct any additional remedial action found to be necessary after the date of transfer for any hazardous substance existing on the Property prior to the date of this Deed. This covenant shall not apply to the extent that GRANTEE, or its successors or assigns, caused or contributed to any release or threatened release of any hazardous substance, pollutant, contaminant, petroleum or petroleum derivative.

4. Access [CERCLA 42 U.S.C. Section 9620 (h)(4)(D)(ii)].

In connection with GRANTOR's covenant in Paragraph E above and in connection with ongoing remediation on GRANTOR's property adjacent to the Property, GRANTEE agrees on behalf of itself, its successors and assigns, as a covenant running with the land, that GRANTOR, the United States Environmental Protection Agency, the California Department of Toxic Substances Control, and the Regional Water Quality Control Board, or

their officers, agents, employees, contractors and subcontractors, shall have the right, upon reasonable notice to GRANTEE, to enter upon the Property in any case in which a response or corrective action is found to be necessary at such property after the date of this deed or such access is necessary to carry out a response action or corrective action on adjoining property. The right to enter shall include the right to conduct tests, investigations and surveys, including, where necessary, drilling, test-pitting, boring and other similar activities. Such right shall also include the right to construct, operate, maintain or undertake any other response or corrective action as required or necessary, including, but not limited to monitoring wells, pumping wells and treatment facilities. In exercising these rights of access, except in case of imminent and substantial endangerment to human health or the environment, the GRANTOR (1) shall give the GRANTEE reasonable notice of any action to be taken related to such remedial or corrective actions on the Property, and (2) make reasonable efforts to minimize interference with the on-going use of the Property.

5. In connection with GRANTOR's remedial actions described above, GRANTEE agrees on behalf of itself, its successors and assigns, as a covenant running with the land, to comply with the provisions of any health or safety plan in effect during the course of any such action. Neither GRANTEE, nor its successors and assigns, shall have any claim on account of such access right or any resulting remedial or corrective action against GRANTOR, the U.S. Environmental Protection Agency, the California Department of Toxic Substances, the Regional Water Quality Board, or any of such entities' officers, agents, employees, contractors or subcontractors.

III. THE CONDITIONS, RESTRICTIONS, RESERVATIONS, AND COVENANTS set forth in this deed, unless subsequently released, are a binding servitude on the Property; shall inure to the benefit of the GRANTOR and GRANTEE and their respective successors and assigns, and shall be deemed to run with the land in perpetuity, pursuant to California Civil Code Sections 1462 and 1471, and other applicable authority.

IV. LIST OF EXHIBITS: The following exhibits are attached hereto and made a part hereof this Quitclaim Deed:

A. Exhibit "A" Legal Description and Map of the Property

B. Exhibit "B" Structures to be demolished

IN WITNESS WHEREOF, the GRANTOR has caused this Quitclaim Deed to be executed in its name and on its behalf by its duly authorized officer on the day first above written.

UNITED STATES OF AMERICA
Acting by and through
the Department of the Navy

BY: _____
CHRISTOPHER E. HASKETT
Real Estate Contracting Officer
Base Realignment & Closure Office

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California
County of San Diego, Ca } ss.

On March 27 2006 before me, Mechelle C. Williams
Date Name and Title of Officer (e.g., "Jane Doe, Notary Public")

personally appeared Christopher E. Haskett
Name(s) of Signor(s)

☐ personally known to me

☑ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Mechelle C. Williams
Signature of Notary Public

ME CHELLE C. WILLIAMS
Commission # 1510429
Notary Public - California
San Diego County
My Comm. Expires Aug 29, 2008

Place Notary Seal Above

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

Description of Attached Document
Title or Type of Document: Quitclaim Deed
Document Date: March 27, 2006 Number of Pages: 18
Signer(s) Other Than Named Above: NO OTHER SIGNER

Capacity(ies) Claimed by Signer(s)

Signer's Name: Christopher E. Haskett	Signer's Name:
☐ Individual	☐ Individual
☑ Corporate Officer — Title(s): Real Estate Contract Mgr.	☐ Corporate Officer — Title(s):
☐ Partner — ☐ Limited ☐ General	☐ Partner — ☐ Limited ☐ General
☐ Attorney in Fact	☐ Attorney in Fact
☐ Trustee	☐ Trustee
☐ Guardian or Conservator	☐ Guardian or Conservator
☐ Other:	☐ Other:
Signer Is Representing:	Signer Is Representing:
Top of thumb here	Top of thumb here

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ILLEGIBLE NOTARY SEAL DECLARATION

(GOVERNMENT CODE 27361.7)

I declare under penalty of perjury that the notary seal on the document to which this statement is attached, reads as follows:

NAME OF NOTARY PUBLIC: Me Chelle C Williams

COMMISSION NUMBER: 1510429

NOTARY PUBLIC STATE: California

COUNTY: San Diego

MY COMM. EXPIRES: 8-29-08
(DATE)

SIGNATURE OF DECLARANT: Debbu Martinez

PRINT NAME OF DECLARANT: Debbie Martinez

CITY & STATE OF EXECUTION: Concord, California

DATE SIGNED: 3-29-06

THE ABOVE INFORMATION MUST BE LEGIBLE FOR SCANNING

ACCEPTANCE AND ACKNOWLEDGMENT:

The GRANTEE hereby accepts this Deed, acknowledges receipt of the documents described therein and agrees to be bound by all the agreements, covenants, conditions and restrictions contained therein.

SUNCAL OAK KNOLL, LLC

BY: _____

Name: Bruce L. Cook

Title: General Counsel

Date: March 28, 2006

CALIFORNIA ALL - PURPOSE ACKNOWLEDGMENT

State of California
County of Orange

On ***March 28, 2006*** before me, ***Summer Hale/Notary Public***
NAME, TITLE OF OFFICER

personally appeared ***Bruce V. Cook***
NAME OF SIGNER(S)

☒ Personally known to me - or - ☐ ~~Proved to me on the basis of satisfactory evidence~~ to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(s) on the instrument the person(~~s~~), or the entity upon behalf of which the person(~~s~~) acted, executed the instrument.

SUMMER HALE
Commission # 1646831
Notary Public - California
Orange County
My Comm. Expires Feb 21, 2010

WITNESS my hand and official seal.

Summer R. Hale
(SIGNATURE OF NOTARY)

OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

CAPACITY CLAIMED BY SIGNER

☐ INDIVIDUAL/OWNER
☐ CORPORATE OFFICER

TITLE(S)

☐ PARTNER(S) ☐ LIMITED
☐ GENERAL
☐ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☒ **OTHER:** **General Counsel**

DESCRIPTION OF ATTACHED DOCUMENT

TITLE OR TYPE OF DOCUMENT

NUMBER OF PAGES

DATE OF DOCUMENT

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

SUNCAL PSV, LLC

ILLEGIBLE NOTARY SEAL DECLARATION

(GOVERNMENT CODE 27361.7)

I declare under penalty of perjury that the notary seal on the document to which this statement is attached, reads as follows:

NAME OF NOTARY PUBLIC: Summer Hale

COMMISSION NUMBER: 1646831

NOTARY PUBLIC STATE: California

COUNTY: Orange

MY COMM. EXPIRES: 2-21-10
(DATE)

SIGNATURE OF DECLARANT: Debbie Martinez

PRINT NAME OF DECLARANT: Debbie Martinez

CITY & STATE OF EXECUTION: Concord, California

DATE SIGNED: 3-29-06

THE ABOVE INFORMATION MUST BE LEGIBLE FOR SCANNING

N4769206RP06P29

Exhibit "A" - Quitclaim Deed
Former Naval Medical Center Oakland

Legal Description and Plats of the Property

Order No. 158214 - DLP

EXHIBIT "A"

LEGAL DESCRIPTION

CITY OF OAKLAND

PARCEL 1:

CIVIL NO. 22087-R (FINAL JUDGMENT FILED JANUARY 16, 1943 IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA SOUTHERN DIVISION)

PORTION OF THE 349 ACRE TRACT OF LAND IN THE PORTION OF THE RANCHO SAN ANTONIO FINALLY CONFIRMED TO YGNACIO PERALTA, WHICH WAS CONVEYED BY SAID YGNACIO PERALTA AND RAFAELA S. DE PERALTA TO LUDEVINA IVEY, BY DEED DATED SEPTEMBER 4, 1871, RECORDED SEPTEMBER 7, 1871, IN BOOK 69 OF DEEDS, AT PAGE 457, ALAMEDA COUNTY RECORDS (WHICH TRACT IS DESIGNATED IN SAID DEED AS BEING DESCRIBED ACCORDING TO A SURVEY OF THE HILLS OF THE RANCHO OF SAID YGNACIO PERALTA ON AUGUST 28, 1871 BY LUIS CASTRO, SURVEYOR OF SAID COUNTY, AND BEING MARKED AND KNOWN IN SAID SURVEY AS DIVISION NO. 2), AND A PORTION OF THE 349 ACRE TRACT IN SAID PORTION OF THE RANCHO SAN ANTONIO WHICH WAS CONVEYED BY SAID YGNACIO PERALTA AND RAFAELA S. DE PERALTA TO RAFAEL MARTINEZ, ET AL, BY DEED DATED SEPTEMBER 4, 1871, RECORDED OCTOBER 7, 1871, IN BOOK 69 OF DEEDS, AT PAGE 468, ALAMEDA COUNTY RECORDS (WHICH TRACT IS DESIGNATED IN SAID DEED AS BEING DESCRIBED ACCORDING TO SAID SURVEY AND BEING MARKED AND KNOWN IN SAID SURVEY AS DIVISION NO. 3), DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTHWESTERN LINE OF THE 349 ACRE TRACT, FIRSTLY ABOVE REFERRED TO, WITH THE NORTHEASTERN LINE OF MOUNTAIN BOULEVARD, AS DESCRIBED IN THE DEED BY ARTHUR D. KING AND FLORENCE J. KING TO CITY OF OAKLAND, DATED APRIL 30, 1937, RECORDED OCTOBER 5, 1937, IN BOOK 3523 OF OFFICIAL RECORDS OF ALAMEDA COUNTY, AT PAGE 329; AND RUNNING THENCE ALONG SAID LINE OF MOUNTAIN BOULEVARD, AS FOLLOWS:

SOUTH 24° 22' 40" EAST, 622.17 FEET; THENCE SOUTHEASTERLY, TANGENT TO THE LAST NAMED COURSE, ON A CURVE TO THE LEFT WITH A RADIUS OF 1040 FEET, A DISTANCE OF 420.03 FEET; THENCE SOUTH 47° 31' 05" EAST, 584.75 FEET; THENCE SOUTHEASTERLY, TANGENT WITH THE LAST NAMED COURSE, ON A CURVE TO THE RIGHT WITH A RADIUS OF 1060 FEET, A DISTANCE OF 760.47 FEET; THENCE SOUTH 6° 24' 46" EAST, 307.83 FEET; THENCE SOUTHEASTERLY, TANGENT WITH THE LAST NAMED COURSE, ON A CURVE TO THE LEFT WITH A RADIUS OF 1140 FEET, A DISTANCE OF 301.44 FEET; THENCE SOUTH 21° 33' 46" EAST, 268.85 FEET TO THE NORTHWESTERN LINE OF THE 29.017 ACRE TRACT OF LAND DESCRIBED IN THE DEED BY ARTHUR D. KING AND FLORENCE L. KING TO OAK KNOLL LAND CORPORATION, DATED DECEMBER 11, 1928, RECORDED FEBRUARY 16, 1929, IN BOOK 2086 OF SAID OFFICIAL RECORDS OF ALAMEDA COUNTY, AT PAGE 47; THENCE ALONG THE LAST NAMED LINE, NORTH 77° 23' 20" EAST, 181.06 FEET TO THE NORTHERN LINE OF OAK KNOLL BOULEVARD, AS SAID BOULEVARD IS SHOWN ON THE MAP OF "FAIRWAY ESTATES IN OAK KNOLL, OAKLAND, ALAMEDA COUNTY, CALIFORNIA", FILED MARCH 14, 1929, IN BOOK 18 OF MAPS, AT PAGES 59, 60 AND 61, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY; THENCE ALONG THE LAST NAMED LINE AND ALONG THE WESTERN LINE OF BARCELONA STREET, FORMERLY OAK KNOLL BOULEVARD, AS SHOWN ON SAID MAP, AS FOLLOWS:

CONTINUED ON ATTACHED EXHIBIT

Description Continued

NORTHEASTERLY ON A CURVE TO THE LEFT WITH A RADIUS OF 200 FEET, A DISTANCE OF 60.13 FEET; THENCE NORTH 44° 15' EAST, 108.39 FEET; THENCE EASTERLY, TANGENT TO THE LAST NAMED COURSE, ON A CURVE TO THE RIGHT WITH A RADIUS OF 150 FEET, A DISTANCE OF 158.46 FEET; THENCE SOUTH 75° 13' 20" EAST, 36.79 FEET; THENCE EASTERLY, TANGENT WITH THE LAST NAMED COURSE, ON A CURVE TO THE LEFT, WITH A RADIUS OF 200 FEET, A DISTANCE OF 238.33 FEET; THENCE NORTH 36° 30' EAST, 162.17 FEET; THENCE NORTHERLY, TANGENT WITH THE LAST NAMED COURSE, ON A CURVE TO THE LEFT WITH A RADIUS OF 90.64 FEET, A DISTANCE OF 108 FEET; THENCE NORTH 31° 46' 15" WEST, 907.58 FEET, TO THE NORTHWESTERN LINE OF SAID "FAIRWAY ESTATES IN OAK KNOLL", AS SHOWN ON SAID MAP THEREOF; THENCE ALONG THE LAST NAMED LINE AND ALONG THE NORTHWESTERN LINE OF THE 58.16 ACRE TRACT OF LAND DESCRIBED IN THE DEED BY WILLIAM H. IVEY TO FRANCISCO PERALTA, DATED JULY 3, 1873, RECORDED JULY 3, 1873, IN BOOK 92 OF DEEDS, AT PAGE 115, ALAMEDA COUNTY RECORDS, NORTH 58° 13' 45" EAST, 4700 FEET; THENCE NORTH 31° 46' 15" WEST, 2250 FEET, MORE OR LESS, TO THE NORTHWESTERN LINE OF SAID 349 ACRE TRACT CONVEYED TO RAFAEL MARTINEZ, ET AL; THENCE ALONG THE LAST NAMED LINE, SOUTH 58° 10' 38" WEST, 2600 FEET, MORE OR LESS, TO THE EASTERN LINE OF THE 1 ACRE PARCEL OF LAND DESCRIBED IN THE DEED BY ARTHUR D. KING AND FLORENCE L. KING TO EAST BAY WATER COMPANY, DATED SEPTEMBER 17, 1924 AND RECORDED SEPTEMBER 19, 1924, IN BOOK 766 OF SAID OFFICIAL RECORDS, AT PAGE 472; THENCE ALONG THE LAST NAMED LINE, SOUTH 12° 10' 38" WEST, 252.32 FEET; THENCE SOUTH 58° 10' 38" WEST, 240 FEET; THENCE NORTH 12° 10' 38" EAST, 252.32 FEET TO THE NORTHWESTERN LINE OF THE LAST MENTIONED 349 ACRE TRACT; THENCE ALONG THE LAST NAMED LINE AND EXTENSION THEREOF, SOUTH 58° 10' 38" WEST, 2500 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

PARCEL 2:

CIVIL NO. 22276-S (AMENDED FINAL JUDGMENT FILED AUGUST 1, 1944 IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA SOUTHERN DIVISION. A COPY OF WHICH RECORDED ON OCTOBER 21, 1944 IN LIBER 4582, PAGE 486, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA)

A PORTION OF PARCEL 10 AS DESCRIBED IN THE DEED FROM ELSIE LAIRD TO HUTCHINSON REALTY COMPANY, DATED NOVEMBER 28, 1933, RECORDED FEBRUARY 28, 1934, IN BOOK 2995 OF OFFICIAL RECORDS OF ALAMEDA COUNTY, PAGE 409, DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTHEASTERN LINE OF MOUNTAIN BOULEVARD, AS SAID LINE OF MOUNTAIN BOULEVARD IS DEFINED IN THE DEED BY HUTCHINSON REALTY COMPANY TO THE CITY OF OAKLAND, DATED JUNE 18, 1937, RECORDED JULY 23, 1937, IN BOOK 3489 OF OFFICIAL RECORDS OF ALAMEDA COUNTY, PAGE 346, WITH THE NORTHERN LINE OF SAID PARCEL 10; RUNNING THENCE ALONG SAID LINE OF SAID PARCEL 10, NORTH 77° 23' 20" EAST, 181.06 FEET TO THE MOST EASTERN CORNER OF SAID PARCEL 10; THENCE ALONG THE NORTHWESTERN LINE OF OAK KNOLL BOULEVARD, AS SAID BOULEVARD IS SHOWN ON THE MAP OF "FAIRWAY ESTATES IN OAK KNOLL, OAKLAND, ALAMEDA COUNTY, CALIFORNIA", FILED MARCH 14, 1929, IN BOOK 18 OF MAPS, PAGES 59, 60 AND 61, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY, AS FOLLOWS: SOUTHWESTERLY ON THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 200 FEET, A DISTANCE OF 15.30 FEET; THENCE ON THE ARC OF A REVERSE CURVE TO THE LEFT WITH A RADIUS OF 200 FEET, A DISTANCE OF 50.70 FEET; THENCE TANGENT WITH THE LAST NAMED COURSE, SOUTH 51° 20' WEST, 51.37 FEET TO THE MOST EASTERN CORNER OF SAID LAND DESCRIBED IN SAID LAST MENTIONED DEED; THENCE

Description Continued

ALONG THE NORTHERN LINE OF SAID LAND DESCRIBED IN SAID LAST MENTIONED DEED, WESTERLY AND NORTHWESTERLY ON THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 50 FEET, A DISTANCE OF 93.47 FEET TO A POINT ON SAID LINE OF MOUNTAIN BOULEVARD, FROM WHICH THE CENTER OF SAID CURVE HAVING A RADIUS OF 50 FEET BEARS NORTH 68° 26' 14" EAST, 50 FEET; THENCE ALONG SAID LINE OF MOUNTAIN BOULEVARD, NORTH 21° 33' 46" WEST, 5.40 FEET TO THE POINT OF BEGINNING.

PARCEL 3:

CIVIL NO. 24608-G (JUDGMENT FILED JUNE 4, 1945 IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA SOUTHERN DIVISION. A COPY OF WHICH RECORDED ON JUNE 11, 1945 IN LIBER 4742, PAGE 23, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA)

BEGINNING AT THE INTERSECTION OF THE SOUTHERN LINE OF PLOT LETTERED "P", NOW KNOWN AS ST. ANDREWS ROAD, WITH THE DIVIDING LINE BETWEEN LOTS NUMBERED 175 AND 177, AS SAID PLOT AND LOTS ARE SHOWN ON THE MAP ENTITLED, "MAP OF SUBDIVISION OF SEQUOYAH HILLS, OAKLAND, CALIFORNIA", FILED FOR RECORD APRIL 3, 1914, IN BOOK 28 OF MAPS, AT PAGES 63 AND 64, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY, AND RUNNING THENCE ALONG SAID DIVIDING LINE, SOUTH 11° 13' 40" WEST, 113.00 FEET TO THE CORNER COMMON TO LOTS NUMBERED 175, 176 AND 177, AS SHOWN ON SAID MAP (THE BEARING OF SAID DIVIDING LINE BEING TAKEN AS SOUTH 11° 13' 40" WEST FOR THE PURPOSE OF MAKING THIS DESCRIPTION); THENCE ALONG THE DIVIDING LINE BETWEEN LOTS NUMBERED 175 AND 176, AS SHOWN ON SAID MAP, SOUTH 74° 30' 30" WEST, 186.61 FEET TO THE CORNER COMMON TO LOTS NUMBERED 173, 174, 175 AND 176, AS SHOWN ON SAID MAP; THENCE SOUTH 61° 20' 30" WEST, 312.88 FEET TO THE MOST EASTERN CORNER OF LOT F 12, AS SAID LOT IS SHOWN ON THE MAP ENTITLED, "FAIRWAY ESTATES IN OAK KNOLL, OAKLAND, ALAMEDA COUNTY, CALIFORNIA", FILED FOR RECORD MARCH 14, 1929, IN BOOK 18 OF MAPS, AT PAGES 59 AND 60, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY; THENCE ALONG THE DIVIDING LINE BETWEEN LOTS F 12 AND F 13, AS SHOWN ON THE LAST NAMED MAP, SOUTH 58° 13' WEST, 110.00 FEET TO THE NORTHEASTERN LINE OF BARCELONA STREET, FORMERLY OAK KNOLL BOULEVARD, AS SAID BOULEVARD IS SHOWN ON THE LAST-NAMED MAP; THENCE ALONG SAID NORTHEASTERN LINE, SOUTH 31° 47' EAST, 27.58 FEET; THENCE CONTINUING ALONG SAID NORTHEASTERN LINE, ALONG THE ARC OF A CURVE TO THE RIGHT, FROM A TANGENT BEARING SOUTH 31° 47' EAST, WITH A RADIUS OF 140.64 FEET, THROUGH AN ANGLE OF 68° 16' 15", FOR A DISTANCE OF 167.58 FEET; THENCE NORTH 53° 30' 45" WEST, 50.00 FEET TO THE WESTERN LINE OF SAID BOULEVARD; THENCE ALONG THE LAST NAMED LINE, ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING NORTH 36° 29' 15" EAST, WITH A RADIUS OF 90.64 FEET, THROUGH AN ANGLE OF 68° 16' 15", FOR A DISTANCE OF 108.00 FEET; THENCE ALONG THE SOUTHWESTERN LINE OF SAID BOULEVARD, NORTH 31° 47' WEST, 907.58 FEET TO THE INTERSECTION THEREOF WITH THE DIRECT EXTENSION SOUTHWESTERLY OF THE NORTHWESTERN LINE OF LOT F 1, AS SHOWN ON SAID MAP; THENCE ALONG SAID EXTENSION AND ALONG THE NORTHWESTERN LINE OF SAID LOT F 1, NORTH 58° 13' EAST, 160.00 FEET TO THE MOST NORTHERN CORNER OF SAID LOT F 1; THENCE ALONG THE NORTHEASTERN LINE OF LOTS F 1 TO F 9, INCLUSIVE, AS SHOWN ON THE LAST NAMED MAP, SOUTH 31° 47' EAST, 599.89 FEET TO THE INTERSECTION THEREOF WITH THE DIRECT EXTENSION SOUTHWESTERLY OF THE NORTHWESTERN LINE OF LOT NUMBERED 170, AS SAID LOT IS SHOWN ON THE MAP FIRSTLY HEREINABOVE REFERRED TO; THENCE ALONG THE LAST-NAMED EXTENSION, ALONG THE NORTHWESTERN LINE OF SAID LOT NUMBERED 170 AND ALONG THE DIRECT EXTENSION NORTHEASTERLY OF SAID NORTHWESTERN LINE, NORTH 37° 21' EAST, 215.53 FEET TO THE

Description Continued

NORTHERN LINE OF SAID PLOT LETTERED "P"; THENCE ALONG THE LAST-NAMED LINE, AS FOLLOWS: EASTERLY ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING SOUTH 52° 39' EAST, WITH A RADIUS OF 210.00 FEET, THROUGH AN ANGLE OF 33° 28' 20", FOR A DISTANCE OF 122.67 FEET; THENCE SOUTH 86° 07' 20" EAST, 284.63 FEET; THENCE ALONG THE ARC OF A CURVE TO THE RIGHT, FROM A TANGENT BEARING SOUTH 86° 07' 20" EAST, WITH A RADIUS OF 792.00 FEET, THROUGH AN ANGLE OF 16° 23' FOR A DISTANCE OF 226.47 FEET; THENCE ALONG THE ARC OF A CURVE TO THE RIGHT, FROM A TANGENT BEARING SOUTH 69° 44' 20" EAST, WITH A RADIUS OF 187.49 FEET, THROUGH AN ANGLE OF 48° 04' 20", FOR A DISTANCE OF 157.30 FEET; THENCE ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING SOUTH 31° 40' EAST, WITH A RADIUS OF 20.00 FEET, THROUGH AN ANGLE OF 73° 39' 20", FOR A DISTANCE OF 25.71 FEET TO THE NORTHERN LINE OF PLOT LETTERED "E", NOW KNOWN AS SEQUOYAH ROAD, AS SAID PLOT "E" IS SHOWN ON THE MAP FIRSTLY HEREINABOVE REFERRED TO; THENCE ALONG THE LAST-NAMED LINE, ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING SOUTH 84° 40' 40" WEST, WITH A RADIUS OF 327.00 FEET, THROUGH AN ANGLE OF 10° 52' 20", FOR A DISTANCE OF 62.05 FEET; THENCE LEAVING THE LAST NAMED LINE AND RUNNING ALONG THE SOUTHERN LINE OF SAID PLOT LETTERED "P", ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING NORTH 73° 48' 20" EAST, WITH A RADIUS OF 20.00 FEET, THROUGH AN ANGLE OF 100° 26' 50", FOR A DISTANCE OF 35.06 FEET; THENCE CONTINUING ALONG SAID SOUTHERN LINE, ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING NORTH 26° 38' 30" EAST, WITH A RADIUS OF 163.49 FEET, THROUGH AN ANGLE OF 43° 05' 50", FOR A DISTANCE OF 122.98 FEET; THENCE CONTINUING ALONG SAID SOUTHERN LINE, ALONG THE ARC OF A CURVE TO THE LEFT, FROM A TANGENT BEARING NORTH 69° 44' 20" WEST, WITH A RADIUS OF 768.00 FEET, THROUGH AN ANGLE OF 9° 02', FOR A DISTANCE OF 121.08 FEET TO THE POINT OF BEGINNING.

PARCEL 4:

QUITCLAIM DEED (ANMAR INVESTMENTS INCORPORATED TO UNITED STATES OF AMERICA RECORDED IN OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA, JULY 16, 1980 AS DOCUMENT NO. 80-119199).

A PARCEL OF LAND LYING IN THE CITY OF OAKLAND, COUNTY OF ALAMEDA, STATE OF CALIFORNIA, BEING A PORTION OF THAT CERTAIN PARCEL OF LAND LYING IN PARCEL 2 AS DESCRIBED BY QUIT CLAIM DEED FILED FOR RECORD IN SAID COUNTY AT REEL 5703, IMAGE 51, DATED DECEMBER 4, 1978, DESCRIBED AS FOLLOWS:

COMMENCING FOR POINT OF REFERENCE AT THE SOUTHWESTERLY CORNER OF SAID PARCEL 2;

(I) THENCE ALONG THE WESTERLY AND NORTHERLY BOUNDARY LINE OF SAID PARCEL 2, ALONG A NON-TANGENT CURVE TO THE RIGHT HAVING A RADIAL BEARING OF NORTH 57° 58' 24" EAST FROM THE BEGINNING OF CURVE TO THE POINT OF RADIUS, A RADIUS OF 150.00 FEET, THROUGH A CENTRAL ANGLE OF 73° 30' 00", FOR AN ARC LENGTH OF 192.42 FEET;

(II) THENCE CONTINUING ALONG SAID NORTHERLY BOUNDARY LINE, NORTH 41° 14' 37" EAST, 88.16 FEET TO THE TRUE POINT OF BEGINNING.

1. THENCE LEAVING SAID NORTHERLY BOUNDARY LINE, SOUTH 48° 45' 23" EAST, 22.00 FEET;

Description Continued

2. THENCE PARALLEL WITH SAID NORTHERLY BOUNDARY LINE, NORTH 41° 14' 37" EAST, 93.00 FEET;

3. THENCE NORTH 48° 45' 23" WEST, 22.00 FEET TO SAID NORTHERLY BOUNDARY LINE;

4. THENCE ALONG SAID NORTHERLY BOUNDARY LINE, SOUTH 41° 14' 37" WEST, 93.00 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPTING FROM THE LANDS DESCRIBED HEREINABOVE AS PARCELS 1 THROUGH 4, THE FOLLOWING:

(A) QUITCLAIM DEED TO SEACREST COMPANY, A CO-PARTNERSHIP, ET AL, RECORDED MARCH 8, 1962, IN REEL 531, IMAGE 519, DOCUMENT NO. AT-30784, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(B) QUITCLAIM DEED TO THE CITY OF OAKLAND, A MUNICIPAL CORPORATION, RECORDED SEPTEMBER 26, 1978, IN REEL 5597, IMAGE 223, DOCUMENT NO. 78-187144, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(C) QUITCLAIM DEED TO WILLIAM A. HARDENSTINE, ET UX, RECORDED DECEMBER 4, 1978, IN REEL 5703, IMAGE 51, DOCUMENT NO. 78-236024, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(D) QUITCLAIM DEED TO THE SENECA RESIDENTIAL AND DAY TREATMENT CENTER FOR CHILDREN, RECORDED JANUARY 30, 2002, SERIES NO. 2002048897, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(E) QUITCLAIM DEED TO SEA WEST COAST GUARD FEDERAL CREDIT UNION, RECORDED MAY 7, 2002, SERIES NO. 2002202441, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(F) QUITCLAIM DEED TO THE REDEVELOPMENT AGENCY OF THE CITY OF OAKLAND, A STATE OF CALIFORNIA AGENCY, RECORDED AUGUST 15, 2005, AS SERIES NO. 2005348212 IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY, CALIFORNIA AND SHOWN AS PARCEL A ON PARCEL MAP 8730 FILED OCTOBER 3, 2005 IN BOOK 284 OF MAPS AT PAGES 63-65 IN THE OFFICE OF THE COUNTY RECORDER OF SAID ALAMEDA COUNTY.

EXCEPTED PARCELS A THROUGH F ARE ALSO SHOWN AND REFLECTED ON EXHIBIT A-1 ATTACHED HERETO AND MADE A PART HEREOF.

ASSESSOR'S PARCEL NOS. 043A-4675-003-21
043A-4712-001 (PORTION)
048-6865-002-01 (PORTION)

LICENSED LAND SURVEYOR
THOMAS H. PHELPS
NO. 6295
EXP. 09-30-06
CALIFORNIA

NOT TO SCALE

KELLER AVE EXTENSION

NAVAL REGIONAL MEDICAL CENTER OAKLAND (OAK KNOLL)

MOUNTAIN BLVD.

BARCELONA ST.

ST.

ANDREWS RD.

RD.

SEQUOYAH

SEE DETAIL ON SHEET 2

LEGEND

- BOUNDARY OAK KNOLL
- PARCEL MAP 8730
- LOT LINES
- CIVIL LINES
- ACQUISITIONS
- DISPOSALS

NOTE-1: SEE SHEET 3 FOR DESCRIPTION OF ACQUISITIONS AND DISPOSALS

NOTE-2: THIS PLAT WAS COMPILED FROM RECORD INFORMATION AND IS NOT BASED ON A FIELD SURVEY

EXHIBIT "A-1"

SHEET 1 OF 3

DEPT. OF THE NAVY — NAVFAC SOUTHWEST

NAVAL REGIONAL MEDICAL CENTER OAKLAND (OAK KNOLL)

OAKLAND — CALIFORNIA

DRAWN BY:	R.SCHMIDT
CADASTRAL ENGR:	T. PHELPS
DATE:	02/16/2006
SCALE:	NO SCALE
FILE NAME:	C2006-073

J:\05BR\244\BASES\HOSPITALS&MEDCTRS\OAKLAND\BRAC\DWGFILES\SALES EXCEPTION_REV-1.DWG - REV-2 ADDED COUNTY RECORDING INFO TO CIVIL 24608-G ON SHEET 3

NAVAL REGIONAL MEDICAL
CENTER OAKLAND (OAK KNOLL)

NOTE:
LOT 175 OF SEQUOYAH HILLS SUBDIVISION IS NOT A PART OF QCD RECORDED 08/15/2005 SERIES NO. 2005348212

PARCEL A
PARCEL MAP 8730
MAP BK. 284 PG. 64

SEQUOYAH HILLS
FAIRWAY ESTATES
BARCELONA ST.
ST. ANDREWS RD.
LOT BK 18 PG 59-61
LOT BK 28 PG 64
SEQUOYAH RD.

0 200 400
SCALE 1" = 200'

EXHIBIT "A-1"

SHEET 2 OF 3

DEPT. OF THE NAVY — NAVFAC SOUTHWEST

NAVAL REGIONAL MEDICAL CENTER OAKLAND (OAK KNOLL)

OAKLAND — CALIFORNIA

DRAWN BY:	R.SCHMIDT
CADASTRAL ENGR:	T. PHELPS
DATE:	02/16/2006
SCALE:	1"=200'
FILE NAME:	C2006-073

ACQUISITIONS

(1) CIVIL No. 22087-R FINAL JUDGMENT FILED JANUARY 16, 1943 IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA SOUTHERN DIVISION.

(2) CIVIL No. 22276-S AMENDED FINAL JUDGMENT FILED AUGUST 1, 1944 IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA SOUTHERN DIVISION. A COPY WHICH WAS RECORDED OCTOBER 21, 1944 IN LIBER 4562, PAGE 486, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(3) CIVIL No. 24608-G JUDGMENT FILED JUNE 4, 1945 IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA SOUTHERN DIVISION. A COPY WHICH WAS RECORDED ON JUNE 11, 1945 IN BOOK 4742, PAGE 23, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(4) QUITCLAIM DEED BETWEEN ANMAR INVESTMENTS INCORPORATED, AND THE UNITED STATES OF AMERICA RECORDED IN OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA JULY 16, 1980 AS DOCUMENT No. 80-119199

DISPOSALS

(A) QUITCLAIM DEED TO SEACREST COMPANY, A CO-PARTNERSHIP, ET AL, RECORDED MARCH 8, 1962, IN REEL 531, IMAGE 519, DOCUMENT No. 30784, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(B) QUITCLAIM DEED TO THE CITY OF OAKLAND, A MUNICIPAL CORPORATION RECORDED SEPTEMBER 26, 1978 IN REEL 5597, IMAGE 223, DOCUMENT No. 78-187144 IN OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(C) QUITCLAIM DEED TO WILLIAM A. HARDENSTINE, ET UX, RECORDED DECEMBER 4, 1978, IN REEL 5703, IMAGE 51, DOCUMENT No. 78-236024 OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(D) QUITCLAIM DEED TO THE SENECA RESIDENTIAL AND DAY TREATMENT CENTER FOR CHILDREN RECORDED JANUARY 30, 2002, SERIES NO. 2002048897, OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(E) QUITCLAIM DEED TO THE SEA WEST COAST GUARD FEDERAL CREDIT UNION, RECORDED MAY 7, 2002 SERIES NO. 2002202441 OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA.

(F) QUITCLAIM DEED TO THE REDEVELOPMENT AGENCY OF THE CITY OF OAKLAND A STATE OF CALIFORNIA AGENCY, RECORDED AUGUST 15,2006 SERIES NO. 2005348212 OFFICIAL RECORDS OF ALAMEDA COUNTY, CALIFORNIA. SEE PARCEL MAP 8730.

EXHIBIT "A-1" **SHEET 3 OF 3**

NAVFAC

DEPT. OF THE NAVY — NAVFAC SOUTHWEST

NAVAL REGIONAL MEDICAL CENTER OAKLAND (OAK KNOLL)

OAKLAND — CALIFORNIA

DRAWN BY:	R.SCHMIDT
CADASTRAL ENGR:	T. PHELPS
DATE:	03/27/2006
SCALE:	N/A
FILE NAME:	C2006-073

N4769206RP06P29

Exhibit "B" - Quitclaim Deed
Former Naval Medical Center Oakland

Structures to be Demolished

Parcel No. (from FOST)	Building No.	Building Description/Former Use	Year Built	Square Feet (approximate)
102		Johnson Circle Housing	1969	44712
115		Officer Quarters D & E Williams	1943-44	3600
140		Officer Quarters A, B & C Williams	1943-44	6250
140		Duplex Officer Quarters	1956	7059
104	63	Facilities administration	1942	13330
107	62	Financial management	1942	13230
123	65	Drug screening	1942	13230
124	66	PCO quarters	1942	13230
130	67	Dental annex	1942	13230
131	101	Naval school	1943	18664
133	75	Education and training	1943	13230
142	38,103, 108	Community service	1944	30886
147	102	Security, machine shop	1945	15300
159	110,111,112, 113,114,116	Transportation Center, vehicle storage	1945	14528
163	70	Alcohol rehabilitation	1943	13230

NOTE: The above list includes all housing where Navy did not perform abatement for LBP in soil and all buildings in the "mixed-use" area identified in the reuse plan. Buildings in other reuse areas that are not listed above may be reused if the Grantee complies with all Federal, state, local, and any other applicable law regarding lead-based paint hazards.

construed to include the plural as well as the singular number.

WITNESS the hands and seals of the Grantors, the day and year first above written.

A.J. Vargas.
Marie Vargas.

STATE OF CALIFORNIA)SS
COUNTY OF ALAMEDA) On this 16th day of September, in the year A.D. Nineteen Hundred and Twenty-four before me C.C. [illegible], a Notary Public in and for said County of Alameda State of California, duly commissioned and sworn, personally appeared A.J. VARGAS and MARIE VARGAS, husband and wife, known to me to be the persons described in and who executed and whose names are subscribed to the within instrument and they acknowledged to me that they executed the same,

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at my office in the said County, the day and year first above written,

C.C. Emslie, Notary Public
(Notarial Seal) In and for the County of Alameda, State of California,
Recorded at request of ALAMEDA COUNTY TITLE INSURANCE Co. at 53 min. past 11 A.M. Sep. 19 1924
T-151703 2.70

L.J

COUNTY [illegible]

A.D. KING ET AL
TO
EAST BAY WATER COMPANY

766
P.472

THIS INDENTURE, made this 17th day of September, 1924. Between ARTHUR D. KING and FLORENCE [illegible] KING, his wife, of San Francisco, California, the parties of the first part, and EAST BAY WATER COMPANY, a California Corporation, the party of the second part.

WITNESSETH, That said parties of the first part grant to said party of the second part, all that certain real property situated in the County of Alameda, State of California, and bounded and particularly described as follows ;

BEGINNING at a point on the compromise line so called, between YGNATIO PERALTA, and SIMSON and CHITTENDEN, according to the Survey of the Hewston Ranch, containing 549.59 Acres of land and being a portion of the Ygnatio Peralta Portion of the Rancho San Antonio by Beugler and Boardman, Civil Engineers, Oakland California, dated Nov. 11, 1914 said point of beginning being distant Four Thousand Thirty-four and 34/100 (4034.34) feet from a 4" x 4" x 3" post marking the Southwest corner of the said Hewston Ranch and running thence along said Simson and Chittenden Compromise Line North 58° 13' East Two Hundred Forty and No/100 (240.00) feet, thence South 12° 13' West Two Hundred Fifty-two and 32/100 (252.32) feet, thence South 58° 13' West Two Hundred Forty and No/100 (240.00) feet, thence North 12°13' East Two Hundred Fifty-two and 32/100 (252.32) feet to the point of beginning

BEING a portion of the 639.84 Acre tract of land known as the Arthur D. King Ranch.

Containing One (1) Acre.

IT IS understood and agreed that if in the future said Grantors shall desire to subdivide all or any portion of the 639.84 Acre Tract of land known as the Arthur D. King Ranch and of which said property above described was before its conveyance hereby, a part and if in such subdivision it shall be necessary for the purposes thereof to use portions of the above described parcel of land, consisting of One (1) Acre, for the purpose of streets or roads, then and in that event said party of the second part agrees, that said parties of the first part, shall have the right to take from said One (1) Acre piece such portion or portions thereof as may be necessary for said roads or streets, provided, that such portion so taken shall not interfere in anywise with the operation and maintenance by said party of the second part of any of its works or structures on said one (1) acre piece, and provided further that said parties of the first part, will in exchange for said portions which may be taken as aforesaid, convey to said party of the second part an equal amount of land contiguous to said One (1) Acre piece and so located as to be equally advantageous to said party of the second part, in the operation and maintenance of its works and structures.

SAID parties of the first part, further grant to said party of the second part, a right of way and easement Fifty (50) feet in width for the purpose of ingress to and egress from said one (1) acre piece first hereinabove described and also for the purpose of installing, operating and maintaining thereon and therein telephone, power and pipe lines and mains, which said right of way and easement, is also situated in the County of Alameda, State of California, and is described as follows to-wit,

BEGINNING at the point of intersection of the Northern boundary of the 639.84 acre tract of land known as the Arthur D.Ring Ranch and the Eastern boundary of the grant for public road to be known as Mountain Boulevard conveyed by Arthur D.Ring,et al, to the City of Oakland,a Municipal corporation dated March 8, 1919, and recorded March 8, 1919, in Liber 2724 of Deeds,page 344, Alameda County Records, and running thence North 68° 15' East along the Northern boundary of the said Arthur D.Ring,Ranch, said Northern boundary being the same as the Simson and Chittenden Compromise line, hereinabove described to the Northeast corner of the One (1) Acre portion of the said Arthur D.Ring Ranch,Firstly hereinabove described, thence South 12° 15' East along the said Eastern boundary of the said One (1) Acre Sixty-nine and 81/100 (69.81) feet, thence South 68° 15' West to the Eastern boundary of the said grant for public road to be known as Mountain Boulevard, thence along said Eastern boundary of said grant,for public road to the point of beginning.

EXCEPTING however, from the above described Fifty (50) foot right of way, the following described portion thereof,

That portion of the said Fifty (50) foot right of way included between two lines one Thousand (1000) feet apart, each making an angle of 90° with the so-called Simson and Chittenden Compromise line and distant along said so-called Simson and Chittenden Compromise line one Thousand Eight Hundred Ten (1810) feet and Two Thousand Eight Hundred Ten (2810) feet,respectively from a 4" x 4" x 8" post, firstly hereinabove described as marking the Southwest corner of the Houston Ranch.

IT BEING further understood that said party of the second part is hereby granted the right to construct,operate and maintain a telephone line over the parcel of land last hereinabove described,

SAID parties of the first part also grant to said party of the second part, a right of way and easement to install,operate and maintain a telephone line,said right of way and easement being described as follows to-wit,

A strip of land beginning at the Northeasterly corner of the hereinabove described one (1) Acre tract and ending at the Northeasterly corner of the tract known as the Arthur D.Ring Ranch.

being Thirty-seven Hundred Sixty (3760) feet in length, more or less and Six (6) feet in width and lying parallel with and adjacent to the Northern boundary of the said Arthur D.Ring Ranch, which is the fence that parallels and approximates on the ground the so-called Simson and Chittenden Compromise line according to the survey of the Houston Ranch by Zeugler, and Boardman,Civil Engineers, Oakland,California, dated November 11, 1914.

SAID PARTIES of the first part further grant to said party of the second part, a right of way and easement for the purpose of digging,constructing,building and thereafter maintaining and operating,a concrete lined tunnel Five (5) by Eight (8) feet in dimensions, for the purpose of transporting and conveying water; it being understood that said tunnel and the construction, operation and maintenance thereof shall in nowise disturb the surface of the ground under which it is located, and it being further understood that said parties of the first part reserve unto themselves any and all rights whatsoever to the surface of the ground and that said party of the second part does hereby release to said parties of the first part any and all right,title, use or occupancy of such surface and expressly disclaims any right whatsoever to the same, the center line of said right of way and easement being described as follows to-wit,

BEGINNING at a point on the Eastern boundary of the One (1) Acre portion of the Arthur D.Ring Ranch as Firstly hereinabove described, distant on said Eastern boundary Two Hundred Thirty-nine and 6/100 (239.06) feet Southerly from the so-called Simson and Chittenden Compromise Line and running thence North 68° 4' 30" East, a distance of Four Thousand (4000) feet, more or less to the point where said center line intersects the Eastern boundary of the said Arthur D.Ring Ranch,

ALSO. That portion of the said Fifty (50) foot right of way,secondly hereinabove described included between two lines One Thousand (1000) feet apart,each making an angle of 90° with the so-called Simson and Chittenden Compromise Line and distant along said so-called Simson and Chittenden Compromise [illegible] One Thousand Eight Hundred Ten (1810) feet and Two Thousand Eight Hundred Ten (2810) feet, respectively from a 4" x 4" x 8" [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

IN WITNESS WHEREOF, the parties hereto have executed this [illegible], in duplicate as of the [illegible] year first [illegible] written, [illegible] said party of the second part, being by its officers thereunto duly authorized.

[illegible]

[illegible]

(Corporate Seal)

Approved as to description, [illegible]
Approved as to [illegible]

STATE OF CALIFORNIA)
CITY AND COUNTY OF SAN FRANCISCO) On this 17th day of September, in the [illegible] Thousand Nine Hundred and Twenty-four before me [illegible], a Notary Public in and for the said City and County of San Francisco, residing therein, duly commissioned and sworn, personally appeared, [illegible] and [illegible], his wife, [illegible] the persons whose names are subscribed to the within instrument, and they duly acknowledged to me that they executed the same.

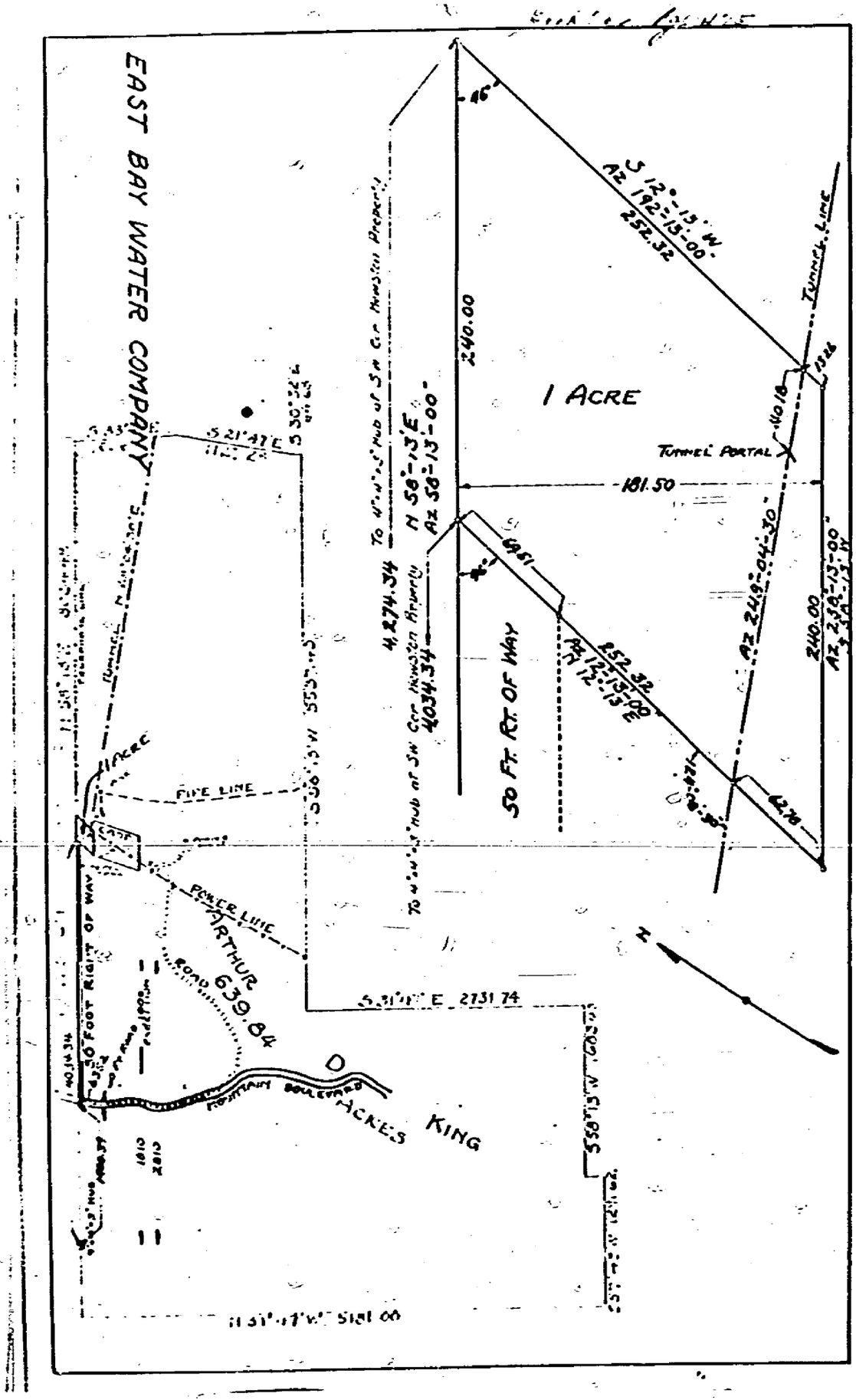
IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at my office in the said City and County of San Francisco, the day and year in this Certificate first above written.

[illegible], Notary Public
(Notarial Seal) In and for the City and County of San Francisco, State of California.
My Commission expires March 1, 19[illegible].

STATE OF CALIFORNIA)
COUNTY OF ALAMEDA) On this 19th day of September in the year one thousand Nine Hundred and Twenty-four before me [illegible], a Notary Public in and for the County of Alameda, State of California, residing therein, duly commissioned and sworn, personally appeared G.H.[illegible], known to me to be the Vice-President and [illegible] known to me to be the Asst. Secretary of the Corporation that executed the within instrument and the officers who executed the within instrument on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year in this Certificate first above written.

Clifford J. Andrews, Notary Public
(Notarial Seal) In and for said County of Alameda, State of California,



Recorded at request of [illegible], at 15 min. past 12 P.M. Sep. 1[illegible], 1924
T-151728 5.50

COMPARED
DC J.R.R.
GC [illegible]

COUNTY RECORDER

The words "GRANTOR" and "LENDER" wherever used in this instrument, shall be [illegible] the singular number.

[illegible]

[illegible] Sixteenth day of January, in the year, A.D. Nineteen [illegible], before me, Alberta A. Martin, a Notary Public in and for said [illegible] commissioned and sworn, personally appeared [illegible] person described in, and who executed and [illegible] acknowledged to me that [illegible]

[illegible] Official Seal, [illegible] County of Alameda, [illegible]

Alberta A. Martin, Notary Public
[illegible] County of Alameda, State of California.

[illegible]

[illegible]

[illegible] COUNTY RECORDER.

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF ALAMEDA

MARIE F. HEWLINGS PLAINTIFF VS. CARL H. NIEPER, ANNA G. NIEPER, FIRST DOE, SECOND DOE AND THIRD DOE DEFENDANTS.	No. 106,737 Dept. No. - NOTICE OF LIS PENDENS NOTICE is hereby given that an action has been commenced in the above entitled Court, by the above named plaintiff against the above

named defendants, to recover certain real estate and the possession thereof, with damages for the withholding thereof and the reasonable value of the use and occupation thereof during such withholding; and that the premises affected by this suit, and described in said complaint, are situated in the City of Berkeley, County of Alameda, State of California, and described as follows, to-wit:

> "Lot Numbered 5, in Block Numbered 8, as said lot and block are delineated and so designated upon that certain Map entitled, 'Map of Thousand Oaks, Alameda County, Cal.' filed August 23, 1909 in Liber 25 of Maps, at page 2, in the office of the County Recorder of Alameda County".

Dated: January 25th 1929.

Ivores R. Dains
Attorney for Plaintiff

Recorded at Request of Plaintiff at 6 min. past 10 A.M. Jan 28 1929.
Z----6256 1.00

Copied Feb. 1,1929. A.Aaron. COUNTY RECORDER.

A. D. KING ET AL
TO
THE CITY OF OAKLAND

OAKLAND CITY COUNCIL
RESOLUTION No. 43734 N.S.
INTRODUCED BY COMMISSIONER PARKER

RESOLUTION ACCEPTING DEED FROM ARTHUR D. KING ET AL FOR SEWER RIGHT OF WAY EXTENDING FROM THE SOUTHERN END OF MOUNTAIN BOULEVARD IN THE MELROSE HIGHLANDS EXTENSION TRACT TO THE NORTHERN END OF MOUNTAIN BOULEVARD IN THE OAK KNOLL UNTIL C. TRACT AND DIRECTING THE CITY CLERK TO PLACE SAME OF RECORD.

RESOLVED: That the deed dated January 17, 1929 from Arthur D. King and Florence L. King, his wife, to the City of Oakland, for sewer right of way extending from the southern end of Mountain Boulevard in the Melrose Highlands Extension tract to the northern end of Mountain Boulevard in the Oak Knoll Unit C. tract be and the same is hereby accepted, and the City Clerk is hereby directed to have said deed placed

of record in the office of the County Recorder of Alameda County.

I certify that the foregoing is a full, true and correct copy of a Resolution passed by the City Council of the City of Oakland, Cal. on Jan 25 1929.
Frank C. Merritt City Clerk
(Municipal Corporate Seal) Per W.W. Chappell Deputy

THIS INDENTURE, Made and entered into this Seventeenth day of January A.D. Nineteen Hundred Twenty-nine (1929)

By and Between Arthur D. King and Florence L. King, his wife, of the City of San Francisco, State of California, the parties of the first part, and The City of Oakland, a Municipal Corporation, the party of the second part.

WITNESSETH: That the said parties of the first part, for and in consideration of the sum of Five Dollars ($5.00) United States Gold Coin, paid by the party of the second part to the parties of the first part, the receipt whereof is hereby acknowledged, do hereby Grant, Bargain, Sell, Transfer and Alien unto the said party of the second part the Easement and Right of Way to establish, construct and maintain for all time a public sewer in, through, on and along that certain piece and strip of land situated, lying and being in the City of Oakland, County of Alameda, State of California, and particularly bounded and described as follows, to-wit:

A strip of land, 8 feet in width, the center line of which is described as follows:

Beginning at a point on the southeastern line, produced, of Lot 561 of the "Melrose Highlands Extension" tract, as shown on the map thereof filed October 7, 1926 in Book 10 of Maps, page 87, Alameda County Records, distant thereon, South 58 degrees, 13 minutes West, 39.19 feet from the most southern corner of said Lot 561; and running thence South 20 degrees, 49 minutes East 268.88 feet; thence South 34 degrees, 48 minutes, 30 seconds East, 381.55 feet; thence South 18 degrees, 56 minutes East, 259.48 feet; thence South 47 degrees, 10 minutes, 30 seconds East 341.22 feet; thence South 45 degrees, 39 minutes East, 314.47 feet; thence South 57 degrees, 40 minutes East, 222.13 feet; thence South 30 degrees, 01 minute, 30 seconds East 558.66 feet; thence South 13 degrees, 13 minutes 30 seconds East, 243.48 feet; thence South 1 degree, 51 minutes West 184.09 feet; thence South 17 degrees, 04 minutes East 237.87 feet; and thence South 20 degrees, 36 minutes East 343.9 feet, more or less, to a point on the northwestern boundary line of Mountain Boulevard, as said Mountain Boulevard is shown on that certain map entitled, "Unit C, Oak Knoll, Oakland, Alameda County, California" filed June 25, 1926 in Book 10 of Maps, pages 79 and 80, aforesaid Alameda County Records.

Being a portion of that certain 349 acre tract of land firstly described in that certain deed from A.A. Moore and Stanley Moore executors of the will of Lodovina Ivay to Arthur D. King, recorded March 6, 1919 in Volume 2733 of Deeds, page 286, aforesaid Alameda County Records.

TO HAVE AND TO HOLD unto the said party of the second part forever for the sole object and purpose of constructing and maintaining thereon a public sewer and for no other purpose; and should said real property herein described be at any time used for any other purpose by said party of the second part than for the Easement and Right of Way for the purpose of constructing and maintaining a public sewer, then this easement and right of way, granted and conveyed, shall immediately lapse and become null and void and said easement and right of way shall immediately revert to said part_ of the first part, successors and assigns.

IN WITNESS WHEREOF, the said parties of the first part have hereunto set their hands and seals the day and year first above written.

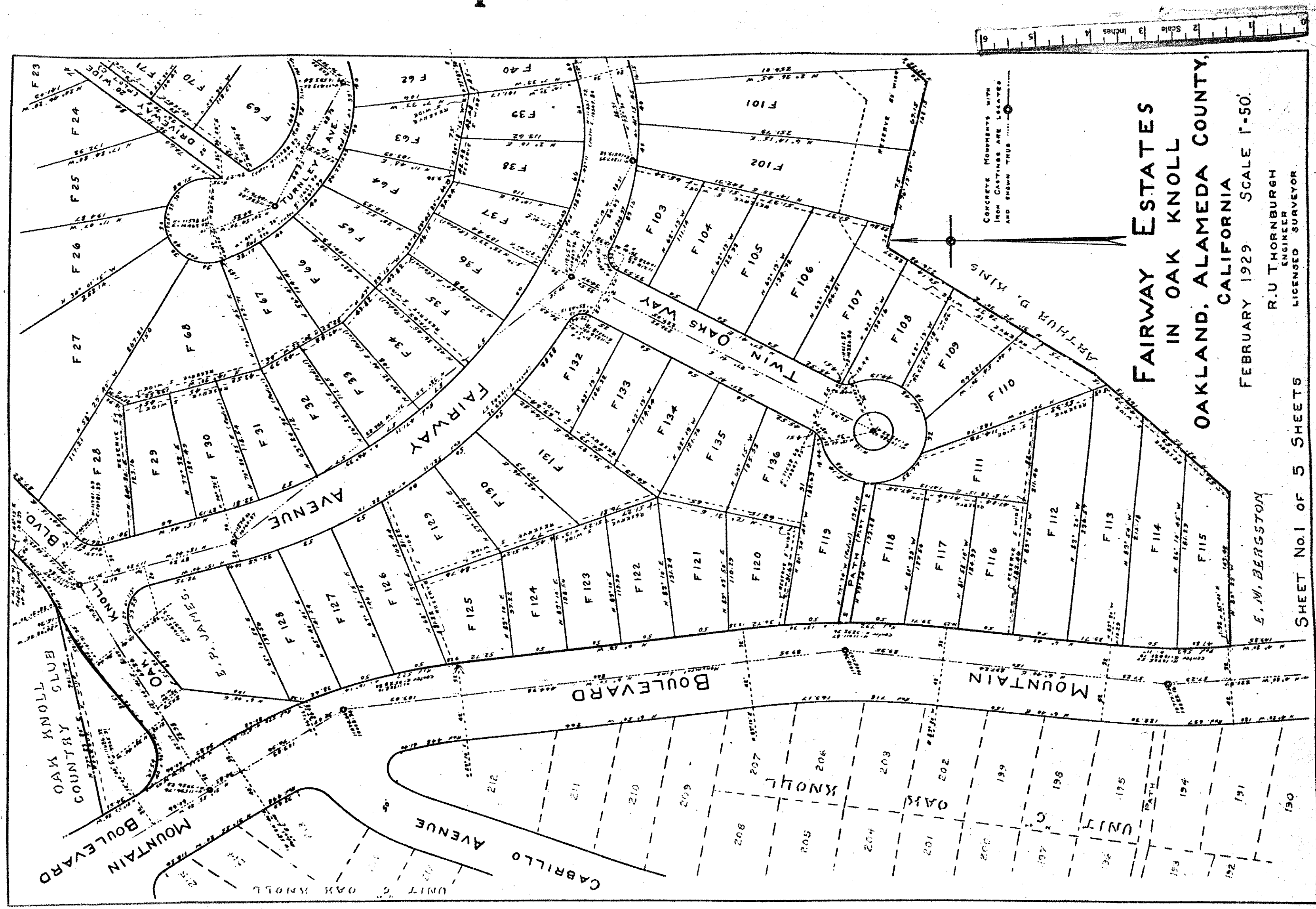
Signed, Sealed and Delivered in the Presence of S.A. Latvanen

Arthur D. King Seal
Florence L. King Seal

STATE OF CALIFORNIA)
CITY AND COUNTY OF)
SAN FRANCISCO) SS. On this 17th day of January in the year One Thousand Nine Hundred and Twenty-nine, before me Kathryn E. Stone, a Notary Public in and for the said City and County of San Francisco, residing therein, duly commissioned and sworn, personally appeared Arthur D. King and Florence L. King his wife, known to me to be the persons whose names are subscribed to the within instrument and they duly acknowledged

Map Book No. 18

18-59



18-59

PARK BOULEVARD COMPANY (a corporation) Owner of the tract of land embraced within the red lines upon the map entitled "ADDITION TO BLOCK 12 OAKMORE HIGHLANDS OAKLAND ALAMEDA CO. CALIF." etc., consisting of two sheets numbered respectively SHEET No. 1 and SHEET No. 2, these affidavits being on SHEET No. 2, hereby consents to the making and filing of said map and said corporation hereby dedicates unto the CITY OF OAKLAND (a municipal corporation), its successors, grantees, assignees and licensees, the easement and right-of-way to construct, maintain and operate public sewers, gas pipes, water pipes and conduits for telegraph, telephone, electric light and power lines in, thru and under those certain strips of land, five (5) feet in width and marked and designated "5 ft. Reserve" on the aforesaid map and colored Orange thereon.

IN WITNESS WHEREOF said corporation has hereunto caused its corporate name to be signed and its corporate seal to be hereto affixed by its officers thereunto duly authorized this 16th day of January A.D. 1929.

PARK BOULEVARD COMPANY, (a corporation)

Harry E. Leimert
President.

Frank Ayers
Secretary.

STATE OF CALIFORNIA } S.S.
COUNTY OF ALAMEDA }

On this 16th day of January in the year of OUR LORD One Thousand Nine Hundred Twenty Nine, before me, A. C. Brach, a Notary Public in and for the County of Alameda, State of California, residing therein, duly commissioned and sworn, personally appeared HARRY E. LEIMERT and FRANK H. AYERS, known to me to be the President and Secretary respectively of the PARK BOULEVARD COMPANY (a corporation) the Corporation that executed the above certificate, and the persons who executed the above certificate on behalf of said corporation therein named and they duly acknowledged to me that said Corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at my office in the County and State aforesaid the day and year in this certificate first above written.

A. C. Brach
Notary Public in and for the County of Alameda
State of California.

W. W. GARTHWAITE and J. Y. ECCLESTON, TRUSTEES, on behalf of and at the request of THE OAKLAND BANK, (a corporation) beneficiary under Deed of Trust covering the lands embraced within the red lines on the aforesaid map entitled "ADDITION TO BLOCK 12 OAKMORE HIGHLANDS OAKLAND ALAMEDA CO. CALIF." etc., hereby consent to the making and filing of said map and consent to all dedications offered by said map.

IN WITNESS WHEREOF said Trustees have hereunto set their hands this 16th day of January A.D. 1929.

W. W. Garthwaite Trustee.

J. Y. Eccleston Trustee.

"ADDITION TO BLOCK 12 OAKMORE HIGHLANDS OAKLAND ALAMEDA CO. CALIF." IS A SUBDIVISION INTO LOTS AND BLOCKS OF A portion of that certain piece or parcel of land heretofore conveyed to PARK BOULEVARD COMPANY by KEY SYSTEM TRANSIT COMPANY by deed dated Jan. 15, 1925 and recorded April 2, 1925 in Vol. 996 Official Records at page 28 thereof.

STATE OF CALIFORNIA } S.S.
COUNTY OF ALAMEDA }

On this 16th day of January in the year of OUR LORD One Thousand Nine Hundred Twenty Nine, before me, A. C. Brach, a Notary Public in and for the County of Alameda, State of California, residing therein, duly commissioned and sworn, personally appeared W. W. GARTHWAITE and J. Y. ECCLESTON Trustees, known to me to be the persons described as Trustees in the above certificate and whose names are subscribed thereto as Trustees and acknowledged to me that they executed the same as Trustees.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal at my office in the County and State aforesaid, the day and year in this certificate first above written.

A. C. Brach
Notary Public in and for the County of Alameda, State of California.

THE OAKLAND BANK (a corporation) beneficiary under Deed of Trust covering the lands embraced within the red lines on the aforesaid map entitled "ADDITION TO BLOCK 12 OAKMORE HIGHLANDS OAKLAND ALAMEDA CO. CALIF." etc., hereby consents to the making and filing of said map and consents to all dedications offered by said map.

IN WITNESS WHEREOF said corporation has hereunto caused its corporate name to be signed and its corporate seal to be hereto affixed by its officers thereunto duly authorized this 16th day of January A.D. 1929.

THE OAKLAND BANK (a corporation)

[illegible] Vice-President

K. Z. Keller
Ass't. Secretary

STATE OF CALIFORNIA } S.S.
COUNTY OF ALAMEDA }

On this 16th day of January in the year of Our Lord One Thousand Nine Hundred Twenty Nine, before me, A. C. Brach, a Notary Public in and for the County of Alameda, State of California, residing therein, duly commissioned and sworn personally appeared J. Y. Eccleston and K. Z. Keller known to me to be the Vice-President and Ass't. Secretary respectively of the OAKLAND BANK (a corporation), the Corporation that executed the above certificate, and the persons who executed the above certificate on behalf of said corporation as beneficiary and they duly acknowledged to me that said corporation executed the same as Beneficiary.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal at my office in the County and State aforesaid, the day and year in this certificate first above written.

A. C. Brach
Notary Public in and for the County of Alameda, State of California

---

STATE OF CALIFORNIA } S.S.
COUNTY OF ALAMEDA }

I, FRANK C. MERRITT, City Clerk and Clerk of the Council of the City of Oakland, do hereby certify that the foregoing map was presented to said Council of said City of Oakland at a meeting thereof held on the 14th day of February A.D. 1929 and that said City Council did thereupon by Resolution No. 41821 N.S. submit said map to the City Planning Commission of the City of Oakland for a report thereon and that said City Council of the City of Oakland did on the 19th day of February A.D. 1929, by Resolution No. 41813 N.S. approve of said map and accept on behalf of said City all offers of dedication to said City of Oakland shown thereon.

Frank C. Merritt
City Clerk and Clerk of the Council of the City of Oakland.

By W. H. Chappell
Deputy City Clerk

STATE OF CALIFORNIA } S.S.
COUNTY OF ALAMEDA }

I, E. F. GARRISON County Auditor of the County of Alameda, State of California, do hereby certify that I have examined all the Tax Rolls in my office and to which I have acces relating to the within described tract of land for the purpose of ascertaining whether there exist any liens on said tract of land for unpaid Taxes and I do hereby certify that after a careful examination of the Tax Rolls of the County of Alameda, in my office and in my possession, I have been unable to find any LIEN on said tract of land or of any subdivision thereof for unpaid State or County taxes

IN WITNESS WHEREOF I have hereunto set my hand this 26th day of February A.D. 1929.

E. F. Garrison
County Auditor of the County of Alameda, State of California.

By John W. Middleton Deputy County Auditor

STATE OF CALIFORNIA } S.S.
COUNTY OF ALAMEDA }

I, HARRY G. WILLIAMS, City Auditor of the City of Oakland, County of Alameda, State of California, do hereby certify that I have examined all of the Tax ROLLS in my office and to which I have access relating to the within described tract of land for the purpose of ascertaining whether there exist any LIENS on said Tract of land for unpaid City taxes and I do hereby certify that after a careful examination of the Tax Rolls of the City of Oakland in my office and in my possession, I have been unable to find any LIEN on said tract of land or of any subdivision thereof for unpaid City of Oakland taxes

IN WITNESS WHEREOF I have hereunto set my hand this 26th day of February A.D. 1929.

Harry G. Williams
City Auditor of the City of Oakland, County of Alameda, State of California.

By Osborne T. Knapp, Deputy City Auditor.

I hereby certify that this plat is as approved by the Oakland City Planning Commission at its meeting held on the 14th day of February 1929 with the proviso that said approval shall become null and void 90 days from the date of this certificate unless this plat shall have been filed for record in the office of the County Recorder on or before expiration of said 90 days.

Dated 14th day of February, 1929.

[illegible] Secretary.

I hereby certify that the Subdivision shown on this map is made from my own survey of the ground and that the Monuments are of the nature and in the locations shown on this map.

Dated this 10th day of January, A.D. 1929.

Geo. A. Posey
Civil Engineer.

STATE OF CALIFORNIA } S.S.
COUNTY OF ALAMEDA }

I, GEORGE N. RANDLE, City Engineer of the City of Oakland, State of California, do hereby certify that I have carefully examined each and every lot shown on the map entitled "ADDITION TO BLOCK 12 OAKMORE HIGHLANDS OAKLAND ALAMEDA CO. CALIF." etc., accompanying this certificate, as to its value for residence or commercial uses and state that same is adapted for such uses. Adequate reservations have been provided for sewer and public utility installations and sufficient data is furnished to relocate street and subdivisional lines and I therefore recommend that said map be approved.

IN WITNESS WHEREOF I have hereunto set my hand this 13th day of Feb A.D. 1929.

Geo. N. Randle
City Engineer of the City of Oakland, County of Alameda, State of California.

By _____
Deputy City Engineer.

This map is accepted for filing showing a Clear Title as per report made by Oakland Title Insurance and Guaranty Company the 27th day of February A.D. 1929, and the same complies in all respects with the provisions of an Act entitled "An Act requiring the recording of maps of subdivisions of land into Lots for the purpose of sale and prescribing the conditions on which said map may be recorded and prohibiting the selling or offering for sale of lands by reference to said Maps unless same are recorded. Approved March 15th 1907" and all amendments thereto.

G. W. BACON
County Recorder of the County of Alameda, State of California.

By Wm. J. Adams Deputy County Recorder

Z 13786
Filed at the request of Oakland Title Insurance and Guaranty Company on the 27th day of February A.D. 1929 at 3 (6 minutes past 10 o'clock A.M. in the office of the County Recorder of the County of Alameda, State of California.

G. W. BACON
County Recorder of the County of Alameda, State of California.

By _____
Fee $5.00 Deputy County Recorder.

ADDITION TO BLOCK 12 OAKMORE HIGHLANDS OAKLAND ALAMEDA CO. CALIF.

1929.

SCALE: 1" = 100'

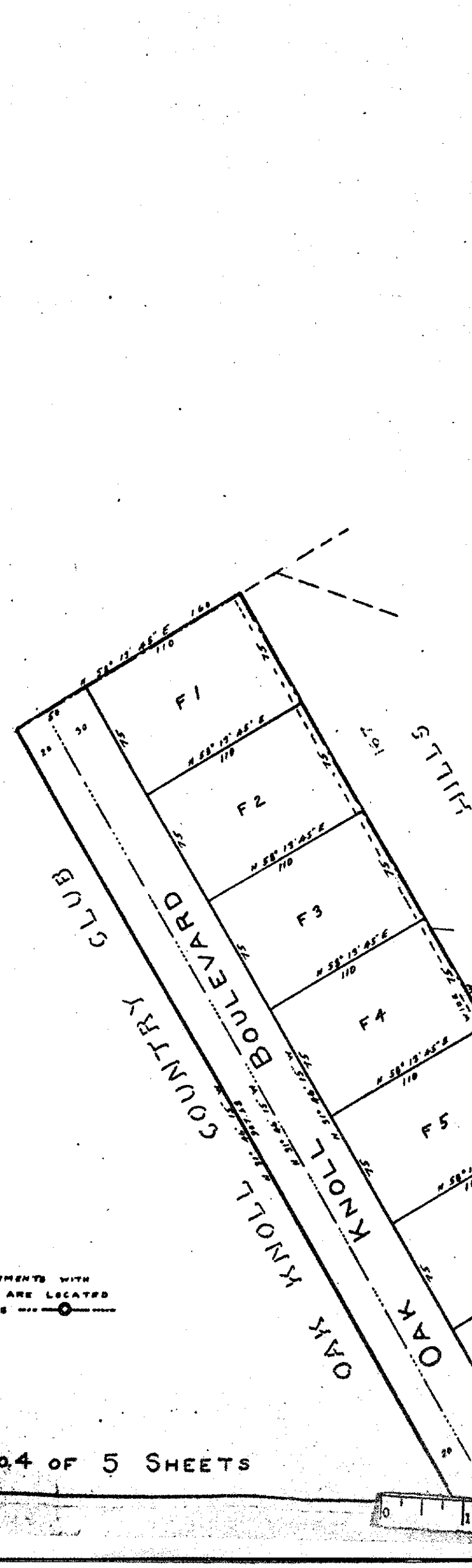
SHEET 2 OF 2 SHEETS.

GEORGE A. POSEY
CIVIL ENGINEER
OAKLAND CALIF.

FAIRWAY ESTATES
IN OAK KNOLL
OAKLAND, ALAMEDA COUNTY, CALIFORNIA

FEBRUARY 1929 SCALE 1"=50'

R.U THORNBURGH
ENGINEER
LICENSED SURVEYOR



CONCRETE MONUMENTS WITH IRON CASTINGS ARE LOCATED AND SHOWN THUS ---o---

0 1 2 Scale 3 inches 4 5 6

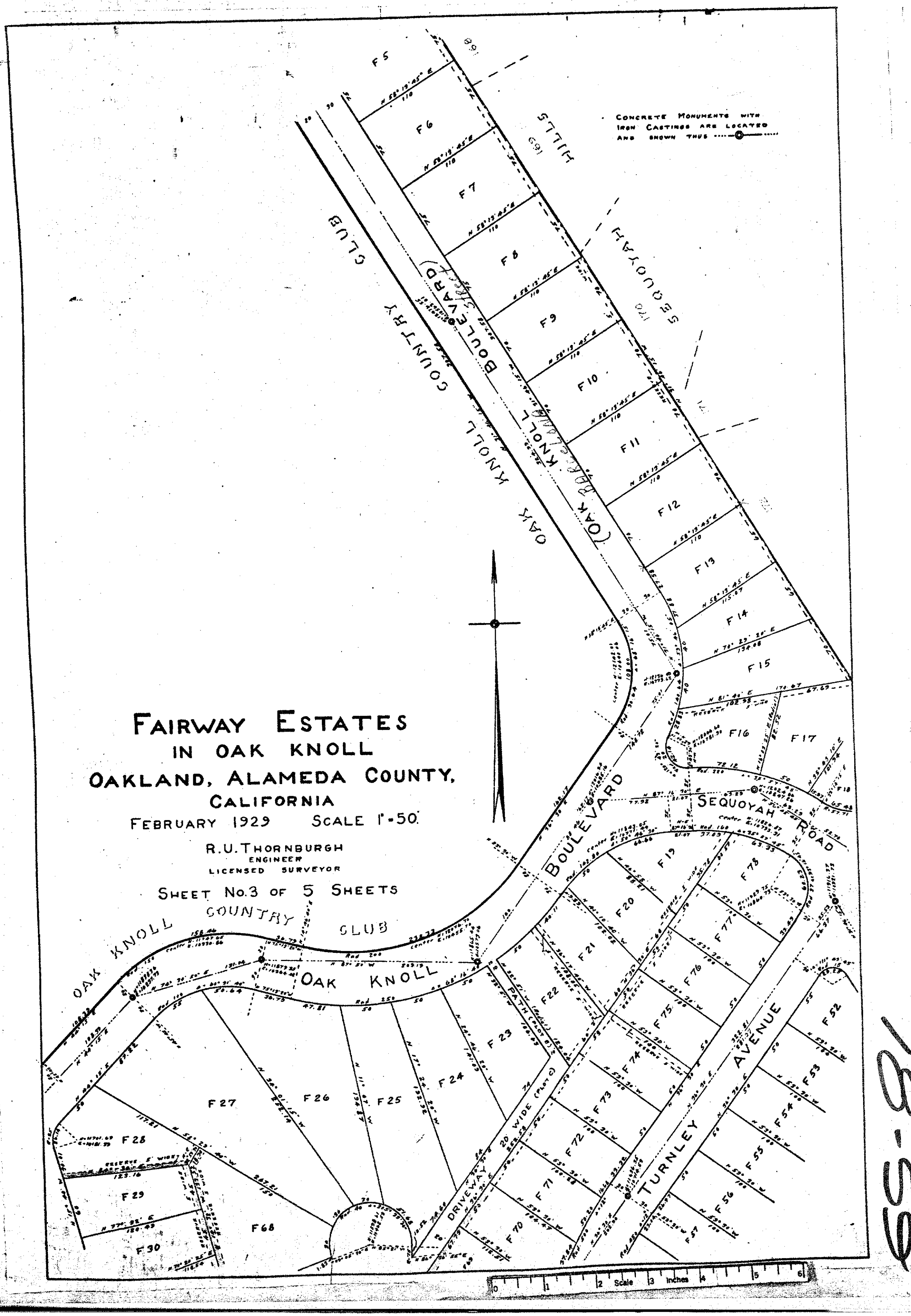
18-56

FAIRWAY ESTATES
IN OAK KNOLL
OAKLAND, ALAMEDA COUNTY, CALIFORNIA

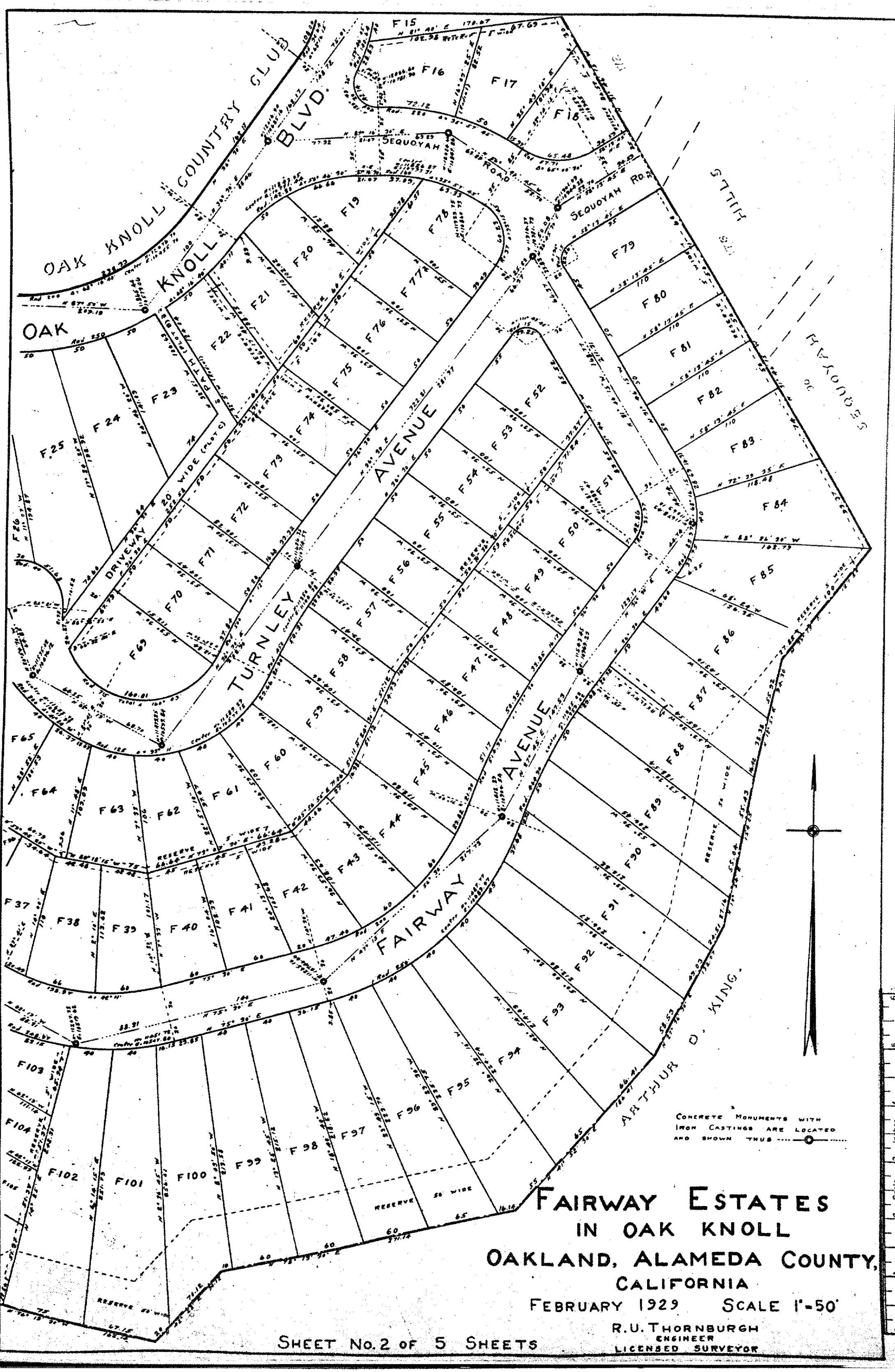
FEBRUARY 1929 SCALE 1"-50'

R. U. THORNBURGH
ENGINEER
LICENSED SURVEYOR

SHEET No. 3 OF 5 SHEETS



3-29-29



FAIRWAY ESTATES
IN OAK KNOLL
OAKLAND, ALAMEDA COUNTY, CALIFORNIA

FEBRUARY 1929 SCALE 1"-50'

R. U. THORNBURGH
ENGINEER
LICENSED SURVEYOR

SHEET NO. 2 OF 5 SHEETS

2-8-29

FAIRWAY ESTATES
IN OAK KNOLL
OAKLAND, ALAMEDA COUNTY, CALIFORNIA

FEBRUARY 1929 SCALE 1"-50'

R. U. THORNBURGH
ENGINEER
LICENSED SURVEYOR

SHEET No. 3 OF 5 SHEETS

CONCRETE MONUMENTS WITH IRON CASTINGS ARE LOCATED AND SHOWN THUS ——◎——

F5 F6 F7 F8 F9 F10 F11 F12 F13 F14 F15 F16 F17 F18 F19 F20 F21 F22 F23 F24 F25 F26 F27 F28 F29 F66 F71 F72 F73 F74 F75 F76 F77 F78 F52 F53 F54 F55 F56

HILLS

SEQUOYAH

GOLF

COUNTRY CLUB

BOULEVARD

KNOLL

OAK

OAK KNOLL

OAK KNOLL COUNTRY CLUB

OAK KNOLL

SEQUOYAH ROAD

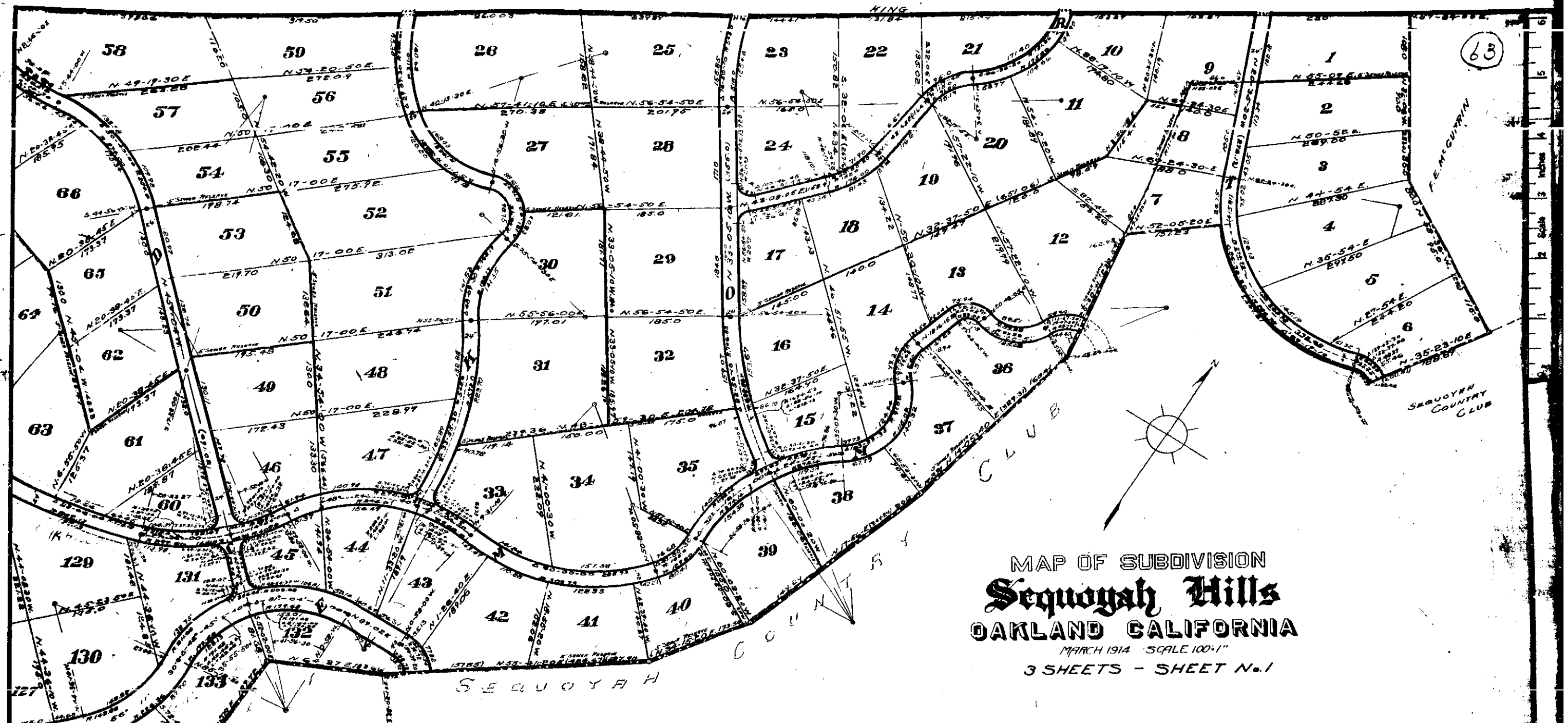
BOULEVARD

PATH (PLOT D)

20' WIDE (PLOT D)

DRIVEWAY

TURNLEY AVENUE



MAP OF SUBDIVISION

Sequoyah Hills

OAKLAND CALIFORNIA

MARCH 1914 SCALE 100:1"

3 SHEETS - SHEET No.1

LEGEND:

Subdivision of SEQUOYAH HILLS, Oakland, California (a portion of the Haines Ranch) is a portion of Divisions Nos. 1 and 3 of the Survey of Lewis Castro, County Surveyor of the County of Alameda, State of California, on August 29, 1871, in partition of a portion of Rancho de San Antonio, owned by Ignacio Peralta in his lifetime, more particularly described as follows:

Beginning at the Southwest corner of Division No. 3, (the point marked Monument on the West line, 458.04 ft. from NW. corner, on Sheet No.2, this map) running thence N.32°-00'W. 458.04 ft.; thence N.57°-25'E. 2476.95 feet; thence S.32°-06'E. 2833.00 ft.; thence S.58°-36'E. 2930.00 ft.; thence S35°-23'-10"W 212.89 ft., along the North line of Sequoyah Country Club; thence continuing along same line by a curve Westerly, (the center of which lies 36.39 ft. S35°-23'-10"W from this point) having a central angle of 52°-37'-00", radius, 36.39 ft., a distance of 33.42 ft.; thence reversing on a curve to the right, having a central angle of 69°-19'-10", radius of 286.98 ft., a distance of 347.21 ft.; thence S.52°-05'-20"W 151.23 ft.; thence S7-25-30E 830.59 ft., S14-05-10W, 329.31 ft., S17°-36 W 349.29 ft., S34°-15-20W 173.54 ft., S55°-44'-20"W 428.47 ft., S64-27W, 189.66 ft., S 2-58 W, 189.72 ft., S 25°-13 W, 404.78 ft.; S57°-39' W, 358.10 ft.; S45-23-30W, 346.10 ft.; N44-36-10W 128.00 ft.; thence by a curve Westerly (whose center lies N44°-36'-10"W 37.53 ft. from this point) having a central angle of 65°-34', radius 32.53 ft., a distance of 928.60 ft.; thence reversing to left, (Radius 86.00 ft., central angle 38°-03'-30") a distance of 31.18 ft.; thence continuing to the left (Radius 20.00 ft. central angle 33°-07'-20") a distance of 32.25 ft.; thence reversing on a curve to the right, having a central angle of 63°-32'-30", radius of 134.00 ft., a distance of 147.74 ft.; thence S41°-19-10W, 200.85 ft.; thence N85°-17-15W, 15.09 ft.; thence S41°-19-10W, 101.51 ft.; thence S40°-47-50W, 667.16 ft., to the Western line of the property; thence along said line, N32-00-00 W, 1183.36 ft., to point of beginning.

Note: Permanent Monuments are of concrete, with brass points, Monuments have iron covers thus: ◉ Monuments without covers, thus: ● Lot corners, as shown thus: ○ of monuments

Bearings are true bearings, shown in degrees, minutes, and seconds

Distances are shown in feet and decimals of feet.

Other abbreviations: Δ = central angle. R = radius. L or L.C. = length of curve.

Red lines denote sewer reservations; green line encloses subdivision, yellow lines, certain reservations for public highway dedication.

MATTHEW COMPANY ENGINEERS BARNEY, CALIFORNIA

MAP OF SUBDIVISION

SEQUOYAH HILLS

OAKLAND-CALIFORNIA

MARCH 1914 SCALE 100'-1"

3 SHEETS SHEET No.2

SEQUOYAH COUNTRY CLUB

MATTHEW COMPANY
ENGINEERS
BERKELEY, CALIFORNIA

APPENDIX B

HISTORICAL RECORD SOURCES

Former Oak Knoll Naval Hospital
8750 Mountain Blvd
Oakland, CA 94605

Inquiry Number: 3768145.3
October 25, 2013

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

10/25/13

Site Name:
Former Oak Knoll Naval
8750 Mountain Blvd
Oakland, CA 94605

EDR Inquiry # 3768145.3

Client Name:
WEST
711 Grand Avenue
San Rafael, CA 94901

Contact: Peter Morris

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by WEST were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Former Oak Knoll Naval Hospital
Address: 8750 Mountain Blvd
City, State, Zip: Oakland, CA 94605
Cross Street:
P.O. # NA
Project: Signature.Oak Knoll
Certification # D132-44C6-91BA

Sanborn® Library search results
Certification # D132-44C6-91BA

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Former Oak Knoll Naval Hospital
8750 Mountain Blvd
Oakland, CA 94605

Inquiry Number: 3768145.4
October 25, 2013

EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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Historical Topographic Map



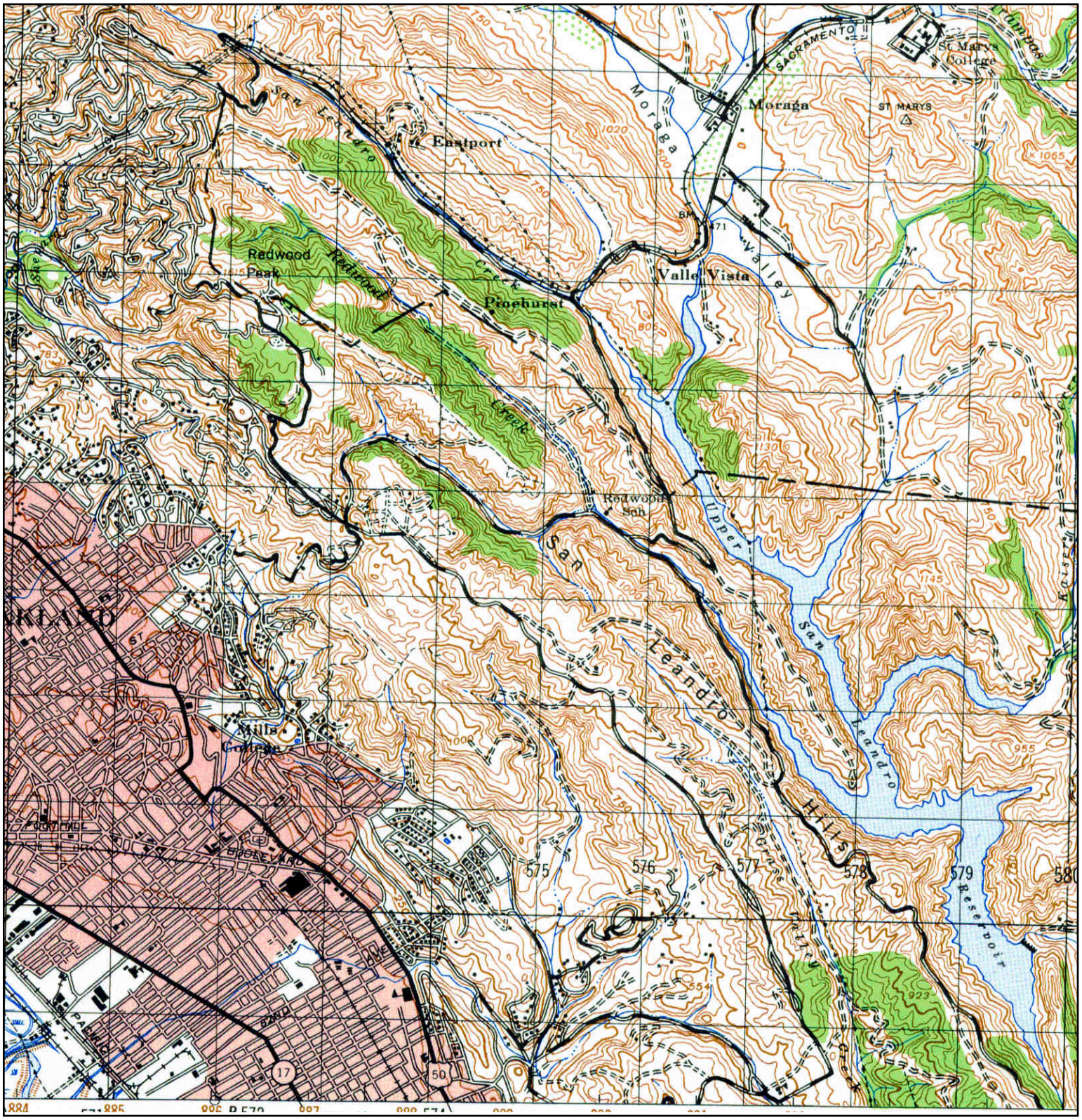
N	TARGET QUAD NAME: CONCORD MAP YEAR: 1897 SERIES: 15 SCALE: 1:62500	SITE NAME: Former Oak Knoll Naval Hospital ADDRESS: 8750 Mountain Blvd Oakland, CA 94605 LAT/LONG: 37.768 / -122.1478	CLIENT: WEST CONTACT: Peter Morris INQUIRY#: 3768145.4 RESEARCH DATE: 10/25/2013

Historical Topographic Map



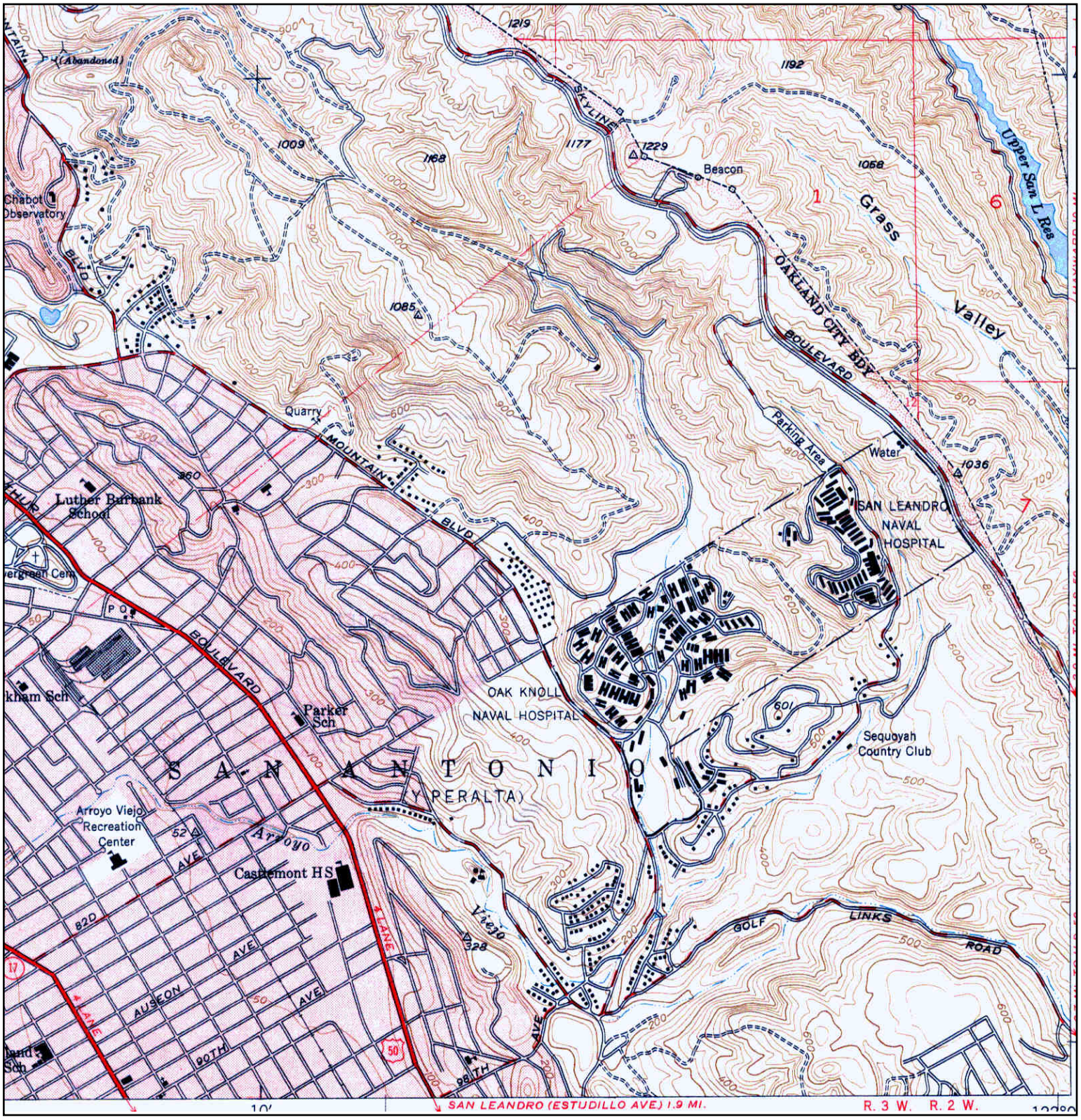
N	TARGET QUAD		SITE NAME:	Former Oak Knoll Naval Hospital	CLIENT: WEST
	NAME:	CONCORD			CONTACT: Peter Morris
	MAP YEAR:	1915	ADDRESS:	8750 Mountain Blvd Oakland, CA 94605	INQUIRY#: 3768145.4
	SERIES:	15	LAT/LONG:	37.768 / -122.1478	RESEARCH DATE: 10/25/2013
	SCALE:	1:62500			

Historical Topographic Map



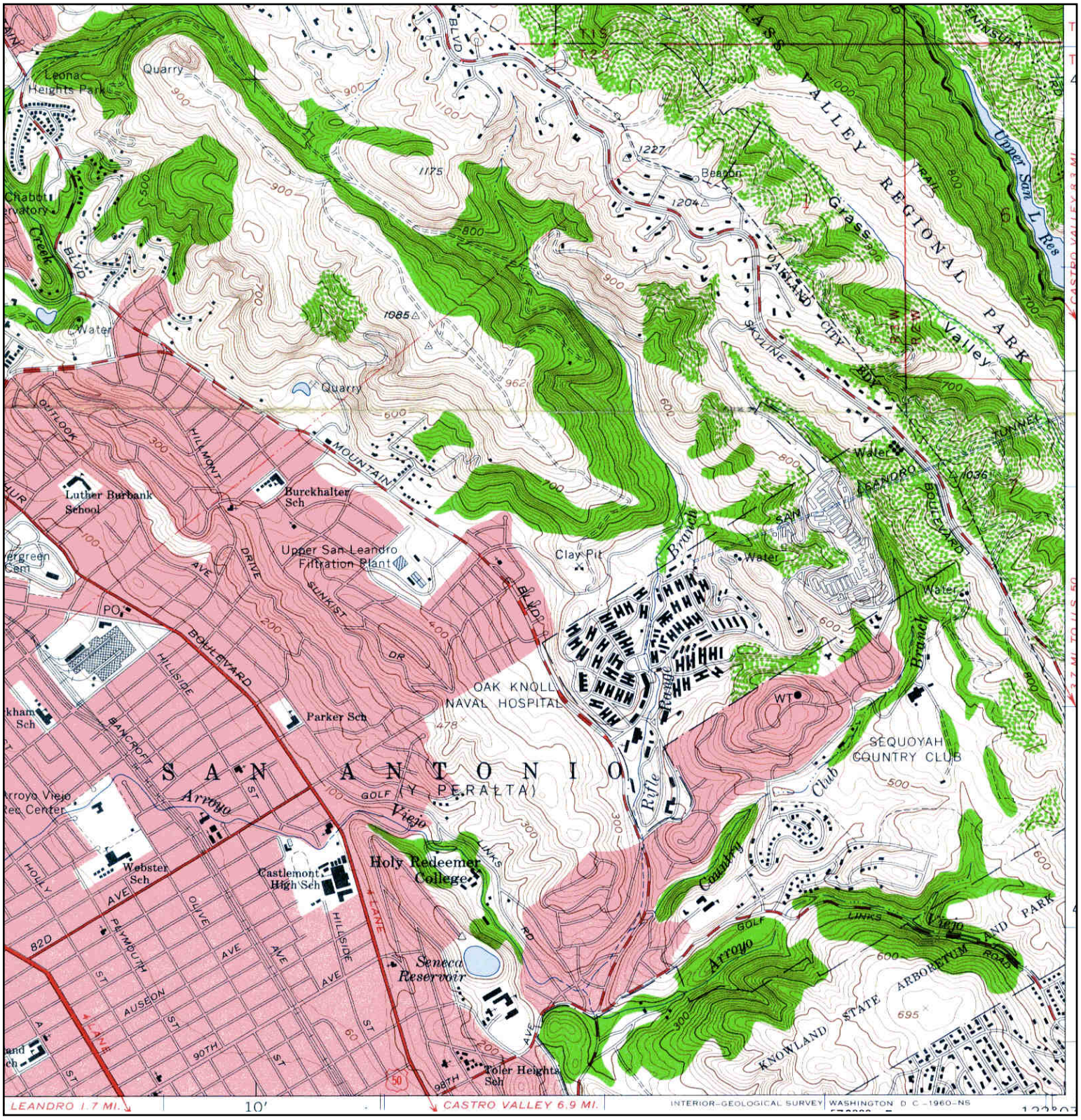
N	TARGET QUAD NAME: CONCORD MAP YEAR: 1948 SERIES: 15 SCALE: 1:50000	SITE NAME: Former Oak Knoll Naval Hospital ADDRESS: 8750 Mountain Blvd Oakland, CA 94605 LAT/LONG: 37.768 / -122.1478	CLIENT: WEST CONTACT: Peter Morris INQUIRY#: 3768145.4 RESEARCH DATE: 10/25/2013

Historical Topographic Map



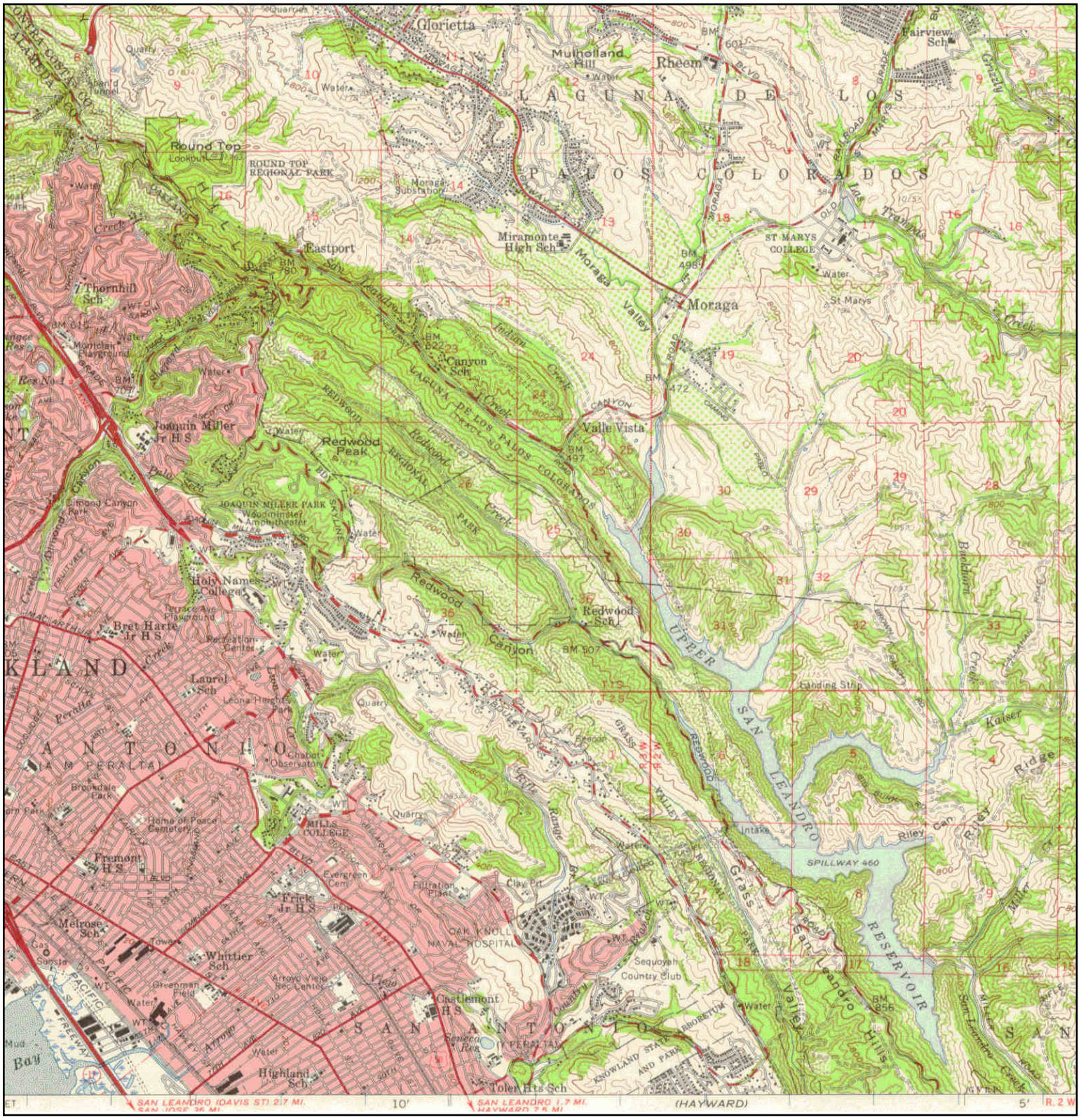
N	TARGET QUAD NAME: OAKLANDEAST MAP YEAR: 1949 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Former Oak Knoll Naval Hospital ADDRESS: 8750 Mountain Blvd Oakland, CA 94605 LAT/LONG: 37.768 / -122.1478	CLIENT: WEST CONTACT: Peter Morris INQUIRY#: 3768145.4 RESEARCH DATE: 10/25/2013

Historical Topographic Map



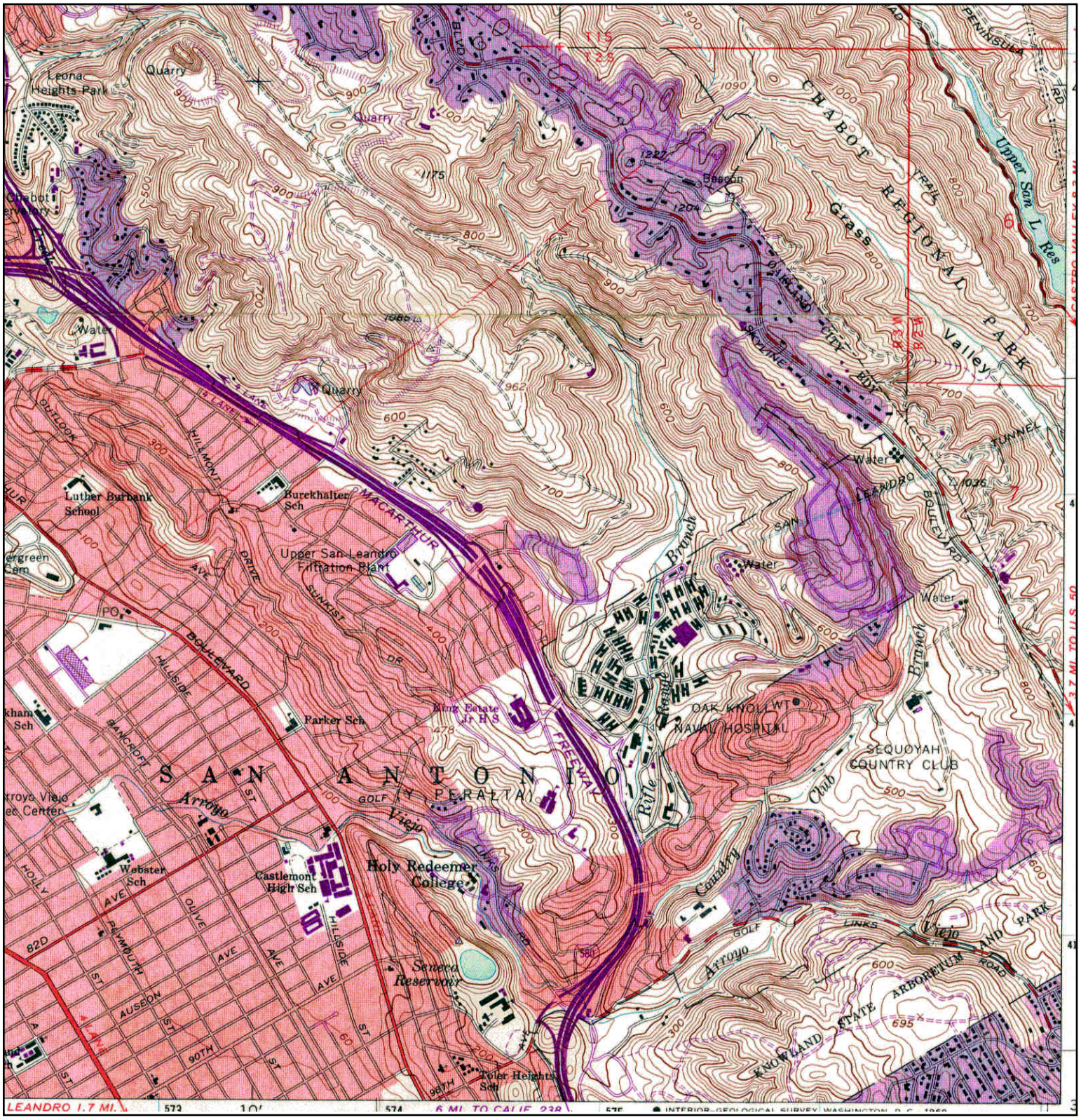
N	TARGET QUAD NAME: OAKLANDEAST MAP YEAR: 1959 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Former Oak Knoll Naval Hospital ADDRESS: 8750 Mountain Blvd Oakland, CA 94605 LAT/LONG: 37.768 / -122.1478	CLIENT: WEST CONTACT: Peter Morris INQUIRY#: 3768145.4 RESEARCH DATE: 10/25/2013

Historical Topographic Map



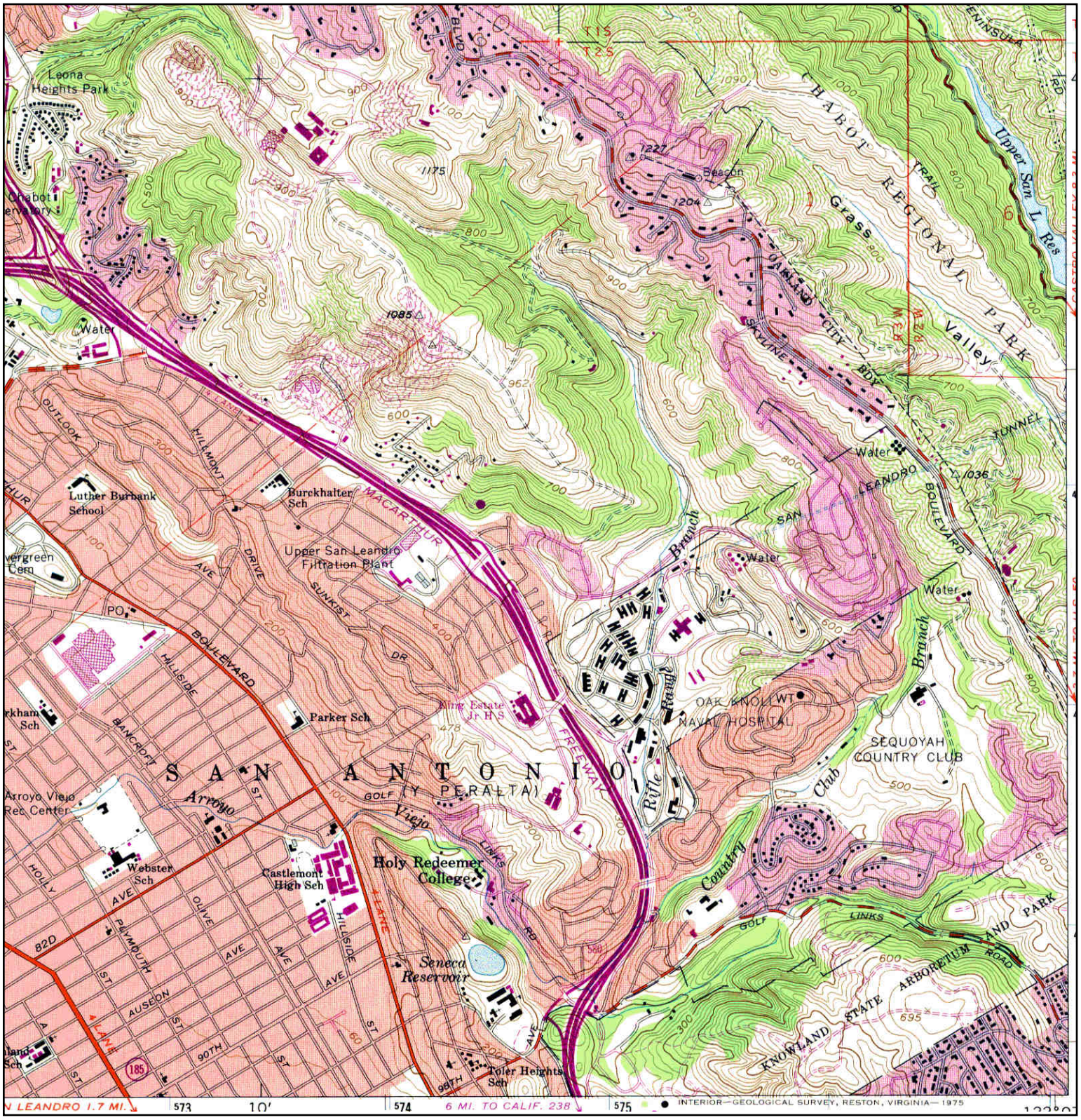
N	TARGET QUAD		SITE NAME:	Former Oak Knoll Naval Hospital	CLIENT: WEST
	NAME:	CONCORD			CONTACT: Peter Morris
	MAP YEAR:	1959	ADDRESS:	8750 Mountain Blvd Oakland, CA 94605	INQUIRY#: 3768145.4
	SERIES:	15	LAT/LONG:	37.768 / -122.1478	RESEARCH DATE: 10/25/2013
	SCALE:	1:62500			

Historical Topographic Map



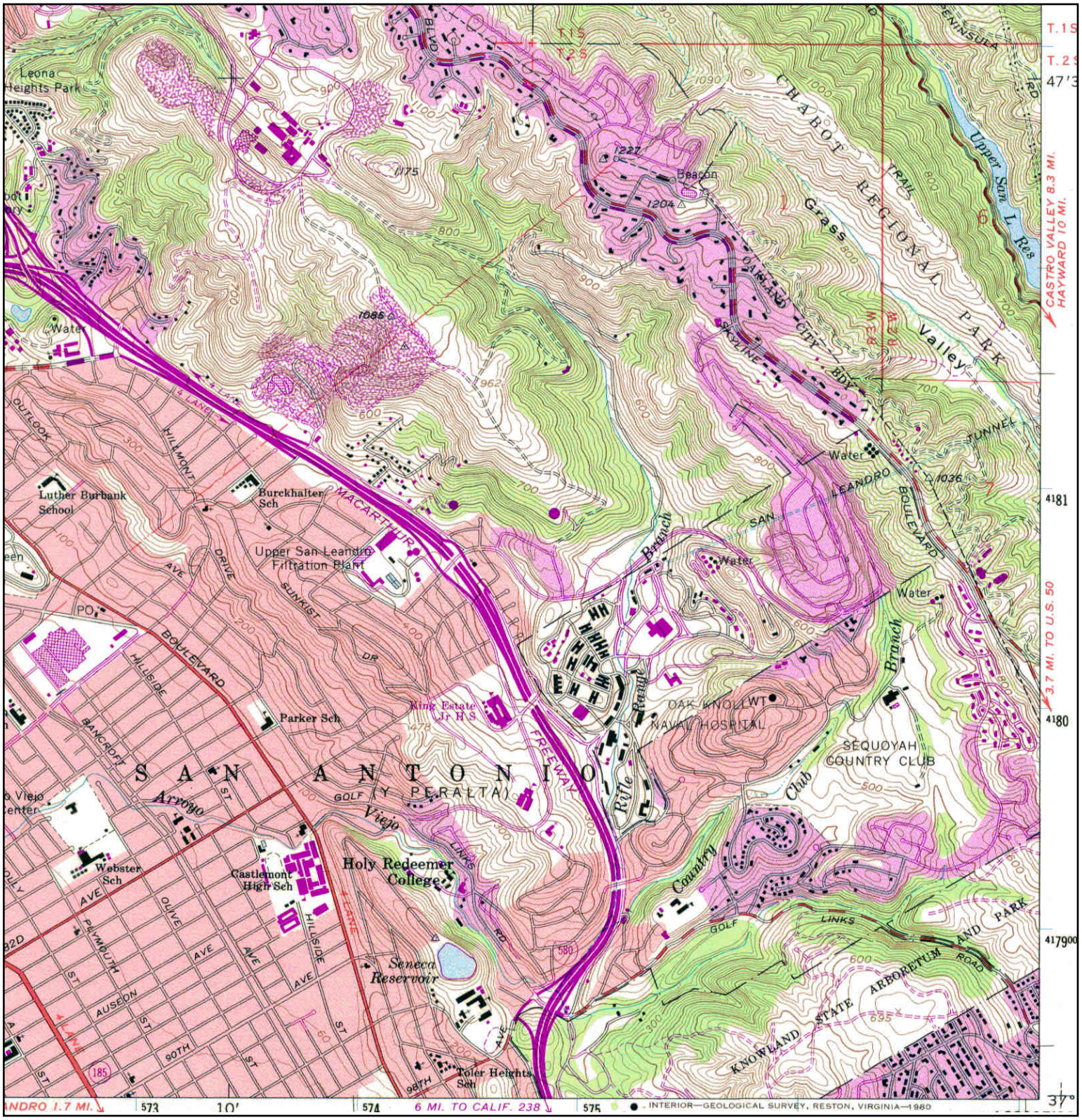
N	TARGET QUAD NAME: OAKLANDEAST MAP YEAR: 1968 PHOTOREVISED FROM :1959 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Former Oak Knoll Naval Hospital ADDRESS: 8750 Mountain Blvd Oakland, CA 94605 LAT/LONG: 37.768 / -122.1478	CLIENT: WEST CONTACT: Peter Morris INQUIRY#: 3768145.4 RESEARCH DATE: 10/25/2013

Historical Topographic Map



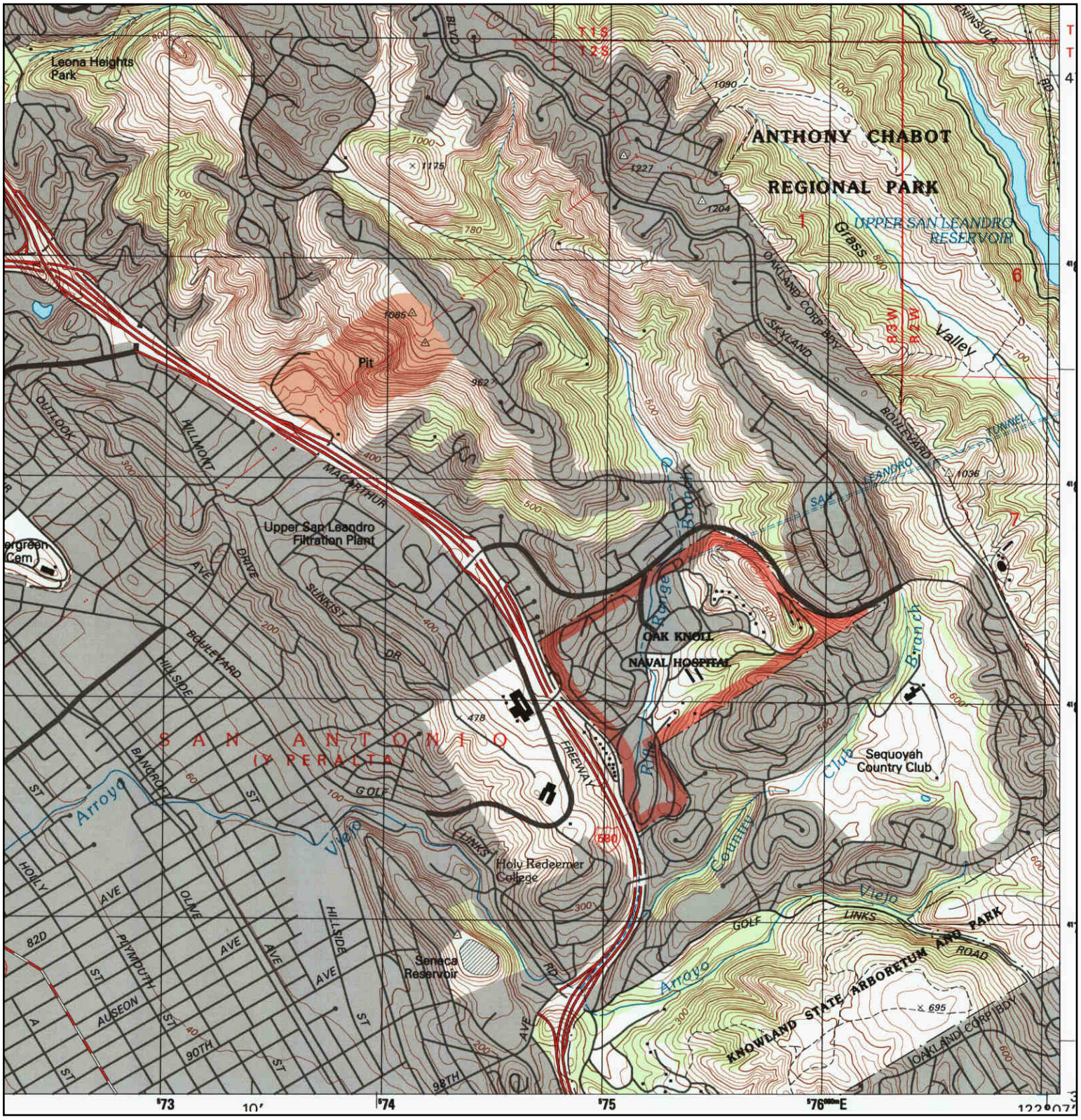
N	TARGET QUAD		SITE NAME:	Former Oak Knoll Naval Hospital	CLIENT:	WEST
	NAME:	OAKLANDEAST			CONTACT:	Peter Morris
	MAP YEAR:	1973	ADDRESS:	8750 Mountain Blvd	INQUIRY#:	3768145.4
	PHOTOREVISED FROM :	1959		Oakland, CA 94605	RESEARCH DATE:	10/25/2013
	SERIES:	7.5	LAT/LONG:	37.768 / -122.1478		
	SCALE:	1:24000				

Historical Topographic Map



N	TARGET QUAD		SITE NAME:	Former Oak Knoll Naval Hospital	CLIENT:	WEST
	NAME:	OAKLANDEAST			CONTACT:	Peter Morris
	MAP YEAR:	1980	ADDRESS:	8750 Mountain Blvd	INQUIRY#:	3768145.4
	PHOTOREVISED FROM :	1959		Oakland, CA 94605	RESEARCH DATE:	10/25/2013
	SERIES:	7.5	LAT/LONG:	37.768 / -122.1478		
	SCALE:	1:24000				

Historical Topographic Map



N	TARGET QUAD NAME: OAKLAND EAST MAP YEAR: 1997 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Former Oak Knoll Naval Hospital ADDRESS: 8750 Mountain Blvd Oakland, CA 94605 LAT/LONG: 37.768 / -122.1478	CLIENT: WEST CONTACT: Peter Morris INQUIRY#: 3768145.4 RESEARCH DATE: 10/25/2013

Former Oak Knoll Naval Hospital
8750 Mountain Blvd
Oakland, CA 94605

Inquiry Number: 3768145.5
October 30, 2013

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

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Date EDR Searched Historical Sources:

Aerial Photography October 30, 2013

Target Property:

8750 Mountain Blvd

Oakland, CA 94605

Year	***Scale***	***Details***	***Source***
1939	Aerial Photograph. Scale: 1"=500'	Flight Year: 1939	Fairchild
1946	Aerial Photograph. Scale: 1"=500'	Flight Year: 1946	Jack Ammann
1958	Aerial Photograph. Scale: 1"=500'	Flight Year: 1958	USGS
1968	Aerial Photograph. Scale: 1"=500'	Flight Year: 1968	USGS
1974	Aerial Photograph. Scale: 1"=500'	Flight Year: 1974	USGS
1982	Aerial Photograph. Scale: 1"=500'	Flight Year: 1982	WSA
1993	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1993	EDR
1999	Aerial Photograph. Scale: 1"=500'	Flight Year: 1999	WAC
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	EDR
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	EDR
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	EDR
2010	Aerial Photograph. Scale: 1"=500'	Flight Year: 2010	EDR
2012	Aerial Photograph. Scale: 1"=500'	Flight Year: 2012	EDR


INQUIRY #: 3768145.5
YEAR: 1939
= 500'
N
EDR Environmental Data Resources Inc


INQUIRY #: 3768145.5
YEAR: 1946
= 500'
N
EDR Environmental Data Resources Inc


INQUIRY #: 3768145.5
YEAR: 1958
= 500'
N
EDR Environmental Data Resources Inc



INQUIRY #: 3768145.5

YEAR: 1968

= 500'

N

EDR Environmental Data Resources Inc


INQUIRY #: 3768145.5
YEAR: 1974
= 500'
N


INQUIRY #: 3768145.5
YEAR: 1982
= 500'
N
EDR Environmental Data Resources Inc


INQUIRY #: 3768145.5
YEAR: 1993
= 500'
N


INQUIRY #: 3768145.5
YEAR: 1999
= 500'
N
EDR Environmental Data Resources Inc


INQUIRY #: 3768145.5
YEAR: 2005
= 500'
N
EDR Environmental Data Resources Inc


INQUIRY #: 3768145.5
YEAR: 2006
= 500'
N


INQUIRY #: 3768145.5
YEAR: 2009
= 500'
N


INQUIRY #: 3768145.5
YEAR: 2010
= 500'
N
EDR Environmental Data Resources Inc


INQUIRY #: 3768145.5
YEAR: 2012
= 500'
N

Former Oak Knoll Naval Hospital
8750 Mountain Blvd
Oakland, CA 94605

Inquiry Number: 3768145.6
October 25, 2013

The EDR-City Directory Abstract

Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

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Executive Summary

Findings

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1920 through 2013. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2013	Cole Information Services	-	X	X	-
	Cole Information Services	X	X	X	-
2008	Cole Information Services	-	X	X	-
	Cole Information Services	X	X	X	-
2006	Haines Company, Inc.	X	X	X	-
2002	R. L. Polk & Co.	-	-	-	-
2000	Pacific Bell	X	X	X	-
1996	PACIFIC BELL DIRECTORY	X	X	X	-
1993	Pacific Bell	-	-	-	-
1992	PACIFIC BELL DIRECTORY	X	X	X	-
1991	PACIFIC BELL WHITE PAGES	X	X	X	-
1986	PACIFIC BELL WHITE PAGES	X	X	X	-
1984	Pacific Bell	-	-	-	-
1982	Pacific Telephone	-	-	-	-
1980	Pacific Telephone	X	X	X	-
1979	Pacific Telephone	-	-	-	-
1976	Pacific Telephone	-	-	-	-
1975	Pacific Telephone	X	X	X	-
1973	Pacific Telephone	-	-	-	-
1970	Pacific Telephone Directory	X	X	X	-
1967	R. L. Polk & Co.	X	X	X	-
1965	Pacific Telephone	-	-	-	-
1962	Pacific Telephone	X	X	X	-
1960	Pacific Telephone	-	-	-	-
1959	R. L. Polk & Co.	-	-	-	-
1956	Pacific Telephone	-	-	-	-

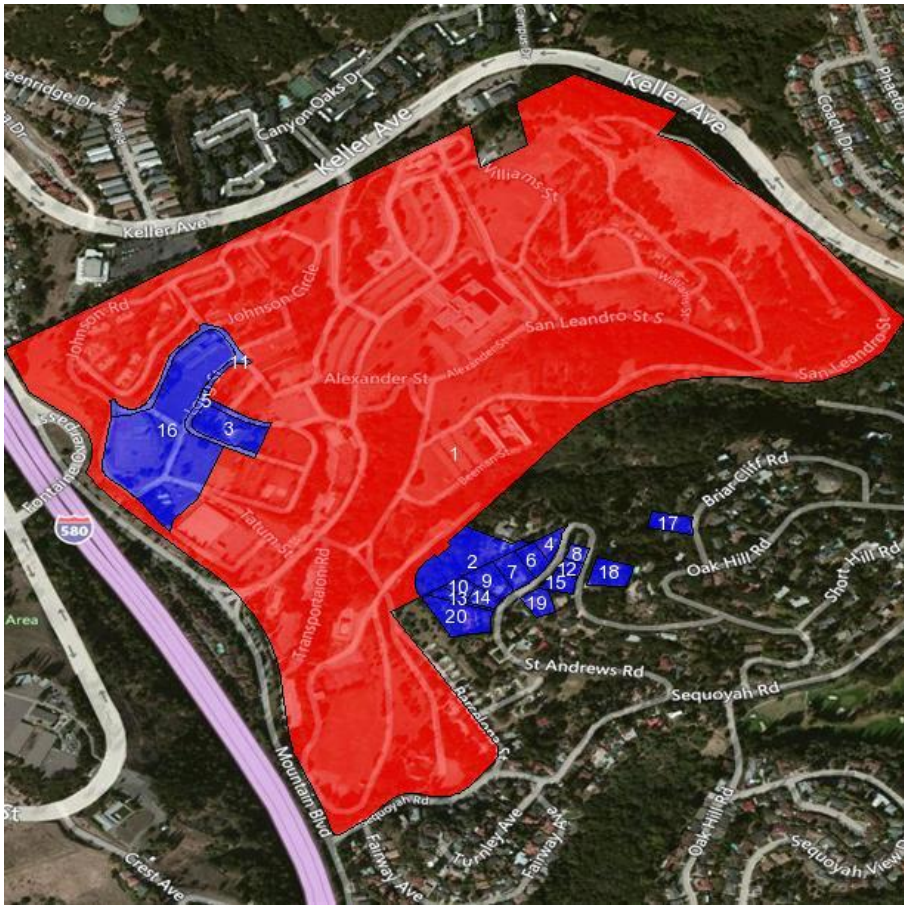
EXECUTIVE SUMMARY

Year	Source	TP	Adjoining	Text Abstract	Source Image
1955	The Pacific Telephone & Telegraph Co.	X	X	X	-
1954	R. L. Polk & Co. of California	-	-	-	-
1951	R. L. Polk & Co.	-	-	-	-
1950	The Pacific Telephone & Telegraph Co.	X	X	X	-
1946	R. L. Polk & Co.	-	-	-	-
1945	The Pacific Telephone & Telegraph Co.	-	X	X	-
1943	R. L. Polk & Co.	-	X	X	-
1940	R. L. Polk & Co.	-	-	-	-
1938	Pacific Telephone	-	X	X	-
1933	R. L. Polk & Co.	-	-	-	-
1932	R. L. Polk & Co. of California	-	-	-	-
1928	R. L. Polk & Co. of California	-	-	-	-
1926	R. L. Polk & Co.	-	-	-	-
1925	The Pacific Telephone & Telegraph Co.	-	-	-	-
1920	R. L. Polk & Co. of California	-	-	-	-

EXECUTIVE SUMMARY

MAP INFORMATION

The Overview Map provides information on nearby property parcel boundaries. Properties on this map that were selected for research are listed below the map.



SELECTED ADDRESSES

The following addresses were selected by the client. Detailed findings are contained in the findings section. An "X" indicates where information was identified.

Address	***Type***	***Findings***
8750 Mountain Blvd	Map ID: 1	X
MOUNTAIN BLVD	Map ID: 11	
MOUNTAIN BLVD	Map ID: 16	
4377 SAINT ANDREWS RD	Map ID: 2	
MOUNTAIN BLVD	Map ID: 3	
MOUNTAIN BLVD	Map ID: 5	

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

8750 Mountain Blvd
Oakland, CA 94605

FINDINGS DETAIL

Target Property research detail.

MOUNTAIN BLVD

MOUNTAIN BLVD

Year	*Uses*	*Source*

8750 MOUNTAIN BLVD

Year	*Uses*	*Source*
2013	INTERNATIONAL CHILD RESEARCH	Cole Information Services
	SENECA CENTER	Cole Information Services
2008	NAVAL MEDICAL CENTER OAKLAND	Cole Information Services
	SEA WEST FEDERAL CREDIT UNION	Cole Information Services
	SENECA CENTER	Cole Information Services

Mountain Blvd

8750 Mountain Blvd

Year	*Uses*	*Source*
2006	CREDIT UNION	Haines Company, Inc.
	SEAWESTFEDERAL	Haines Company, Inc.
	SENECACENTER	Haines Company, Inc.
2000	SEA WEST FEDERAL CREDIT UNION	Pacific Bell
1996		PACIFIC BELL DIRECTORY
	E NELSON FRANKLIN S	PACIFIC BELL DIRECTORY
	SEA WEST FEDERAL CREDIT UNION	PACIFIC BELL DIRECTORY
1992		PACIFIC BELL DIRECTORY
	A VUKSTA MICHAEL J CAPT	PACIFIC BELL DIRECTORY
	AMERICABLE INTERNATL INC	PACIFIC BELL DIRECTORY
	B BARTLETT JOHN D CDR	PACIFIC BELL DIRECTORY
	CHAMPUS SERVICE CENTER	PACIFIC BELL DIRECTORY
	E HYDE NOEL A & LINDA	PACIFIC BELL DIRECTORY

FINDINGS

Year	Uses	Source
1992	F WILDE WADE & TERRI	PACIFIC BELL DIRECTORY
	M ANDERSEN CURTIS	PACIFIC BELL DIRECTORY
	SEA WEST FEDERAL CREDIT UNION	PACIFIC BELL DIRECTORY
	U3 EVANGALISTA CEASAR	PACIFIC BELL DIRECTORY
1991	Ameri Call Corporation	PACIFIC BELL WHITE PAGES
	Americable Internati Inc	PACIFIC BELL WHITE PAGES
	Duff HRay	PACIFIC BELL WHITE PAGES
	Main Office	PACIFIC BELL WHITE PAGES
	Reed Wm	PACIFIC BELL WHITE PAGES
	Ross Rosalyn L	PACIFIC BELL WHITE PAGES
	Ross S	PACIFIC BELL WHITE PAGES
	Ross S L	PACIFIC BELL WHITE PAGES
	Ross S L 8	PACIFIC BELL WHITE PAGES
	Ross S R	PACIFIC BELL WHITE PAGES
	Southern Illinois University	PACIFIC BELL WHITE PAGES
	Southern Pacific Employees Assistances	PACIFIC BELL WHITE PAGES
	Winesett Doug E	PACIFIC BELL WHITE PAGES
	Winet Jon	PACIFIC BELL WHITE PAGES
	Winet S	PACIFIC BELL WHITE PAGES
1986	Allshouse M J	PACIFIC BELL WHITE PAGES
	Battle J C	PACIFIC BELL WHITE PAGES
	Coogan B	PACIFIC BELL WHITE PAGES
	Crowder Fred R	PACIFIC BELL WHITE PAGES
	Duff H Ray	PACIFIC BELL WHITE PAGES
	Fertig D W	PACIFIC BELL WHITE PAGES
	Foster Stephen P	PACIFIC BELL WHITE PAGES
	Foster T	PACIFIC BELL WHITE PAGES
	Jedrzejewski D	PACIFIC BELL WHITE PAGES
	Lynch Caroline S	PACIFIC BELL WHITE PAGES
	Lynch Chas J & Michal	PACIFIC BELL WHITE PAGES
	Main Office	PACIFIC BELL WHITE PAGES
	Perkins Carpenter Pat	PACIFIC BELL WHITE PAGES
	Perkins Winson R	PACIFIC BELL WHITE PAGES
	Perkins Y	PACIFIC BELL WHITE PAGES
	Perko George	PACIFIC BELL WHITE PAGES
	Peterson Steven P	PACIFIC BELL WHITE PAGES
	Racette Richard	PACIFIC BELL WHITE PAGES
	Smyth Jos P Capt MC US N	PACIFIC BELL WHITE PAGES

FINDINGS

Year	Uses	Source
1986	Songco Lito	PACIFIC BELL WHITE PAGES
	Songer Joan	PACIFIC BELL WHITE PAGES
	Southern Illinois University	PACIFIC BELL WHITE PAGES
	Tremblay Thos A	PACIFIC BELL WHITE PAGES
	Trembley G	PACIFIC BELL WHITE PAGES
1980	Adams Jos W	Pacific Telephone
	Alameda Coast Guard Federal Credit Union	Pacific Telephone
	Alameda Coin Exchange Po Box 2170 Almda	Pacific Telephone
	Bagley Grover C III	Pacific Telephone
	Bloomquist R L	Pacific Telephone
	Braden J D	Pacific Telephone
	Carroll Brian J	Pacific Telephone
	Elliott A	Pacific Telephone
	Evans Larry E	Pacific Telephone
	Gonzalez Joe R	Pacific Telephone
	Gray Harold Douglas	Pacific Telephone
	Hassler Jim	Pacific Telephone
	Heather Farms Landscape Inc	Pacific Telephone
	Hegland Duane	Pacific Telephone
	Hodge Warren W	Pacific Telephone
	Hritz Donald E	Pacific Telephone
	Hutchinson Richard	Pacific Telephone
	Jenkins Nathaniel	Pacific Telephone
	Johanboeke M F Jr	Pacific Telephone
	Kashka Ronald D	Pacific Telephone
	Lamar Skip	Pacific Telephone
	Langford H J Jr	Pacific Telephone
	Lay Herbert W	Pacific Telephone
	Llaguno Benjie	Pacific Telephone
	Martin Early M	Pacific Telephone
	Matin Roberta S	Pacific Telephone
	Mc Cleary Myron	Pacific Telephone
	Messier H E	Pacific Telephone
	Naval Hospital	Pacific Telephone
	Naval Hospital Federal Credit Union	Pacific Telephone
	Ortega Cesar	Pacific Telephone
	OShea Phillip	Pacific Telephone
	Pulicicchio Louis	Pacific Telephone

FINDINGS

Year	Uses	Source
1980	Schoof Ron L	Pacific Telephone
	Scott Chas M Capt	Pacific Telephone
	Somerville Stephen & Cam	Pacific Telephone
	Southern Illinois University	Pacific Telephone
	Stroehlein Jas	Pacific Telephone
	Taylor D R	Pacific Telephone
	Vanderwood Wm	Pacific Telephone
	Vines D W	Pacific Telephone
	Weber David M MD	Pacific Telephone
	Wiley R A	Pacific Telephone
1975	BRASSEUR JAS W	Pacific Telephone
	BROWN STEPHEN W	Pacific Telephone
	BURINGRUD DUANE	Pacific Telephone
	CARSON ROBT M	Pacific Telephone
	CASTOR KENNETH C	Pacific Telephone
	COHEN LARRY	Pacific Telephone
	DITTMAN DAVID	Pacific Telephone
	DUPUIS DORIAN	Pacific Telephone
	FANSIER LLOYD W	Pacific Telephone
	FAULKNER DONALD R	Pacific Telephone
	GONZALES MAXIE	Pacific Telephone
	GORSUCH GEO CAPT	Pacific Telephone
	GRIEVE DAVID L	Pacific Telephone
	GROSS GEO R	Pacific Telephone
	HOULE RICHARD G	Pacific Telephone
	IMLER DONALD	Pacific Telephone
	JONES HAROLD C	Pacific Telephone
	JOSEPH WIN A	Pacific Telephone
	KT CONE JERRY	Pacific Telephone
	LEWIS PAUL ELI MD	Pacific Telephone
	NIEVES MIGUEL JR DR	Pacific Telephone
	ODEGAARD DAN I J	Pacific Telephone
	PIERCE ROBT L	Pacific Telephone
1970	BEEBE D B	Pacific Telephone Directory
	DOUGLAS DONALD S	Pacific Telephone Directory
	HARRIS THOS M	Pacific Telephone Directory
	HAYES JAS W DR	Pacific Telephone Directory
	HOSKINS WM J LT	Pacific Telephone Directory

FINDINGS

Year	Uses	Source
1970	HUBBARD HAMPTON CAPT	Pacific Telephone Directory
	KAMMERER WM R	Pacific Telephone Directory
	MAHIN H P RADM USN	Pacific Telephone Directory
	MASTIN ROBT E MD	Pacific Telephone Directory
	REED CHAS N MD	Pacific Telephone Directory
	ROBL ROBT J MD	Pacific Telephone Directory
	SAVIN MAX MD	Pacific Telephone Directory
	SPARKS HENRY A CAPT USN	Pacific Telephone Directory
	UNITED STATES GOVERNMENT	Pacific Telephone Directory
1967	AMERICAN NATIONAL RED CROSS	R. L. Polk & Co.
	BAKER F L	R. L. Polk & Co.
	BASSHAM H L	R. L. Polk & Co.
	COKELY H J	R. L. Polk & Co.
	CONTP	R. L. Polk & Co.
	DOBBIE R P	R. L. Polk & Co.
	ELLIS G M	R. L. Polk & Co.
	HARKINS H H	R. L. Polk & Co.
	HUBER HUNT & NICHOLS BLDG	R. L. Polk & Co.
	LUEHERS J G 56q 5261	R. L. Polk & Co.
	MELTON R W	R. L. Polk & Co.
	SEMMENS J P	R. L. Polk & Co.
	SPARKS H	R. L. Polk & Co.
	U S N EXCHANGE	R. L. Polk & Co.
	U S N HOSP	R. L. Polk & Co.
	YOUNG W D	R. L. Polk & Co.
1962	Navy Exchange	Pacific Telephone
	Navy Exchange Restaurant	Pacific Telephone
	U S Naval Hospital	Pacific Telephone
1955	UNITED STATES GOVERNMENT	The Pacific Telephone & Telegraph Co.
1950	BAR TON H C DRI R	The Pacific Telephone & Telegraph Co.

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

EARL

8101 EARL

Year	Uses	Source
1991	Pristas Thomas	PACIFIC BELL WHITE PAGES

8116 EARL

Year	Uses	Source
1986	Zeiser R W	PACIFIC BELL WHITE PAGES
	Zeiser Roland II	PACIFIC BELL WHITE PAGES
	Zeiss C I	PACIFIC BELL WHITE PAGES
1980	Zeiser R W	Pacific Telephone

8119 EARL

Year	Uses	Source
1991	Sheldon Myron & Elena	PACIFIC BELL WHITE PAGES
	Sheldon Sandee	PACIFIC BELL WHITE PAGES
	Sheldon Mark	PACIFIC BELL WHITE PAGES
	Sheldon M	PACIFIC BELL WHITE PAGES
	Sheldon T Dale	PACIFIC BELL WHITE PAGES
	Sheldon Mark	PACIFIC BELL WHITE PAGES
	Sheldon Ramsay C	PACIFIC BELL WHITE PAGES
	Sheldon Peg	PACIFIC BELL WHITE PAGES
1986	Sheldon Myron	PACIFIC BELL WHITE PAGES
	Sheldon Mark	PACIFIC BELL WHITE PAGES
	Sheldon M	PACIFIC BELL WHITE PAGES
1980	Sheldon M	Pacific Telephone

8125 EARL

Year	Uses	Source
1980	Freitas O	Pacific Telephone

8129 EARL

Year	Uses	Source
1980	Johnston M L	Pacific Telephone

FINDINGS

8136 EARL

Year	*Uses*	*Source*
1991	Sierra Maria	PACIFIC BELL WHITE PAGES
1986	Sanchez Antoinio	PACIFIC BELL WHITE PAGES
1980	Rodriguez Hector	Pacific Telephone

EARL ST

8100 EARL ST

Year	*Uses*	*Source*
2006	a PEDERSENChas	Haines Company, Inc.
1967	PEDERSEN CHARLES	R. L. Polk & Co.
1962	Pedersen Charles r	Pacific Telephone
1955	PEDERSEN CHARLES R	The Pacific Telephone & Telegraph Co.
1950	PEDER SEN CHARLES R	The Pacific Telephone & Telegraph Co.
1945	PEDERSEN CHARLES R	The Pacific Telephone & Telegraph Co.
1943	CAMPBELL Burns A Barbara shipydwkr h	R. L. Polk & Co.

8101 EARL ST

Year	*Uses*	*Source*
2006	BARKERTracy	Haines Company, Inc.
1970	TULL MARILYN	Pacific Telephone Directory
	MERRIAM A JOSEPHINE	Pacific Telephone Directory
	ALTSTAETTER FREDERICA	Pacific Telephone Directory
1967	SEGALE RENALDO	R. L. Polk & Co.
1962	Segale R r	Pacific Telephone
1955	SEGALE R R	The Pacific Telephone & Telegraph Co.
1950	SEGALE R R	The Pacific Telephone & Telegraph Co.
1943	Segale Renaldo F Elsie sub sta opr PG & E Co h	R. L. Polk & Co.

8108 EARL ST

Year	*Uses*	*Source*
2006	o THOMAST	Haines Company, Inc.
	a THOMAS Elaine	Haines Company, Inc.
1975	JACKSON A C	Pacific Telephone
1970	FRARY L R	Pacific Telephone Directory
1967	PERRY KENNETH Jt	R. L. Polk & Co.

FINDINGS

Year	Uses	Source
1962	Perry Kenneth J	Pacific Telephone
1955	PERRY KENNETH J	The Pacific Telephone & Telegraph Co.
1950	RISI BARBARA R	The Pacific Telephone & Telegraph Co.
1945	DAVIS ALBERT D R	The Pacific Telephone & Telegraph Co.
1943	George Emile Eileen acct h	R. L. Polk & Co.

8116 EARL ST

Year	Uses	Source
2006	a ORANTENewin 00 an	Haines Company, Inc.
1970	ZEISER R W	Pacific Telephone Directory
1967	ZEISER ROLAND W	R. L. Polk & Co.
1962	Zeiser R W	Pacific Telephone
1955	ZEISER R W R	The Pacific Telephone & Telegraph Co.
1950	ZEISER R W R	The Pacific Telephone & Telegraph Co.
1945	RICHARD JOHN R	The Pacific Telephone & Telegraph Co.
1943	Richard John J Frances V shtmtlwkr h	R. L. Polk & Co.

8119 EARL ST

Year	Uses	Source
2006	GONZALEZRamon	Haines Company, Inc.
2000	SHELDON M	Pacific Bell
1996	SHELDON M	PACIFIC BELL DIRECTORY
1992	SHELDON M	PACIFIC BELL DIRECTORY
1970	VON DER HEIDE LAURA	Pacific Telephone Directory
	SHELDON M	Pacific Telephone Directory
1967	SHELDON MIKE S	R. L. Polk & Co.
1962	Von Der Heide Laura	Pacific Telephone
	Sheldon M r	Pacific Telephone
1955	VON DER HEIDE LAURA R	The Pacific Telephone & Telegraph Co.
	SHELDON M R	The Pacific Telephone & Telegraph Co.
1945	KETTWIG C J R	The Pacific Telephone & Telegraph Co.
1943	Kettwig Carl J Annice R mech h	R. L. Polk & Co.
	Grover Jane tmkpr r	R. L. Polk & Co.

FINDINGS

8124 EARL ST

Year	Uses	Source
2006	a BLASICory	Haines Company, Inc.
1970	MACARIO JUAN C	Pacific Telephone Directory
1967	BLANKENHORN CHARLES A S	R. L. Polk & Co.
1962	Blankenhorn Chas	Pacific Telephone
1955	PERRY ALBERT JR	The Pacific Telephone & Telegraph Co.
1945	PERRY ALBERT JR R	The Pacific Telephone & Telegraph Co.
1943	Perry Albt jr Ruth welder h	R. L. Polk & Co.

8125 EARL ST

Year	Uses	Source
2006	CONNORSTobi	Haines Company, Inc.
1970	FREITAS O	Pacific Telephone Directory
1967	FREITAS MANUEL 0 L	R. L. Polk & Co.
1962	Freitas Olive E Mrs	Pacific Telephone
1955	FREITAS OLIVE E MRS	The Pacific Telephone & Telegraph Co.
1950	BRANTLEY L W MRS R	The Pacific Telephone & Telegraph Co.
1945	KOCH N C R	The Pacific Telephone & Telegraph Co.
1943	Mac Donald Alex A Betty serv mgr h	R. L. Polk & Co.
1938	ROBINSON WM A R	Pacific Telephone

8129 EARL ST

Year	Uses	Source
2006	o BUTIS Steding	Haines Company, Inc.
1970	DAANE C P REV	Pacific Telephone Directory
1967	DAANE CORNELIUS P REV	R. L. Polk & Co.
1962	Daane Gerald C	Pacific Telephone
1955	PIPKIN ALAN C	The Pacific Telephone & Telegraph Co.
1950	PURUSE ERNEST R	The Pacific Telephone & Telegraph Co.
1945	PURSE ERNEST R	The Pacific Telephone & Telegraph Co.
1943	Hein Rose wid G F r	R. L. Polk & Co.
	Purse Ernest Edith R h	R. L. Polk & Co.
1938	PURSE E R	Pacific Telephone

FINDINGS

8130 EARL ST

Year	Uses	Source
2006	ODOMS James	Haines Company, Inc.
1970	ALVES MANUEL MRS	Pacific Telephone Directory
1967	ALVES MANUEL	R. L. Polk & Co.
1962	Alves Manuel Mrs	Pacific Telephone
1955	ALVES MANUEL MRS	The Pacific Telephone & Telegraph Co.
1945	BRUNER DANIEL E R	The Pacific Telephone & Telegraph Co.
1943	Stott Reo D Virginia h	R. L. Polk & Co.

8136 EARL ST

Year	Uses	Source
2006	SANCHEZ Antonio	Haines Company, Inc.
	KJOBMAND Jeaneoe	Haines Company, Inc.
1970	ECKLEY FRANCES M	Pacific Telephone Directory
1967	ECKLEY FRANCES M MRS	R. L. Polk & Co.
1955	BEAVER JIMMY C	The Pacific Telephone & Telegraph Co.
1950	DUCK LLOYD L R	The Pacific Telephone & Telegraph Co.

FONTAINE

8073 FONTAINE

Year	Uses	Source
1980	Grubbs Edw G	Pacific Telephone

8089 FONTAINE

Year	Uses	Source
1980	Lahmann Larry	Pacific Telephone

8101 FONTAINE

Year	Uses	Source
1980	Poirson R F	Pacific Telephone

8115 FONTAINE

Year	Uses	Source
1980	LITTLE WIZ CHILD CARE CENTER THE	Pacific Telephone

FINDINGS

8251 FONTAINE

Year	Uses	Source
1980	King	Pacific Telephone

FONTAINE CT

4102 FONTAINE CT

Year	Uses	Source
2006	EBOZAYDAhmed	Haines Company, Inc.
	ABOZAYDAhmed	Haines Company, Inc.
1967	SMITH LAWRENCE W	R. L. Polk & Co.
1962	Smith Lawrence Wm	Pacific Telephone
1955	SMITH LAWRENCE WM R	The Pacific Telephone & Telegraph Co.
1950	GILLETTE LEE R	The Pacific Telephone & Telegraph Co.

4103 FONTAINE CT

Year	Uses	Source
2013	PORCELAIN STUDIO KRAFT	Cole Information Services
2008	KRAFT PORCELAIN STUDIO	Cole Information Services
2006	KRAFTPORCELAIN	Haines Company, Inc.
	STUDIO	Haines Company, Inc.
	WINKELMAN Grant T	Haines Company, Inc.
2000	WINKELMAN GRANT T	Pacific Bell
	KRAFT PORCELAIN STUDIO	Pacific Bell
1996	WINKELMAN GRANT T	PACIFIC BELL DIRECTORY
1992	WINKELMAN GRANT T	PACIFIC BELL DIRECTORY
1980	Andrews Rick	Pacific Telephone
1975	COLWELL WM	Pacific Telephone
1970	COLWELL WM	Pacific Telephone Directory
1967	COLWELL WM H	R. L. Polk & Co.
1962	Colwell Wm	Pacific Telephone
1955	COLWELL WM	The Pacific Telephone & Telegraph Co.
1950	PEPPAS SAM I J R	The Pacific Telephone & Telegraph Co.

4108 FONTAINE CT

Year	Uses	Source
2006	e AGUINALDO Robed	Haines Company, Inc.
1986	Williams Roman E	PACIFIC BELL WHITE PAGES

FINDINGS

Year	Uses	Source
1986	Williams Rolf Ph D	PACIFIC BELL WHITE PAGES
	Williams Hazel K	PACIFIC BELL WHITE PAGES
1975	NIELSON M H	Pacific Telephone
1967	NIELSON MARGT H MRS 562 497 T	R. L. Polk & Co.
1962	Nielson Margaret Hopton	Pacific Telephone
1955	NIELSON MARGARET H MRS	The Pacific Telephone & Telegraph Co.
1950	NIELSON MARGARET H MRS R	The Pacific Telephone & Telegraph Co.

4109 FONTAINE CT

Year	Uses	Source
2006	COMBS Ronaelyn	Haines Company, Inc.
	CARLSONA	Haines Company, Inc.
2000	COMBS ROBT W & ROSSELYN	Pacific Bell
1996	COMBS ROBT W & ROSSELYN	PACIFIC BELL DIRECTORY
1992	COMBS ROBT W & ROSSELYN	PACIFIC BELL DIRECTORY
1991	Combs Robt W & Rosselyn	PACIFIC BELL WHITE PAGES
1986	Combs Robt W & Rosselyn	PACIFIC BELL WHITE PAGES
1980	Combs Robt W & Rosselyn	Pacific Telephone
1975	COMBS RO BT W	Pacific Telephone
1970	COMBS ROBT W	Pacific Telephone Directory
1967	COMBS ROBT W	R. L. Polk & Co.
1962	Combs Robt W	Pacific Telephone
1955	COMBS ROBT W R	The Pacific Telephone & Telegraph Co.

4117 FONTAINE CT

Year	Uses	Source
2006	JACKSON MC	Haines Company, Inc.
2000	JACKSON M C	Pacific Bell
1996	JACKSON S & L	PACIFIC BELL DIRECTORY
	JACKSON M C	PACIFIC BELL DIRECTORY
1992	JACKSON M C	PACIFIC BELL DIRECTORY
1991	Jackson ME	PACIFIC BELL WHITE PAGES
	Jackson MC	PACIFIC BELL WHITE PAGES
1986	Jackson M C	PACIFIC BELL WHITE PAGES
	Woods D W Mrs	PACIFIC BELL WHITE PAGES
1980	Jackson M C	Pacific Telephone
	Woods D W Mrs	Pacific Telephone

FINDINGS

Year	Uses	Source
1970	RODBY L T	Pacific Telephone Directory
1967	ROOBY LAWRENCE T	R. L. Polk & Co.
1962	Loney Herbert J	Pacific Telephone
1950	JOHANNISEN RICHARD L R	The Pacific Telephone & Telegraph Co.

8072 FONTAINE CT

Year	Uses	Source
1955	HENRICS ALBERT	The Pacific Telephone & Telegraph Co.

8073 FONTAINE CT

Year	Uses	Source
1975	GRUBBS EDW G	Pacific Telephone

8081 FONTAINE CT

Year	Uses	Source
1970	GREVES WM J	Pacific Telephone Directory

8088 FONTAINE CT

Year	Uses	Source
1950	RICHARDS A M R	The Pacific Telephone & Telegraph Co.

8089 FONTAINE CT

Year	Uses	Source
1975	GARRETT MOLLLE	Pacific Telephone
	LAHMANN LARRY	Pacific Telephone
1970	DEBETTENCOURT JOHN J	Pacific Telephone Directory
	DEBETTENCOURT EDELTRAUT M	Pacific Telephone Directory
1955	MARTIN MARY A L CDR	The Pacific Telephone & Telegraph Co.
	JENKINS MARGARET B LCDR	The Pacific Telephone & Telegraph Co.
	HALL W L	The Pacific Telephone & Telegraph Co.

8101 FONTAINE CT

Year	Uses	Source
1970	HANSEN MOGENS	Pacific Telephone Directory
1955	JILSON A A BLDG CONTR	The Pacific Telephone & Telegraph Co.

FINDINGS

8109 FONTAINE CT

Year	Uses	Source
1970	AIRAKSINEN MERLIN J	Pacific Telephone Directory
	AIRAKSINEN GEO E	Pacific Telephone Directory

8121 FONTAINE CT

Year	Uses	Source
1975	CLOYD CARLTON L	Pacific Telephone
1970	REAVES CHESTER O	Pacific Telephone Directory

8129 FONTAINE CT

Year	Uses	Source
1955	KENYON ERMOND	The Pacific Telephone & Telegraph Co.

8137 FONTAINE CT

Year	Uses	Source
1955	MINER MALCOLM H REV	The Pacific Telephone & Telegraph Co.

8251 FONTAINE CT

Year	Uses	Source
1970	OAKLAND PUBLIC SCHOOLS	Pacific Telephone Directory

FONTAINE ST

8072 FONTAINE ST

Year	Uses	Source
1945	NASH JOYCE D R	The Pacific Telephone & Telegraph Co.
1943	Abrusci Jack F Mary Marcisi Italian Dinners h	R. L. Polk & Co.

8073 FONTAINE ST

Year	Uses	Source
2006	e NHIM Chy	Haines Company, Inc.
1992	PORTER S	PACIFIC BELL DIRECTORY
1967	FEY ELISE MRS	R. L. Polk & Co.
1962	Yeager Robt E	Pacific Telephone
1955	FEY ELISE J	The Pacific Telephone & Telegraph Co.
1950	FEY ELSE J R	The Pacific Telephone & Telegraph Co.
1945	FEY HOWARD M R	The Pacific Telephone & Telegraph Co.

Year	Uses	Source
1943	Fey Elise Mrs h	R. L. Polk & Co.

8080 FONTAINE ST

Year	Uses	Source
1955	TRACY RICHARD D R	The Pacific Telephone & Telegraph Co.
1950	TRACY RICLIHARD D R	The Pacific Telephone & Telegraph Co.
1945	TRACY RICHARD D R	The Pacific Telephone & Telegraph Co.
1943	Tapparo John A shipydwkr r	R. L. Polk & Co.
	Tracy Richd D Johanna welder h	R. L. Polk & Co.

8081 FONTAINE ST

Year	Uses	Source
2006	SANDERS Calvin	Haines Company, Inc.
1967	GREVES WM J	R. L. Polk & Co.
1962	Greves Wm J	Pacific Telephone
1955	DAVISON EDW P R	The Pacific Telephone & Telegraph Co.
1945	DALTON HOWARD R	The Pacific Telephone & Telegraph Co.
1943	Dalton Howard D shipydwkr h	R. L. Polk & Co.

8088 FONTAINE ST

Year	Uses	Source
1955	ROBINSON E W R	The Pacific Telephone & Telegraph Co.
1945	SNASHALL A F R	The Pacific Telephone & Telegraph Co.
1943	Snashall Arth F Effie R welder h	R. L. Polk & Co.

8089 FONTAINE ST

Year	Uses	Source
2006	MARTINEZEIlseo	Haines Company, Inc.
2000	SAMANO MARIA C	Pacific Bell
1967	DE BETTENCOURT J 00 HN J	R. L. Polk & Co.
1962	Hall Antoinette K	Pacific Telephone
	Hart Frank H	Pacific Telephone
1950	HALL W L	The Pacific Telephone & Telegraph Co.
1945	HALL W R	The Pacific Telephone & Telegraph Co.

Year	Uses	Source
1943	HALL Wiley L Antionette shipydwkr h	R. L. Polk & Co.

8096 FONTAINE ST

Year	Uses	Source
1945	HAYWARD DONALD E R	The Pacific Telephone & Telegraph Co.
1943	HAYWARD Donald E Dolly h	R. L. Polk & Co.

8101 FONTAINE ST

Year	Uses	Source
2006	POIRSONRF	Haines Company, Inc.
2000	POIRSON R F	Pacific Bell
1996	POIRSON R F	PACIFIC BELL DIRECTORY
1992	POIRSON R F	PACIFIC BELL DIRECTORY
1967	CONNELLY LLOYD E o	R. L. Polk & Co.
1962	Greene Donald R	Pacific Telephone
1945	JILSON A A R	The Pacific Telephone & Telegraph Co.

8109 FONTAINE ST

Year	Uses	Source
2006	No Current Listing	Haines Company, Inc.
1967	AIRAKSININ GE 5 E S	R. L. Polk & Co.
1962	Airaksinen Geo E	Pacific Telephone
	Airaksinen Merlin J	Pacific Telephone
1955	QUINCY W R R	The Pacific Telephone & Telegraph Co.
1950	QUINCY W R R	The Pacific Telephone & Telegraph Co.
1945	QUINCY W R R	The Pacific Telephone & Telegraph Co.
1943	Quincy Wm R Ruth M shipydwkr h	R. L. Polk & Co.

8115 FONTAINE ST

Year	Uses	Source
2013	COLOR ME CHILDREN PRESCHOOL & KINDER	Cole Information Services
2008	COLOR ME CHILDREN CORP	Cole Information Services
2006	COLORME	Haines Company, Inc.
	CHILDREN PResc&	Haines Company, Inc.
	KNDGN	Haines Company, Inc.

FINDINGS

Year	Uses	Source
2000	COLOR ME CHILDREN PRESCHOOL & KINDERGARTE	Pacific Bell
1992	WEE LI L PEOPLE PRESCHOOL	PACIFIC BELL DIRECTORY
1967	CARL H GORDON	R. L. Polk & Co.
1962	Carl H Gordon	Pacific Telephone
1955	MARSHALL DONALD E R	The Pacific Telephone & Telegraph Co.
1950	MARSHALL DONALD E R	The Pacific Telephone & Telegraph Co.
1945	NEWELL ELLA MRS R	The Pacific Telephone & Telegraph Co.
	SPENCER MAXINE R	The Pacific Telephone & Telegraph Co.
1943	Newell Wm A Ella wtchmn r	R. L. Polk & Co.
	Spencer Maxine Mrs shipydwkr h	R. L. Polk & Co.

8120 FONTAINE ST

Year	Uses	Source
1955	SUSSMAN MAURICE R	The Pacific Telephone & Telegraph Co.

8121 FONTAINE ST

Year	Uses	Source
1967	REAVES CHESTER	R. L. Polk & Co.
1962	Melton Russell W MD	Pacific Telephone
1955	PEERY GEO T R	The Pacific Telephone & Telegraph Co.
1945	CAPPELINI JOS A R	The Pacific Telephone & Telegraph Co.
1943	Santos Edwin A Louise mldr h	R. L. Polk & Co.

8129 FONTAINE ST

Year	Uses	Source
1950	SWANSON J A R	The Pacific Telephone & Telegraph Co.
1945	MCCOOL LEON MRS R	The Pacific Telephone & Telegraph Co.
1943	Wade Wayne C Merle electn Pittsburgh E M Co h	R. L. Polk & Co.

8137 FONTAINE ST

Year	Uses	Source
1945	HEALEY MAY C R	The Pacific Telephone & Telegraph Co.

Year	Uses	Source
1943	HUTCHINSON Frank Garnet shipydwkr h	R. L. Polk & Co.
	Pullian Sarah r	R. L. Polk & Co.

8138 FONTAINE ST

Year	Uses	Source
1955	GRABE H G R	The Pacific Telephone & Telegraph Co.
1950	GRABE H C R	The Pacific Telephone & Telegraph Co.
1943	Sexauer Earl D Rev Pauline pastor Neighborhood Christian Missionary Alliance h	R. L. Polk & Co.

8251 FONTAINE ST

Year	Uses	Source
2013	BAY AREA TECHNOLOGY SCHOOL	Cole Information Services
	OAKLAND UNIFIED SCHOOL DISTRICT	Cole Information Services
2008	OAKLAND UNIFIED SCHOOL DSTRC	Cole Information Services
	KING ESTATES MIDDLE SCHOOL	Cole Information Services
2006	OAKLD SC MIDDLE	Haines Company, Inc.
	KING ESTATES	Haines Company, Inc.
1996	OAKLAND PUBLIC SCHOOLS	PACIFIC BELL DIRECTORY
1992	OAKLAND PUBLIC SCHOOLS	PACIFIC BELL DIRECTORY
1967	KING JUNIOR HIGH SCHOOL	R. L. Polk & Co.
1962	King Junior High School	Pacific Telephone

HOLMES AVE

3901 HOLMES AVE

Year	Uses	Source
2006	BARTON Linda	Haines Company, Inc.
	BARTON David	Haines Company, Inc.
	BARTON Linda	Haines Company, Inc.
2000	BARTON DAVID & LINDA	Pacific Bell
1970	SCHMUCK CHAS R	Pacific Telephone Directory
1967	SCHMUCK CHARLES R	R. L. Polk & Co.
1962	Schmuck Chas R	Pacific Telephone
1955	ARBAUGH BOB	The Pacific Telephone & Telegraph Co.
1950	COTTER JAS E R	The Pacific Telephone & Telegraph Co.

FINDINGS

HOLMES CT

3901 HOLMES CT

Year	Uses	Source
1945	HANSEN BENJ B MRS R	The Pacific Telephone & Telegraph Co.

HOLMES ST

3901 HOLMES ST

Year	Uses	Source
1943	Hansen Benj B Stella advmn h	R. L. Polk & Co.
	Furlatt Gladys shipydwkr r	R. L. Polk & Co.

MOUNTAIN BLVD

8601 MOUNTAIN BLVD

Year	Uses	Source
2006	No Current Listing	Haines Company, Inc.

8603 MOUNTAIN BLVD

Year	Uses	Source
2006	RODRIGUEZRafael	Haines Company, Inc.

8605 MOUNTAIN BLVD

Year	Uses	Source
2006	JACQUES Ga lry	Haines Company, Inc.

8607 MOUNTAIN BLVD

Year	Uses	Source
2006	a GAGE Melvin	Haines Company, Inc.
1991	Johnson M	PACIFIC BELL WHITE PAGES

8609 MOUNTAIN BLVD

Year	Uses	Source
2006	BELLKena	Haines Company, Inc.
	DAVIS K	Haines Company, Inc.
1992	MOORE TYRONE	PACIFIC BELL DIRECTORY

8611 MOUNTAIN BLVD

Year	Uses	Source
2006	GIPSON Tifaney	Haines Company, Inc.

FINDINGS

8629 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	MASON Francis	Haines Company, Inc.
2000	WHARTON RABER	Pacific Bell
1996	WHARTON RABER	PACIFIC BELL DIRECTORY
1992	WHARTON RABER	PACIFIC BELL DIRECTORY

8631 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	MCCLAIN Carol	Haines Company, Inc.

8633 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	ROGERS Emily	Haines Company, Inc.
	a LABARE Marie	Haines Company, Inc.

8635 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	CRAWFORDBROWN	Haines Company, Inc.
	Jocelyn	Haines Company, Inc.

8637 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	GLYER Margaret	Haines Company, Inc.

8639 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	CHANEY Dodle	Haines Company, Inc.
	FERNANDES Arthur	Haines Company, Inc.
2000	CHANEY DODIE	Pacific Bell
1996	CHANEY DODIE	PACIFIC BELL DIRECTORY
1992	CHANEY DODIE	PACIFIC BELL DIRECTORY
1991	Chany Dodle	PACIFIC BELL WHITE PAGES

8649 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	a WALTER Barbara	Haines Company, Inc.

8651 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	a NEAL Deborah	Haines Company, Inc.

FINDINGS

8653 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	WILSON Gwerdolyn	Haines Company, Inc.

8655 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	JACKSON Timothy	Haines Company, Inc.

8657 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	WALLSJoan	Haines Company, Inc.

8659 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	e WHITLEYMary	Haines Company, Inc.

8669 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	X99	Haines Company, Inc.

8671 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	a TAKAKUWA Jeffrey	Haines Company, Inc.

8673 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	Deborah	Haines Company, Inc.
	MANNHALTER	Haines Company, Inc.
1992	MANNHALTER D A	PACIFIC BELL DIRECTORY

8675 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	ROBERSON Ike	Haines Company, Inc.

8677 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	CAMP Stephanie	Haines Company, Inc.
1991	Beringer E	PACIFIC BELL WHITE PAGES
	Berilla Terry	PACIFIC BELL WHITE PAGES

FINDINGS

8679 MOUNTAIN BLVD

Year	Uses	Source
2006	ALLEN Cynthia	Haines Company, Inc.

8681 MOUNTAIN BLVD

Year	Uses	Source
2006	o MOORE Ar Irida	Haines Company, Inc.
1991	Davis Donald & Beverly Harris	PACIFIC BELL WHITE PAGES

8683 MOUNTAIN BLVD

Year	Uses	Source
2006	DANIELS VIctoria	Haines Company, Inc.

8685 MOUNTAIN BLVD

Year	Uses	Source
2006	No Current Listing	Haines Company, Inc.
1991	Miller Gordon	PACIFIC BELL WHITE PAGES
	Miller Glenn D	PACIFIC BELL WHITE PAGES
	Miller Glenn	PACIFIC BELL WHITE PAGES
1986	Wylie F M Ph D	PACIFIC BELL WHITE PAGES

8687 MOUNTAIN BLVD

Year	Uses	Source
2006	X 0 X 9 X	Haines Company, Inc.

8689 MOUNTAIN BLVD

Year	Uses	Source
1992	PATTON A	PACIFIC BELL DIRECTORY
1991	I Patton A	PACIFIC BELL WHITE PAGES
	I Patton B	PACIFIC BELL WHITE PAGES

8691 MOUNTAIN BLVD

Year	Uses	Source
2006	e PRest ON Alyce	Haines Company, Inc.

8707 MOUNTAIN BLVD

Year	Uses	Source
1996	OAK KNOLL HEIGHTS	PACIFIC BELL DIRECTORY
1992	OAK KNOLL HEIGHTS	PACIFIC BELL DIRECTORY
1986	Oak Knoll Heights	PACIFIC BELL WHITE PAGES

FINDINGS

8711 MOUNTAIN BLVD

Year	Uses	Source
2006	GAIGNARDCraig	Haines Company, Inc.
1986	Roberts Lawrence HMD	PACIFIC BELL WHITE PAGES

8715 MOUNTAIN BLVD

Year	Uses	Source
2006	KANEKO Eric	Haines Company, Inc.
1986	Denke Lee D	PACIFIC BELL WHITE PAGES

8717 MOUNTAIN BLVD

Year	Uses	Source
2006	:STAFFORD Steven	Haines Company, Inc.
1986	Watson Doris C	PACIFIC BELL WHITE PAGES

8719 MOUNTAIN BLVD

Year	Uses	Source
2006	e LEMONS Fraddye	Haines Company, Inc.
1992	TAAFFE SUSAN	PACIFIC BELL DIRECTORY
1986	Lemons F	PACIFIC BELL WHITE PAGES

8721 MOUNTAIN BLVD

Year	Uses	Source
2006	BROWNR=had A	Haines Company, Inc.
1991	Brown Richard A	PACIFIC BELL WHITE PAGES

8723 MOUNTAIN BLVD

Year	Uses	Source
2006	OQUINONEZ Gina	Haines Company, Inc.
2000	ANDREWS CHUCK	Pacific Bell

8725 MOUNTAIN BLVD

Year	Uses	Source
2006	HUYLER Tim	Haines Company, Inc.
2000	HUYLER TIM	Pacific Bell
1996	HUYLER TIM	PACIFIC BELL DIRECTORY
1992	HUYLER TIM	PACIFIC BELL DIRECTORY
1991	Huyler Tim	PACIFIC BELL WHITE PAGES

8727 MOUNTAIN BLVD

Year	Uses	Source
2006	e LEWISAngel	Haines Company, Inc.

FINDINGS

8729 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	LEE Kenneth	Haines Company, Inc.

8731 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	a RUSSELL David	Haines Company, Inc.
2000	THOMAS CAROLYN	Pacific Bell
1986	Wilson Ollie	PACIFIC BELL WHITE PAGES

8741 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	BLUEFORDCairenu	Haines Company, Inc.

8743 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	AHAD Hasan	Haines Company, Inc.

8745 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	a PARKERDenise	Haines Company, Inc.
1986	Bostrom Paul	PACIFIC BELL WHITE PAGES

8747 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	TRANVy	Haines Company, Inc.
2000	JOHNSON MARLIO	Pacific Bell

8749 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	a SIMS Lucy	Haines Company, Inc.

8751 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	RUSSELL Jennifer	Haines Company, Inc.

8761 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	CARRILLO Margeaux	Haines Company, Inc.

FINDINGS

8763 MOUNTAIN BLVD

Year	Uses	Source
2006	a JOHNSON Debra	Haines Company, Inc.

8765 MOUNTAIN BLVD

Year	Uses	Source
2006	o BROADNAXSusan	Haines Company, Inc.
2000	SMITH ANZELLA	Pacific Bell
1996	LEVINE BILL	PACIFIC BELL DIRECTORY
1992	LEVINE BILL	PACIFIC BELL DIRECTORY
1991	Levine CD	PACIFIC BELL WHITE PAGES
	Levine Bill	PACIFIC BELL WHITE PAGES

8767 MOUNTAIN BLVD

Year	Uses	Source
2006	GADSON Carolyn	Haines Company, Inc.

8769 MOUNTAIN BLVD

Year	Uses	Source
2006	CHA N Edwin	Haines Company, Inc.
1992	REMIGIO DAVID	PACIFIC BELL DIRECTORY
1986	Worrell Polly & Jim	PACIFIC BELL WHITE PAGES

8781 MOUNTAIN BLVD

Year	Uses	Source
2006	MALONE Lzzie	Haines Company, Inc.
1991	Castillo Miguel A	PACIFIC BELL WHITE PAGES

8783 MOUNTAIN BLVD

Year	Uses	Source
2006	GARNER Debra	Haines Company, Inc.

8785 MOUNTAIN BLVD

Year	Uses	Source
2006	COOPER Marc	Haines Company, Inc.

8787 MOUNTAIN BLVD

Year	Uses	Source
2006	Svonne	Haines Company, Inc.
	CUNNINGHAM	Haines Company, Inc.
	BROWN AJalne	Haines Company, Inc.

FINDINGS

8791 MOUNTAIN BLVD

Year	*Uses*	*Source*
2008	MERID ENTERPRISES INC	Cole Information Services
2006	MERID Ayalneh	Haines Company, Inc.
1992	KENT MICHEAL D	PACIFIC BELL DIRECTORY
1991	Kent Nancy	PACIFIC BELL WHITE PAGES
	Kent Micheal D	PACIFIC BELL WHITE PAGES

8793 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	OQUEZADAJasn Ina	Haines Company, Inc.
2000	RAMSEY MICHAEL	Pacific Bell
1996	RAMSEY MICHAEL	PACIFIC BELL DIRECTORY
1992	RAMSEY MICHAEL	PACIFIC BELL DIRECTORY

8795 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	CORNWELLoeborah	Haines Company, Inc.

8797 MOUNTAIN BLVD

Year	*Uses*	*Source*
2006	NUBIE Madeline	Haines Company, Inc.
2000	THI ANNIE	Pacific Bell
1996	THI ANNIE	PACIFIC BELL DIRECTORY

MOUNTAIN LN

8631 MOUNTAIN LN

Year	*Uses*	*Source*
1986	Fike Tom	PACIFIC BELL WHITE PAGES

8637 MOUNTAIN LN

Year	*Uses*	*Source*
1986	Wesley M L	PACIFIC BELL WHITE PAGES

8729 MOUNTAIN LN

Year	*Uses*	*Source*
1986	Williamson Sandra E	PACIFIC BELL WHITE PAGES

8781 MOUNTAIN LN

Year	*Uses*	*Source*
1986	Castillo Miguel A	PACIFIC BELL WHITE PAGES

FINDINGS

SEACOR CT

4102 SEACOR CT

Year	Uses	Source
2006	THORDARSON David	Haines Company, Inc.
2000	THORDARSON DAVID	Pacific Bell
1992	QUALITY AUDITS	PACIFIC BELL DIRECTORY
1991	Quality Audits	PACIFIC BELL WHITE PAGES
1970	THORDARSON PERCY	Pacific Telephone Directory
1967	THORDARSON PERCY D	R. L. Polk & Co.
1962	Thordarson Percy	Pacific Telephone
1955	THORDARSON PERCY	The Pacific Telephone & Telegraph Co.
1950	HINCHCLIFF HOWARD A R	The Pacific Telephone & Telegraph Co.

4103 SEACOR CT

Year	Uses	Source
2006	a JENNINGSSaundfia	Haines Company, Inc.
1991	Suthern Orrin C	PACIFIC BELL WHITE PAGES
1986	Sutin J	PACIFIC BELL WHITE PAGES
	Suthern Orrin C	PACIFIC BELL WHITE PAGES
1967	SMITH GEO W JR	R. L. Polk & Co.
1962	Smith Geo W Jr	Pacific Telephone
1955	SMITH GEO W JR R	The Pacific Telephone & Telegraph Co.

4108 SEACOR CT

Year	Uses	Source
2008	FORTUNA INDUSTRIES	Cole Information Services
2006	CHANG Marganet	Haines Company, Inc.
1980	Coburn Diane	Pacific Telephone
1975	COBURN DIANE	Pacific Telephone
1970	COBURN DIANE	Pacific Telephone Directory
1967	VERLEY DON T	R. L. Polk & Co.
1962	Verley Don T	Pacific Telephone
1955	JOHNSON VAN L JR DR	The Pacific Telephone & Telegraph Co.
1950	COX EUGENE R	The Pacific Telephone & Telegraph Co.

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4109 SEACOR CT

Year	*Uses*	*Source*
2006	e COHEE Ezbeth	Haines Company, Inc.
1970	MYERS JOS H	Pacific Telephone Directory
1967	MYERS JOSEPH H	R. L. Polk & Co.
1962	Myers Jos H	Pacific Telephone
1955	MYERS JOS H R	The Pacific Telephone & Telegraph Co.
1950	MYERS JOS H IN	The Pacific Telephone & Telegraph Co.

4116 SEACOR CT

Year	*Uses*	*Source*
2006	e BARROSh Diah	Haines Company, Inc.
1967	FREITAS GEO E	R. L. Polk & Co.
1962	Freitas Geo E	Pacific Telephone
1955	CROWELL ROBINSON	The Pacific Telephone & Telegraph Co.
1950	KUHL CAR I F R	The Pacific Telephone & Telegraph Co.

4117 SEACOR CT

Year	*Uses*	*Source*
2006	a EVANSKelth	Haines Company, Inc.
1980	Simon L C	Pacific Telephone
1975	EASTSIDE UPHOLSTERY	Pacific Telephone
1970	SIMON JULES A	Pacific Telephone Directory
	EASTSIDE UPHOLSTERY	Pacific Telephone Directory
1967	SIMON JULES A	R. L. Polk & Co.
1962	Simon Jules A	Pacific Telephone
1955	PARR GERALD RAY R	The Pacific Telephone & Telegraph Co.
1950	PARR GERALD RAY R	The Pacific Telephone & Telegraph Co.

4128 SEACOR CT

Year	*Uses*	*Source*
2006	a PADILLA Harold	Haines Company, Inc.
1970	WARREN STANTON R	Pacific Telephone Directory
1967	GOLDMAN WM D	R. L. Polk & Co.
1962	Sharp Robt E	Pacific Telephone
1955	SHARP ROBT E R	The Pacific Telephone & Telegraph Co.

Year	Uses	Source
1950	SHARP ROBT E R	The Pacific Telephone & Telegraph Co.

4129 SEACOR CT

Year	Uses	Source
2006	TRIGGS Chadotte	Haines Company, Inc.
1975	MAC KENZIE VW W	Pacific Telephone
1970	MAC KENZIE W W	Pacific Telephone Directory
1967	MAC KENZIE WALDO W	R. L. Polk & Co.
1962	Mac Kenzie W W	Pacific Telephone
1955	MACKENZIE W W	The Pacific Telephone & Telegraph Co.
1950	FRAZIER CLARK J R	The Pacific Telephone & Telegraph Co.

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TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
8750 Mountain Blvd	2002, 1993, 1984, 1982, 1979, 1976, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
3901 HOLMES AVE	2013, 2008, 2002, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
3901 HOLMES CT	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
3901 HOLMES ST	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4102 FONTAINE CT	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4102 SEACOR CT	2013, 2008, 2002, 1996, 1993, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4103 FONTAINE CT	2013, 2008, 2002, 1993, 1991, 1986, 1984, 1982, 1979, 1976, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4103 FONTAINE CT	2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4103 SEACOR CT	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1965, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4108 FONTAINE CT	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1984, 1982, 1980, 1979, 1976, 1973, 1970, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4108 SEACOR CT	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1979, 1976, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4108 SEACOR CT	2013, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4109 FONTAINE CT	2013, 2008, 2002, 1993, 1984, 1982, 1979, 1976, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4109 SEACOR CT	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4116 SEACOR CT	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920

FINDINGS

Address Researched	Address Not Identified in Research Source
4117 FONTAINE CT	2013, 2008, 2002, 1993, 1984, 1982, 1979, 1976, 1975, 1973, 1965, 1960, 1959, 1956, 1955, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4117 SEACOR CT	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1979, 1976, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4128 SEACOR CT	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4129 SEACOR CT	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
4377 SAINT ANDREWS RD	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8072 FONTAINE CT	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8072 FONTAINE ST	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8073 FONTAINE	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8073 FONTAINE CT	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8073 FONTAINE ST	2013, 2008, 2002, 2000, 1996, 1993, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8080 FONTAINE ST	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1954, 1951, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8081 FONTAINE CT	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8081 FONTAINE ST	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1965, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8088 FONTAINE CT	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8088 FONTAINE ST	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8089 FONTAINE	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8089 FONTAINE CT	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1973, 1967, 1965, 1962, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8089 FONTAINE ST	2013, 2008, 2002, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1965, 1960, 1959, 1956, 1955, 1954, 1951, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8096 FONTAINE ST	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920

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Address Researched	Address Not Identified in Research Source
8100 EARL ST	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8101 EARL	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8101 EARL ST	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8101 FONTAINE	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8101 FONTAINE CT	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1967, 1965, 1962, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8101 FONTAINE ST	2013, 2008, 2002, 1993, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1965, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8108 EARL ST	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8109 FONTAINE CT	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8109 FONTAINE ST	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8115 FONTAINE	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8115 FONTAINE ST	2013, 2008, 2002, 1996, 1993, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8115 FONTAINE ST	2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8116 EARL	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1984, 1982, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8116 EARL ST	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8119 EARL	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1984, 1982, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8119 EARL ST	2013, 2008, 2002, 1993, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8120 FONTAINE ST	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8121 FONTAINE CT	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1973, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8121 FONTAINE ST	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1965, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920

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Address Researched	Address Not Identified in Research Source
8124 EARL ST	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8125 EARL	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8125 EARL ST	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1940, 1933, 1932, 1928, 1926, 1925, 1920
8129 EARL	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8129 EARL ST	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1946, 1940, 1933, 1932, 1928, 1926, 1925, 1920
8129 FONTAINE CT	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8129 FONTAINE ST	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8130 EARL ST	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1965, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8136 EARL	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1984, 1982, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8136 EARL ST	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1965, 1962, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8137 FONTAINE CT	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8137 FONTAINE ST	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8138 FONTAINE ST	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1954, 1951, 1946, 1945, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8251 FONTAINE	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8251 FONTAINE CT	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8251 FONTAINE ST	2013, 2008, 2002, 2000, 1993, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1965, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8251 FONTAINE ST	2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8601 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8603 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920

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Address Researched	Address Not Identified in Research Source
8605 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8607 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8609 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8611 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8629 MOUNTAIN BLVD	2013, 2008, 2002, 1993, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8631 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8631 MOUNTAIN LN	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8633 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8635 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8637 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8637 MOUNTAIN LN	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8639 MOUNTAIN BLVD	2013, 2008, 2002, 1993, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8649 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8651 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8653 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8655 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8657 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8659 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8669 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920

FINDINGS

Address Researched	Address Not Identified in Research Source
8671 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8673 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8675 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8677 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8679 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8681 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8683 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8685 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8687 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8689 MOUNTAIN BLVD	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8691 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8707 MOUNTAIN BLVD	2013, 2008, 2006, 2002, 2000, 1993, 1991, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8711 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8715 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8717 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8719 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1991, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8721 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8723 MOUNTAIN BLVD	2013, 2008, 2002, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8725 MOUNTAIN BLVD	2013, 2008, 2002, 1993, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920

FINDINGS

Address Researched	Address Not Identified in Research Source
8727 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8729 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8729 MOUNTAIN LN	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8731 MOUNTAIN BLVD	2013, 2008, 2002, 1996, 1993, 1992, 1991, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8741 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8743 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8745 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8747 MOUNTAIN BLVD	2013, 2008, 2002, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8749 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8751 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8761 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8763 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8765 MOUNTAIN BLVD	2013, 2008, 2002, 1993, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8767 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8769 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1991, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8781 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8781 MOUNTAIN LN	2013, 2008, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8783 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8785 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920

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Address Researched	Address Not Identified in Research Source
8787 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8791 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8791 MOUNTAIN BLVD	2013, 2006, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8793 MOUNTAIN BLVD	2013, 2008, 2002, 1993, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8795 MOUNTAIN BLVD	2013, 2008, 2002, 2000, 1996, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920
8797 MOUNTAIN BLVD	2013, 2008, 2002, 1993, 1992, 1991, 1986, 1984, 1982, 1980, 1979, 1976, 1975, 1973, 1970, 1967, 1965, 1962, 1960, 1959, 1956, 1955, 1954, 1951, 1950, 1946, 1945, 1943, 1940, 1938, 1933, 1932, 1928, 1926, 1925, 1920

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN II)
Northern and Central California, Nevada, and Utah
Contract Number N62474-94-D-7609
Contract Task Order No. 029

Navy Engineer-In-Charge: Mr. Larry Ramos
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California Regional Water Quality Control Board: Mr. Michael Rochette

Prepared For
Department of the Navy
Engineering Field Activity West
Naval Facilities Engineering Command
San Bruno, California

FINAL FINDING OF SUITABILITY TO TRANSFER (FOST) FOR NAVAL MEDICAL CENTER, OAKLAND, CALIFORNIA

September 1999

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APPENDIX

A	SAMPLE FORM FOR TRANSFER OF RESIDENTIAL DWELLINGS

ABBREVIATIONS AND ACRONYMS

ACM	Asbestos-Containing Material
AST	Aboveground storage tanks
BTEX	Benzene, toluene, ethylbenzene, xylene
CERCLA	Compensation and Liability Act
CFR	Code of Federal Regulations
DFG	Department of Fish and Game
DOD	Department of Defense
DTSC	Department of Toxic Substances Control
EBS	Environmental Baseline Survey
ECP	Environmental Condition of Property
EDC	Economic development conveyance
EFA WEST	Engineering Field Activity West
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FETAX	Frog Embryo Teratogenesis Assay
FOST	Finding of suitability to transfer
HUD	Housing and Urban Development
LBP	Lead-based paint
MG/KG	Milligram per kilogram
MINS	Mare Island Naval Shipyard
NEPA	National Environmental Policy Act
NMCO	Naval Medical Center
NRMP	Navy Radioactive Material Permit
NRSC	Naval Remediation Safety Committee
OBRA	Oakland Base Reuse Authority
OSPR	Office of Spill Prevention and Response
PBC	Public benefit conveyance
PCB	Polychlorinated biphenyl
PPM	Parts per million
PRC	PRC Environmental Management, Inc.
PWC	Public Works Center
RWQCB	Regional Water Quality Control Board
SSPORTS	Supervisor of Shipbuilding Portsmouth Environmental Detachment
TPH	Total petroleum hydrocarbons
TTEMI	Tetra Tech EM Inc.
U&A	Uribe & Associates
UST	Underground storage tank

1.0 PURPOSE

The purpose of this finding of suitability to transfer (FOST) is to document the environmentally related findings regarding the proposed property transfer of Naval Medical Center, Oakland (NMCO), Alameda County, California. The subject property described in Section 2.0 will be transferred by various conveyance methods including: economic development conveyance (EDC), public benefit conveyance (PBC), negotiated sale, or public sale. The subject property will be transferred to the City of Oakland, Oakland Museum, United Indian Nation, Seneca Center, Oakland Parks and Recreation, Sea West Federal Credit Union, and possibly to a private party, if a portion of the property is transferred through public sale (see Section 3.0).

This FOST is a result of a thorough analysis of the information contained in the following documents:

- "Final Letter Report on Results of Additional Sampling and Analysis at the Former Hydraulic Lift at Building 111, Naval Medical Center Oakland." Letter to Mr. Randy Cate, Naval Facilities Engineering Command, Engineering Field Activity West (EFA West) from Lynne T. Srinivasan, Uribe and Associates. April 28, 1999.

- "Results of Additional Sampling and Analysis at the Former Hydraulic Lift at Building 111, Naval Medical Center Oakland (NMCO)." Letter to Mr. Michael Rochette, Regional Water Quality Control Board from Dr. Gerard Chernoff, Office of Spill Prevention and Response (OSPR), California Department of Fish and Game (DFG). April 2, 1999.

- "Removal of Soil Containing Lead-Based Paint, Officer's Quarters (D & E Williams), Naval Medical Center, Oakland, California." Prepared by Supervisor of Shipbuilding Portsmouth Environmental Detachment (SSPORTS). February 1999.

- "Naval Medical Center, Oakland, CA, Frog Embryo Teratogenesis Assay - *Xenopus* (FETAX) Characterization, Final Report." Prepared by The Stover Group, January 1999.

- "Naval Medical Center, Oakland, CA, Frog Embryo Teratogenesis Assay - *Xenopus* (FETAX) Characterization, Final Report." Prepared by The Stover Group. October 1998.

- "Final Field Report for the Removal and Disposal of Medical Debris from Private Property Adjacent to the Former Naval Medical Center Oakland." SSPORTS. October 21, 1998.

- "Final Sampling and Analysis Work Plan for Additional Investigation, Former Hydraulic Lift at Building 111, Naval Medical Center Oakland." Prepared by Tetra Tech EM Inc. (TtEMI) and Uribe & Associates (U&A) for EFA West. September 14, 1998.

- "Results of Sampling for Lead in Soil at Parcels 130 and 134, Naval Medical Center Oakland." Letter from Department of Toxic Substances Control (DTSC). September 25, 1998.

- "Field Report for Removal of Medical Debris from Private Property Located Adjacent to the Former Naval Medical Center in Oakland." Letter to Mr. Baha Zarah, EFA West from Mr. Jorge Goitia, Alameda County Department of Environmental Health. August 26, 1998.

- "Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR), Disposal and Reuse of Naval Medical Center Oakland, CA." Prepared by EFA West., April 1998.

- "Ecological Recommendations for the Hydraulic Hoist Site at the Naval Medical Center Oakland (NMCO); PCA Code: 60130, Project: NTX504." Letter from Dr. Gerald Chernoff, OSPR, DFG. December 19, 1997.

- "Criteria Analysis for Classification of Hydraulic Lift Site at Building 111 as Low Risk Soil Case, Naval Medical Center Oakland." Prepared by SSPORTS. November 12, 1997.

- "Closure Report, Removal Action for Lead Contamination in Soil, Naval Medical Center Oakland, California." Prepared by IT Corporation for EFA-West. September 1997.

- "Results of Soil Sampling for Lead from Lead-Based Paint, Naval Medical Center Oakland." Prepared by DTSC. September 11, 1997.

- "Removal Action Completion Certification for Underground Storage Tank Sites L63D, L63E, 214A, 214B, 214C, 214D, 22-1, and 22-1 at Naval Medical Center, Oakland, California." Prepared by Regional Water Quality Control Board (RWQCB). August 27, 1997.

- "Removal Action Completion Certification for Underground Storage Tank Sites 141A, 141B, 500, 505, and 512 at Naval Medical Center, Oakland, California." Prepared by RWQCB. July 10, 1997.

- "Removal Action Completion Certification for Underground Storage Tank Sites 510A, 510B, and 510C at Naval Medical Center, Oakland, California." Prepared by RWQCB. June 20, 1997.

- "Removal Summary Report for Five Underground Storage Tanks at Naval Medical Center, Oakland, California." Letter from Mr. Baha Zarah, EFA West to Ms. Mary Rose Cassa. DTSC. April 16, 1997.

- "Asbestos Removal Report for PWC Buildings 11 and 22 at Naval Medical Center, Oakland." Prepared by Navy Public Works Center (PWC) San Francisco, California. March 25, 1997.

- "Removal Summary Report for Five Underground Storage Tanks at Naval Medical Center, Oakland." Prepared by PWC San Francisco. March 1997.

- "Environmental Baseline Survey, Sampling and Analysis Summary Report, Naval Medical Center, Oakland, Oakland, California." Prepared by PRC Environmental Management, Inc. (PRC) and U&A. December 17, 1996.

- "Environmental Condition of Property Categories, Naval Medical Center, Oakland, Oakland, California." Prepared by PRC and U&A. December 17, 1996.

- "Termination of Navy Radioactive Material Permit (NRMP) #04-00619-11NP." Letter from Naval Radiation Safety Committee (NRSC). October 25, 1996.

- "Final Reuse Plan for Naval Medical Center, Oakland." Prepared by Oakland Base Reuse Authority (OBRA). August 1996.

- "Technical Memorandum, Former Underground Storage Tank Site 510, Naval Medical Center, Oakland, California, Recommendation for No Action." Prepared by PRC. July 15, 1996.

- "Underground Storage Tank Closure Report, Commanding Officer's and Executive Officer's Residences, Naval Medical Center, Oakland." Prepared by PWC San Francisco. May 1996.

- "Lead-Based Paint at BRAC Installations." Prepared by Commander, Naval Facilities Engineering Command, Letter 5090 41CM/960102. April 16, 1996.

- "Lead-Based Paint Inspection of Family Housing Units at Naval Medical Center Oakland." Prepared by EFA West. April 14, 1996.

- "Asbestos Action Summary for Naval Hospital Oakland, California." Prepared by Naval PWC, Norfolk, Virginia. March 1996.

- "Final Preliminary Site Assessments at Sites 22 and 214 at Naval Medical Center, Oakland, California." Prepared by ERM-West, Inc. January 1996.

- "Lead Management Plan, Naval Medical Center, Oakland." Prepared by PWC, Norfolk Virginia. 1996.

- "Final Basewide Environmental Baseline Survey, Site Assessment and Field Sampling and Analysis Plan, Naval Medical Center, Oakland." Prepared by ERM-West, Inc. June 9, 1995.

- "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing." Prepared by U.S. Department of Housing and Urban Development (HUD). June 1995.

- "Oakland Naval Medical Center Asbestos Remediation Report." Prepared by Mare Island Naval Shipyard (MINS). May 24, 1995.

- "Notice of Stopped Treatment of Photographic Chemicals at Naval Medical Center Oakland." Letter from Mr. Larry Douchand, NMCO to DTSC. March 31, 1995.

- "Final Environmental Baseline Survey/Community Environmental Response Facilitation Act Report for Naval Medical Center, Oakland." Prepared by ERM-West, Inc. December 1, 1994.

- "Asbestos Containing Material Survey, Final Report, Naval Medical Center Oakland, California." Prepared by MINS. December 1994.

- "Site Investigation, Underground Storage Tanks 111A, 510A, 510B, 510C, and 510D, Oakland Naval Hospital, Oakland California, Final Summary Report." Prepared by PRC. November 16, 1994.

- "Asbestos, Lead Paint and Radon Policies at BRAC Properties." Memorandum from the Office of the Under Secretary of Defense. October 31, 1994.

- "Non-Housing Building Radon Distribution." Prepared by Martin Marietta Energy Systems. October 10, 1994.

- "PWC List of Oil Filled Electrical Equipment for Naval Hospital Oakland." Prepared by PWC. June 5, 1994.

2.0 PROPERTY DESCRIPTION

NMCO is located in the east Oakland foothills between San Leandro and central Oakland in California. The site encompasses 183 acres and is bounded by residential areas to the north, a golf course and residential area to the south, Skyline Boulevard to the east, and by Mountain Boulevard and Interstate Route 580 to the west. All 183 acres will be transferred.

NMCO is divided into 63 parcels with approximately 69 structures. The individual parcels, the acres they encompass, a list of buildings currently and historically located on each parcel, and the year each building

was constructed are included on Table 2-1. Utilities on the property include collection and distribution lines/conduits for storm drainage, sanitary sewers, potable water, electrical power, natural gas, and steam. Table 2-2 identifies the utilities on each parcel.

3.0 HISTORIC, CURRENT, AND PROPOSED USE

NMCO was commissioned on July 1, 1942, as a naval hospital to assist in the treatment of wounded service personnel from World War II. The original property consisted of 211 acres, 178 of which were occupied by the Oak Knoll Golf and Country Club. In 1978, 28 of the 211 acres were privately sold. In 1993, the Base Realignment and Closure Commission recommended the closure of NMCO as part of the ongoing nationwide military base closure effort. The facility's Graduate Medical Education program was terminated in July 1995; the hospital ceased medical operations on April 1, 1996, and base closure was completed on September 30, 1996.

Currently, the site includes approximately 135 acres of buildings, roads, parking lots, and recreation facilities, as well 48 acres of undeveloped land. The 183 total acres have been sectioned into 63 parcels to be reused as listed in Table 3-1 and shown on Figure 3-1.

The Oakland Base Reuse Authority approved a reuse plan for the NMCO property in August 1996. The reuse plan specified that the property would be redeveloped to include: residential use, a golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas. The Navy intends to convey the NMCO property in accordance with the reuse plan. Specific disposal decisions have not yet been made; however, this does not preclude future use from unrestricted reuse of the NMCO property.

TABLE 2-1

PROPERTY DESCRIPTION
NAVAL MEDICAL CENTER, OAKLAND

Parcel	Acres	Building Number	Year Built	Building Description/Former Use	Demolished
101	7.05	NW Corner of Property	Pre-1949	Pump House Auxiliary	
		NW Corner of Property	Pre-1949	Pump House	
102	7.7	Housing	1969	Base Housing Units	
		68	Pre-1949	Quarters (Sick Officers)	X
		81	Pre-1949	Ward	X
		82	Pre-1949	Ward	X
		83	Pre-1949	Ward	X
		59	Pre-1949	Storehouse	X
103	1.21	64	Pre-1949	Ward	X
104	1.12	63	1942	Facilities Administration, Medical Equipment Repair	
105	0.01	216	1976	Storage (Hazardous Materials)	
106	0.03	215	1976	Storage (Hazardous Materials)	
107	1.64	62	1942	Financial Management	
108	1.05	74	Pre-1949	Ward	X
		510	1982	Former Service Station	
109	6.42	60	Pre-1949	Ward	X
		61	Pre-1949	Ward	X
		109	Pre-1949	PWC Storehouse	X
		139A	Pre-1949	Outdoor Stage, Dressing Rooms	X
		139B	Pre-1949	Projection Booth	X
		508	1975	Gatehouse	
110	2.91	8	1942	Storage (Former Laundry)	
		9	1942	Storage (Former Laundry Maintenance Workshop)	
		10	1942	PWC Offices, Maintenance Shops (Carpenter, Electrician, P.F., Machinist, Sheet Metal)	
		11	1942	Storage (Plumbing and Electrical Materials, Former Sheet Metal and Electrical Shop)	
		12	Pre-1949	Service Station	X
		13	1942	Paint Shop, Air Conditioning Repair	
		51	Pre-1949	Ward	X
		89	1953	Storage (Former Upholstery Shop)	X
		108	1947	Boiler Room for Building 8	

TABLE 2-1 (CONTINUED)

PROPERTY DESCRIPTION
NAVAL MEDICAL CENTER, OAKLAND

Parcel	Acres	Building Number	Year Built	Building Description/Former Use	Demolished
111	9.41	Housing	1974	Base Housing Units	
112	0.5	37	1943	Storehouse (Former Stables)	X
		107	1942	Former Radioactive Storage	X
113	0.03	17	1949	Storage (Hazardous Materials [Flammables]; Radioactive Materials)	
114	0.2	14	1942	Operating Room	
		115	1943	Animal Housing, Surgery Teaching, Laboratory Laundry	
115	0.85	Housing	1943-1944	Housing	
116	0.35	36	1943	Firestation	
		85	1943	Office and Storage	X
117	0.14	110	1945	Storage (Dry Goods)	
118	28.7	130	Pre-1949	Water Chlorination Plant	X
		W of CO Residence	Pre-1965	Booster Pumphouse	X
119	0.72	No Building	-- --	No Building	
120	3.24	106	1981	Helipad (Former Subsistence Commissary)	
121	1.12	71	Pre-1949	Ward	X
122	1.59	69	1943	Not in Use, Enlisted Men's Quarters	
123	1.02	65	1942	Drug Screening Laboratory	
124	1.31	66	1942	Quarters, PCO	
125	6.29	1	Pre-1949	Administration Building	X
		4	~ 1949	Laboratories, Central Supply	X
		4 Shed	Unknown	Storage (Adjacent to Building 4)	X
		5	Pre-1949	Cast Room, Blood Bank	X
		6	Unknown	Subsistence Commissary	X
		45	Pre-1949	Ward	X
		50	Pre-1949	Ward	X
126	1.15	80	Pre-1949	Ward	X
		519	1991	Storage (Dry Goods)	
		520	1991	Storage (Dry Goods)	
		521	1992	Storage (Hazardous Waste)	
127	1.9	76	Pre-1949	Ward	X
		77	Pre-1949	Ward	X
128	2.22	72	Pre-1949	Ward	X
		105	Pre-1949	Surgery, Outpatient Clinic	X
		511	1976	Credit Union	
129	4.15	46	Pre-1949	Ward	X

TABLE 2-1 (CONTINUED)

PROPERTY DESCRIPTION
NAVAL MEDICAL CENTER, OAKLAND

Parcel	Acres	Building Number	Year Built	Building Description/Former Use	Demolished
		47	Pre-1949	Ward	X
		48	Pre-1949	Ward	X
		49	Pre-1949	Ward	X
130	1.1	67	1942	Dental Annex	
131	0.73	101	1943	Naval School of Health Sciences	
132	2.56	78	Pre-1949	Ward	X
		79	Pre-1949	Ward	X
		87	Pre-1965	Storage (Oxygen)	
		505	1975	General Warehouse, Supplies	
133	0.91	75	1943	Education, Training, Radiation Safety	
134	1.42	73	1943	Administration Building	X
135	2.3	No Building	-- --	No Building	
136	3.89	2	Pre-1949	Physical Therapy	X
		3	Pre-1949	X-Ray	X
		34	Pre-1949	Dental Building	X
		40	Pre-1949	Quarters	X
		41	Pre-1949	Ward	X
		91	Pre-1952	Storage (Flammables)	X
137	5.88	7	Pre-1949	Subsistence Commissary	X
		42	Pre-1949	Ward	X
		43	Pre-1949	Ward	X
		44	Pre-1949	Ward	X
		96	Pre-1952	Storage (Flammables)	X
		217	1972	Hospital Plant Auxiliary Utility Building	
		218	1972	Hospital Plant Auxiliary Utility Building	
		223	1968	Storage (Liquid Oxygen)	
		500	1968	Hospital	
		MRI Building	1986	Magnetic Resonance Imaging Building (Trailer))	Removed
		N Corner of Hospital	Pre-1980	Campus Service Center (Trailer)	Removed
138	6.92	52	Pre-1949	Ward (Donated)	X
		53	Pre-1949	Quarters	X
		54	Pre-1949	Quarters	X
		55	Pre-1949	Quarters	X
		56	Pre-1949	Quarters	X
		57	Pre-1949	Steam Regulating Unit	X
		58	Pre-1949	Storehouse	X

TABLE 2-1 (CONTINUED)

PROPERTY DESCRIPTION
NAVAL MEDICAL CENTER, OAKLAND

Parcel	Acres	Building Number	Year Built	Building Description/Former Use	Demolished
139	0.2	512	1990	Hospital Boiler	
140	3.81	Housing	1943-1944	Base Housing Units	
141	0.74	No Building	-- --	No Building	
142	3.3	38	1944	Community Service, Gym	
		103	1944	Bowling Alley	
143	4.59	125A	Pre-1965	Hotwell	
		125C	Pre-1965	Pumphouse	
		Shed	Unknown	Shed for Well 1, Well 1 Equipment	
144	7.64	25	Pre-1949	Quarters	X
		26A	Pre-1949	Quarters	X
		26B	Pre-1949	Quarters	X
		27	Pre-1949	Occupational Therapy, Quarters	X
		28	Pre-1949	Quarters	X
		31	Pre-1949	Recreation Building	X
		32	Pre-1949	Bag Storage	X
		39	Pre-1949	Library	X
		123	Pre-1949	Quarters	X
		124	Pre-1949	Quarters	X
		129	Pre-1949	Quarters	X
		132	Pre-1949	Animal Housing, Cold Storage, Class Rooms	X
		135	Pre-1949	Quarters	X
145	4.51	127	Pre-1949	Quarters	X
146	2.23	16A	Pre-1949	Water Distribution Pumphouse	X
		16B Rebuilt	1978	Sentry House, Main Gate	X
		16C	Pre-1949	Marine Detachment	X
		16D	1965	Liberty and Visitor's Pass Office	X
147	0.49	102	1945	Security, Machine Shop	
148	3.24	86	Pre-1949	Storehouse	X
		131	1945	Administration Offices	
		133	1945	Command Education, Archives, Excess Property	

TABLE 2-1 (CONTINUED)

PROPERTY DESCRIPTION
NAVAL MEDICAL CENTER, OAKLAND

Parcel	Acres	Building Number	Year Built	Building Description/Former Use	Demolished
149	4.72	23	Pre-1949	Quarters	X
		24	Pre-1949	Quarters	X
		501	1970	Bachelors Enlisted Quarters	
150	1.71	29	Pre-1949	Quarters	X
		35	Pre-1949	Quarters	X
151	2.46	33	Pre-1949	Medical Storehouse	X
		104	Pre-1949	Storage	X
		125B	1945	Hotwell and Pumphouse	X
		214	1951	Service Station	X
		Shed	~ 1965	Temporary Storage (Near Building 214)	X
152	2.88	Guard Shack	Unknown	Guard Shack	
		Shed E of Building #88	Pre-1949	Paint, Oil Shed	
153	0.25	No Building	-- --	No Building	
154	0.12	22	1942	Former Facility Boiler Plant (Hazardous Materials Storage)	
155	0.05	88	1951	Storage, Furniture, Junk	X
156	0.57	20A	Pre-1949	Gardener's Group	
157	0.34	20B	1942	Office (Landscape Contractor)	
		20C	1945	Storage (Garden Supplies)	
		21	Pre-1949	Gardener's Group, Lath House	X
158	1.74	136	1943	Storehouse (Liquor Store)	X
		137	1944	Chlorine and Pump Building, Swimming Pool	
		138	1944	Swimming Pool	
159	1.19	90	1954	Storage (Oil)	X
		111	1945	Transportation Office	
		112	1945	Vehicle Repair Shop	
		113	1945	Storage (Vehicles)	
		114	1945	Storage, Conservation Corp.	
		116	1943	Storage (Vehicles)	
		117	~ 1949	PWC Service Station	X

TABLE 2-1 (CONTINUED)

PROPERTY DESCRIPTION
NAVAL MEDICAL CENTER, OAKLAND

Parcel	Acres	Building Number	Year Built	Building Description/Former Use	Demolished
		117P	Pre-1965	Service Station	X
		141	Unknown	Transportation Area	X
		Shed	Unknown	Houses Air Compressor	
160	2.39	No Building	-- --	No Building	
161	7.86	84	Pre-1949	Storehouse	X
		134	~ 1949	Storehouse	X
		147	1945	Racquetball Courts	
		150	1959	Covered Picnic Area	
		507	1979	Restrooms	
		Shed	Unknown	Athletic Equipment Shed (Adjacent to Dugout at First Base Line)	
		Shed	Unknown	Athletic Equipment Shed (Adjacent to Dugout at Third Base Line)	
		Shed	Unknown	Athletic Equipment Shed/Concession Booth (Behind Home Plate)	
162	4.98	18	1924	Officers and Enlisted Personnel Open Mess	
		19	1942	Garage (Two Car; Adjacent to Building 18)	
		118	Pre-1949	Quarters	X
163	1.27	70	1943	Alcohol Rehabilitation	

Notes:

~ Approximately

PWC Navy Public Works Center

TABLE 2-2

SUMMARY OF UNDERGROUND UTILITIES
NAVAL MEDICAL CENTER, OAKLAND

Parcel	Storm Drain	Sanitary Sewer	Water	Natural Gas	Electrical	Steam
101			X			
102			X	X	X	
103			X			
104	X		X	X		X
105			X			
106			X			
107		X	X	X	X	X
108		X	X			
109	X	X	X		X	
110	X	X	X	X		
111			X	X	X	
112						
113			X			
114		X	X	X		
115			X			
116		X	X	X		
117			X	X		
118			X		X	
119						
120			X			
121			X			X
122			X	X		X
123	X	X	X	X		X
124	X		X	X		
125	X	X	X	X		
126			X			
127			X			X
128		X	X	X		X
129			X			X

TABLE 2-2 (CONTINUED)

SUMMARY OF UNDERGROUND UTILITIES
NAVAL MEDICAL CENTER, OAKLAND

Parcel	Storm Drain	Sanitary Sewer	Water	Natural Gas	Electrical	Steam
130	X	X	X	X		X
131		X	X	X		
132		X	X	X		X
133		X	X	X		X
134	X	X	X	X		X
135	X	X	X			X
136		X	X	X	X	
137	X	X	X	X	X	X
138	X		X	X		X
139		X	X	X		
140			X	X		
141				X		X
142	X	X	X	X		
143	X	X		X	X	X
144	X	X	X	X	X	
145			X	X		
146		X	X	X		
147		X	X			X
148		X	X	X	X	X
149			X	X	X	X
150			X			
151		X	X	X		X
152			X			X
153						
154			X	X	X	X
155					X	
156		X	X	X		X
157		X	X			X
158	X	X	X	X		X
159		X	X		X	X
160	X	X	X			X

TABLE 2-2 (CONTINUED)

SUMMARY OF UNDERGROUND UTILITIES
NAVAL MEDICAL CENTER, OAKLAND

Parcel	Storm Drain	Sanitary Sewer	Water	Natural Gas	Electrical	Steam
161			X	X		
162			X	X		
163		X	X	X		X

Note:

X The underground utility is present

TABLE 3-1

SUMMARY OF PARCEL REUSE AND CONVEYANCE
NAVAL MEDICAL CENTER, OAKLAND

Parcels	Reuse (Conveyance)
101, **102**, 103, 104, **111**, 113, **115**, **118**, 119, **146**, 148, 156, 157, 158, **160**, 161, and 162	Oakland Parks and Recreation (public benefit conveyance)
102, 105, 106, 107, 108, 109, 123, 124, 127, **128**, 130, 133, 134, **135**, 141, **146**, 147, 159, **160**, and 163	Mixed, commercial, and residential use (negotiated sale or public sale)
110, 112, 114, 116, 125, 129, **135**, 136, 137, 138, 139, 140, 142, 143, 144, 145, 149, 150, 151, 152, 153, 154, and 155	Golf course and residential (negotiated sale or public sale)
111	Residential (negotiated sale or public sale)
115, **118**, and 131	United Indian Nations/Native Americans (public benefit conveyance)
120, 121, 122, and 126	Seneca Center and Center for Adolescent Emotional Health (public benefit conveyance)
128	Federal Credit Union (negotiated sale)
132	Storage of Artifacts for the City of Oakland Museum (public sale)

Note:

BOLD numbers are parcels with property to be transferred under more than one conveyance.

The conveyance methods listed represent the proposed disposal plan. The Navy has yet to make specific disposal decisions for the NMCO property.

For the parcels designated in Section 7.0 as environmental condition of property (ECP) area type 1 or ECP area type 3, by definition, these parcels are suitable for unrestricted use. For the parcels designated as ECP area type 2, the release of petroleum products was either at levels below residential action levels or was remediated to levels below residential action levels; ECP area type 2 parcels are also available to transfer for unrestricted use.

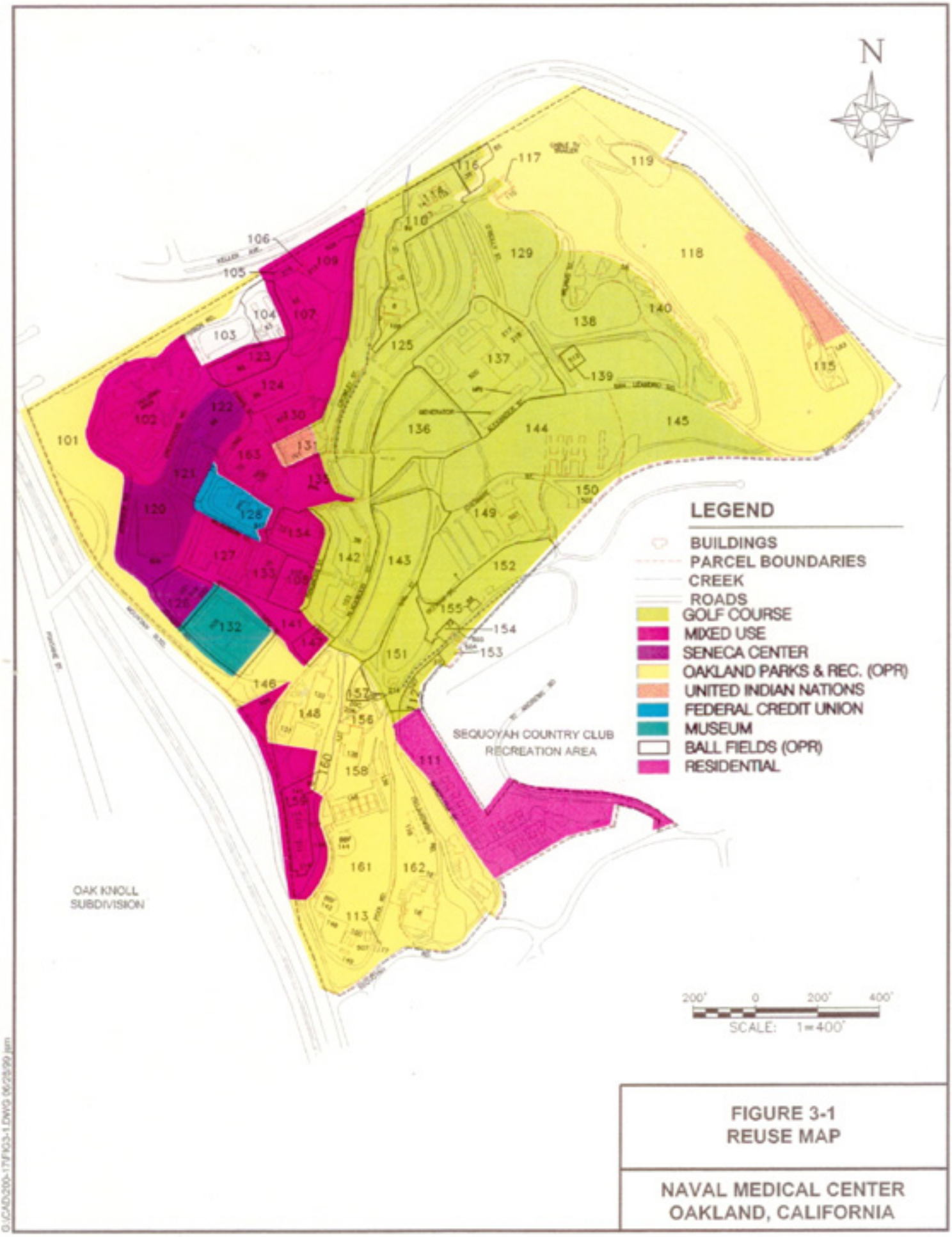

FIGURE 3-1
REUSE MAP

NAVAL MEDICAL CENTER
OAKLAND, CALIFORNIA

4.0 REGULATORY AGENCY COORDINATION

Representatives from the U.S. Environmental Protection Agency (EPA), the California Environmental Protection Agency's Department of Toxic Substances Control (DTSC), and the Regional Water Quality Control Board (RWQCB) met with the Navy on April 9, 1997 to discuss the scope of the NMCO FOST activities. Representatives from these agencies were provided workable draft documents to facilitate their continuing consultative role in developing the FOST. Regulatory comments were reviewed and addressed or incorporated, as appropriate.

5.0 NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE

A joint Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) was prepared for the Navy disposal and community reuse of the properties at NMCO in accordance with the requirements of the National Environmental Policy Act (NEPA), California Environmental Quality Act, and the Navy's environmental and natural resources program manual (OPNAVINST 5090.1B). The final EIS/EIR document was completed April, 1998 and shall accompany this FOST. On August 17, 1998, the Navy issued a record of decision for the disposal and reuse of NMCO, completing the NEPA process.

6.0 SUMMARY OF ENVIRONMENTAL FINDINGS

The following sections present a summary of the environmental findings at NMCO regarding storage tanks (Sections 6.1 and 6.2), the former hydraulic lift at Parcel 159 (Section 6.3), asbestos-containing materials (Section 6.4), lead-based paint (Section 6.5), polychlorinated biphenyls (Section 6.6), radon (Section 6.7), pesticides (Section 6.8), radioactive materials (Section 6.9), medical debris removal from private property adjacent to NMCO (Section 6.10), silver recovery unit (Section 6.11), and groundwater wells (Section 6.12).

6.1 UNDERGROUND STORAGE TANKS

A total of 20 underground storage tank (UST) sites were investigated on parcels 108, 110, 115, 132, 137, 139, 151, 154, and 159 at NMCO (parcels may contain more than one UST). Eighteen USTs at NMCO have been removed. At the two remaining sites (in Building 12 at Parcel 110), suspected UST sites were investigated to reveal that no tank existed. All 18 UST sites at NMCO have received RWQCB closure notification. The location, tank identification, capacity, contents, and status of each UST formerly

located at NMCO are summarized in Table 6-1. In addition, those sites that contain residual contamination from petroleum products are also identified in Table 6-1. Reports which have been referenced in the UST closure letters are included in the reference list presented in Section 1.0 (PWC 1997, PRC 1994, PWC 1996, ERM-West 1996, and PRC 1996).

Notifications. This section serves as a notification that the following UST sites at NMCO contain residual contamination from petroleum products.

Parcel #	Tank ID
108	510A,-B,-C,-D
115	L63D, -E
132	505A
137	500A
139	512A
151	214A
154	22-1,-2
159	141-A, -B

The levels of residual contamination are of no significant impact and the tanks meet the low-risk criteria for closure as identified in the San Francisco Bay RWQCB closure letters. For specific information on the individual sites, refer to the individual reports for the sites. This information may be found at the San Francisco Bay RWQCB records. Also, files are maintained at EFA West or its successor command.

Restrictions. For the purpose of this transfer, no restrictions exist with respect to USTs at NMCO.

TABLE 6-1

UNDERGROUND STORAGE TANK INVENTORY
NAVAL MEDICAL CENTER, OAKLAND

	Tank ID	Location (Building)	Former Land Use	Future Land Use	Capacity (Gallons)	Contents	Status	Comments
108	510A	510	Former Service Station	Mixed Use	10,000	Gasoline	Removed	RWQCB Closure Letter (6/20/97)**
108	510B	510	Former Service Station	Mixed Use	10,000	Gasoline	Removed	RWQCB Closure Letter (6/20/97)**
108	510C	510	Former Service Station	Mixed Use	10,000	Gasoline	Removed	RWQCB Closure Letter (6/20/97)**
108	510D	510	Former Service Station	Mixed Use	550	Waste Oil	Removed	RWQCB Closure Letter (12/94)**
110	12-1	12 [a]	Service Station	Golf Course	Unknown	Unknown	NA	Old Service Station Boiler/No UST Found Upon Excavation*
110	12-2	12[a]	Service Station	Golf Course	Unknown	Unknown	NA	Old Service Station Boiler/No UST Found Upon Excavation*
115	L63D	Officers Res.	Housing	United Indian Nations	750	Diesel	Removed	RWQCB Closure Letter (8/27/97)**
115	L63E	Officers Res.	Housing	United Indian Nations	750	Diesel	Removed	RWQCB Closure Letter (8/27/97)**
132	505A	505	Warehouse/Supplies	Oakland Museum	500	Diesel	Removed	RWQCB Closure Letter (7/10/97)**
137	500A	500	Hospital	Golf Course	5,000	Diesel	Removed	RWQCB Closure Letter (7/10/97)**
139	512A	512	Hospital Boiler	Golf Course	20,000	Diesel	Removed	RWQCB Closure Letter (7/10/97)**
151	214A	214	Service Station	Golf Course	6,000	Gasoline	Removed	RWQCB Closure Letter (8/27/97)**
151	214B	214	Service Station	Golf Course	6,000	Gasoline	Removed	RWQCB Closure Letter (8/27/97)*
151	214C	214	Service Station	Golf Course	8,000	Gasoline	Removed	RWQCB Closure Letter (8/27/97)*
151	214D	214	Service Station	Golf Course	Unknown	Petroleum	Removed	RWQCB Closure Letter (8/27/97)*
154	22-1	22	Boiler Plant	Golf Course	Unknown	Diesel	Closed	RWQCB Closure Letter (8/27/97)**

TABLE 6-1 (Continued)

UNDERGROUND STORAGE TANK INVENTORY
NAVAL MEDICAL CENTER, OAKLAND

	Tank ID	Location (Building)	Former Land Use	Future Land Use	Capacity (Gallons)	Contents	Status	Comments
154	22-2	22	Boiler Plant	Golf Course	Unknown	Diesel	Closed	RWQCB Closure Letter (8/27/97)**
159	111-A	117	Service Station/Transformer Area	Mixed Use	8,000	Petroleum	Removed	RWQCB Closure Letter (12/94)*
159	141-A	141	Service Station/Transformer Area	Mixed Use	10,000	Gasoline	Removed	RWQCB Closure Letter (7/10/97)**
159	141-B	141	Service Station/Transformer Area	Mixed Use	6,000	Diesel	Removed	RWQCB Closure Letter (7/10/97)**

Notes:

*These former UST sites have no residual contamination from petroleum products.
**These former UST sites have residual contamination from petroleum products. The levels of residual contamination are of no significant impact and the tanks meet the low-risk criteria for closure as identified in the RWQCB closure letters.
[a]Building 12 in Parcel 110 has been demolished.
NA No UST found upon excavation.
RWQCB Regional Water Quality Control Board
UST Underground Storage Tank
This serves as notification that future land use may change from land use at the time of UST closure.

6.2 ABOVEGROUND STORAGE TANKS

Six aboveground storage tanks (AST) were located on parcels 110, 137, and 153 at NMCO. Four of the six ASTs have been removed. Two will remain at NMCO, empty and inactive. The location, capacity, contents and status of each AST currently or formerly located at NMCO are summarized in Table 6-2.

Notifications. For the purpose of this transfer, no notifications are required with respect to ASTs at NMCO.

Restrictions. For the purpose of this transfer, no restrictions exist with respect to ASTs at NMCO.

TABLE 6-2

ABOVEGROUND STORAGE TANK INVENTORY
NAVAL MEDICAL CENTER, OAKLAND

Parcel	Location (Building)	Former Land Use	Future Land Use	Capacity (Gallons)	Contents	Status
110	108	Boiler	Golf Course	300	Diesel Fuel	Removed
110	108	Boiler	Golf Course	300	Diesel Fuel	Removed
137	500	Hospital	Golf Course	500	Diesel Fuel	Inactive
154	22	Former Boiler Plant	Golf Course	10,000	Diesel Fuel	Removed
154	22	Former Boiler Plant	Golf Course	10,000	Diesel Fuel	Removed
154	22	Former Boiler Plant	Golf Course	Unknown	None; tank was not active	Inactive

This serves as notification that future land use may change from land use at the time of AST removal.

6.3 FORMER HYDRAULIC LIFT AT PARCEL 159

In August of 1996, the Navy removed the hydraulic lift near Building 111 in Parcel 159; Parcel 159 had formerly been the facility's motor pool. The lift was approximately the size of an average home hot water heater with a capacity of about 66 gallons (too small to be regulated under Title 23, Division 3, Chapter 16). During the removal of the lift, soil samples were collected and analyzed for total petroleum hydrocarbons (TPH)-gasoline/diesel mixture, benzene, toluene, ethylbenzene, xylene (BTEX), polychlorinated biphenyl (PCBs), and metals. Elevated concentrations of lead and TPH-gasoline/diesel mixture were identified in the excavation area (SSPORTS 1997). As a result, approximately 80 cubic

yards of soil were removed and additional soil samples were collected and analyzed for TPH-hydraulic fluid, BTEX, and PCBs; a minnow bioassay was also conducted on soil samples collected from the creek bank adjacent to the excavation area. The data from these additional samples indicated that petroleum contaminated soils remain outside the excavated area on the banks of Rifle Range Creek (Parcel 160); however, results of the minnow bioassay indicated that adverse ecological impacts to the creek had not occurred. Based on the criteria analysis report (SSPORTS 1997), the California Department of Fish and Game (DFG), Office of Spill Prevention and Response (OSPR), recommended additional investigations be conducted to evaluate the potential for contaminant migration and the use of a more sensitive species to evaluate potential ecological impacts at the site (OSPR 1997).

In 1998, the Navy conducted sampling to evaluate the potential impact of petroleum hydrocarbons on frog embryos (TtEMI and U&A 1998). Two rounds of soil and sediment sampling were conducted within the creek bed and along the bank of Rifle Range Creek. Based on the results and observations from these and previous sampling rounds, a petroleum release from Parcel 159 (Building 111, the Hydraulic Lift) to Parcel 160 (Rifle Range Creek) does not appear to have occurred. Concentrations of TPH detected in the creek appear to be similar to concentrations detected previously and at upstream locations; these concentrations are most likely representative of ambient conditions. In addition, concentrations of TPH in the creek were not sufficient to elicit a statistically significant adverse effect on frog embryos (TtEMI and U&A 1999). These conclusions were supported by OSPR in their letter to the RWCQB dated April 2, 1999 (OSPR 1999) noting that, "DFG concludes that there is no increased risk to ecological receptors of concern in the creek adjacent to the former hydraulic lift." Also, contaminant migration of residual concentrations of TPH via groundwater was found to be unlikely as the water table is substantially below the level of the creek bottom. Groundwater was not encountered at 46 feet below ground surface at a boring installed 40 feet west of Rifle Range Creek, adjacent to Building 111 (PRC 1994). The area is also highly vegetated, thus, mitigating overland runoff and improving bank stability. However, in light of the El Nino winter of 1998, the RWQCB recommends that the new property owner monitor bank stability.

Based on this information, Parcel 159 is reclassified as environmental condition of property (ECP) area type 2-4 because petroleum remediation has been completed and there is no risk to human health or the environment. Parcel 160 remains classified as ECP area type 3 due to previously detected concentrations of pesticides below action levels (TtEMI and U&A 1996). Parcels 159 and 160 are suitable for transfer in their current condition (TtEMI and U&A 1999).

Notifications. This section serves as a notification that residual concentrations of TPH exist at depths between 12 and 14 feet from the top of the slope at Parcel 159. The residual concentrations were measured in 1997. Due to biodegradation and natural attenuation, it is likely that the concentrations measured in 1997 have decreased substantially. The U.S. Environmental Protection Agency, the California Department of Toxic Substances Control, the California Department of Fish and Game, and the California Regional Water Quality Control Board have been involved in studies to evaluate potential risk to human health and the environment from these residual concentrations. The following reasons are the' basis for the conclusion that there is no anticipated impact to human health or the environment from TPH concentrations remaining at the parcel:

1) studies on frog embryos showed no statistically significant impacts associated with residual TPH concentrations,

2) TPH concentrations in the creek bank measured in December 1998 do not significantly differ from ambient levels, and

3) residual concentrations of TPH are not migrating.

Restrictions. For the purpose of this transfer, no restrictions exist with respect to the former hydraulic lift at Parcel 159.

6.4 ASBESTOS-CONTAINING MATERIALS

In December 1994, a comprehensive asbestos survey (MINS 1994) was conducted for non-housing facilities at NMCO. Friable, accessible or damaged asbestos-containing materials (ACM) were identified in Buildings 8, 11, 14, 18, 22, 70, 73, 110, 111, 115, 131, 501, 20B, and in a pipe outside of Building 22 at NMCO. Within these buildings, friable, accessible and damaged ACM has been removed or encapsulated (MINS 1995 and PWC 1997). Building- and parcel-specific asbestos survey and asbestos abatement information for non-housing facilities is presented on Tables 6-3 and 6-4, respectively. In March 1996, an asbestos survey for residential units was conducted by the Navy Public Works Center, Norfolk, Virginia (PWC 1996). Results of the survey indicated that identified ACM are nonfriable or friable but in good condition with no damage, therefore asbestos abatement is not required; operations and maintenance programs were recommended.

Notifications. This section serves as a notification that asbestos-containing materials exist in buildings at NMCO. This asbestos-containing material currently poses no human health or environmental

TABLE 6-3

ASBESTOS SURVEY SUMMARY OF FINDINGS FOR NON-RESIDENTIAL BUILDINGS NAVAL MEDICAL CENTER, OAKLAND

Building Number	Parcel	Asbestos			Recommended Action
		Susp.	TSI	Misc.	
8	110		F	F	Abatement and O&M
9	110			NF	O&M
10	110		F	F	O&M
11	110			F	Abatement and O&M
13	110			F	O&M
14	114	NF	F	F	Abatement and O&M
17	113			NF	O&M
18	162	NF	F	F	Abatement and O&M
19	162			NF	O&M
20B	157		F	F	Abatement and O&M
20C	157			NF	Abatement and O&M
22	154		F	NF	Abatement and O&M
36	116			F	O&M
37	112			NF	O&M
38	142			NF	O&M
62	107			NF	O&M
63	104			NF	O&M
65	123			F	O&M
66	124			NF	O&M
67	130			NF	O&M
69	122			NF	O&M
70	163		F	NF	Abatement and O&M
73	134		F	NF	Abatement and O&M
75	133	NF		NF	O&M
85	116			NF	O&M
88	155				None

TABLE 6-3 (CONTINUED)

ASBESTOS SURVEY SUMMARY OF FINDINGS FOR NON-RESIDENTIAL BUILDINGS NAVAL MEDICAL CENTER, OAKLAND

Building Number	Parcel	Asbestos			Recommended Action
		Susp.	TSI	Misc.	
89	110			NF	O&M
90	159			NF	O&M
101	131			NF	O&M
102	147			NF	O&M
103	142			NF	O&M
107	112			NF	O&M
108	110			F	O&M
110	117			F	Abatement and O&M
111	159		F	NF	Abatement and O&M
112	159			NF	O&M
113	159			NF	O&M
114	159			NF	O&M
115	114		F	F	Abatement and O&M
116	159			NF	O&M
131	148		F	NF	Abatement and O&M
133	148			NF	O&M
137	158			NF	O&M
138	158			NF	O&M
147	161			NF	O&M
150	161			NF	O&M
215	106			NF	O&M
216	105			NF	O&M
217	137			NF	O&M
218	137			NF	O&M
223	137				None
500	137	NF		NF	O&M
501	149		F	NF	Abatement and O&M
505	132			NF	O&M

TABLE 6-3 (CONTINUED)

ASBESTOS SURVEY SUMMARY OF FINDINGS FOR NON-RESIDENTIAL BUILDINGS NAVAL MEDICAL CENTER, OAKLAND

Building Number	Parcel	Asbestos			Recommended Action
		Susp.	TSI	Misc.	
507	161			NF	O&M
508	109			NF	O&M
510	108			NF	O&M
511	128	NF		NF	O&M
512	139			NF	O&M
519	126			NF	O&M
520	126				None
521	126				None
Pipe	110		F		Abatement and O&M
Shed				NF	O&M

Notes:

S Surfacing
TSI Thermal System Insulation
Misc Miscellaneous - asbestos found in buildings that was neither surfacing nor thermal systems insulation
F Friable
NF Non-friable
O&M Operations and maintenance
Susp. Suspect
Information based on MINS 1994

TABLE 6-4

ASBESTOS ABATEMENT AT NON-RESIDENTIAL BUILDINGS NAVAL MEDICAL CENTER, OAKLAND

Building Number	Parcel	Asbestos Survey Results	Remedial Action Taken
8	110	Friable asbestos identified	Cleaned, Repaired, and Encapsulated
11	110	Friable asbestos identified	Cleaned, Repaired, and Encapsulated
14	114	Friable and nonfriable asbestos identified	Cleaned, Repaired, and Encapsulated
18	162	Friable and nonfriable asbestos identified	Cleaned, Repaired, and Encapsulated
20B	157	Friable asbestos identified	Cleaned, Repaired, and Encapsulated
22	154	Friable and nonfriable asbestos identified	Cleaned, Repaired, and Encapsulated
70	163	Friable and nonfriable asbestos identified	Cleaned, Repaired, and Encapsulated
73	134	Friable and nonfriable asbestos identified	Cleaned, Repaired, and Encapsulated
110	117	Friable asbestos identified	Cleaned, Repaired, and Encapsulated
111	159	Friable and nonfriable asbestos identified	Cleaned, Repaired, and Encapsulated
115	114	Friable asbestos identified	Cleaned, Repaired, and Encapsulated
131	148	Friable and nonfriable asbestos identified	Cleaned and Repaired or Removed and Encapsulated
501	149	Friable and nonfriable asbestos identified	Cleaned, Repaired, and Encapsulated
Pipe	110	Friable asbestos identified	Cleaned, Repaired, and Encapsulated

Notes:

Information based on MINS 1995 and PWC 1997

problems; however, if the asbestos-containing material is not managed in compliance with the site operations and maintenance plan, and applicable local, state, and Federal laws and regulations, it may become a hazard. The transferee will assume responsibility for the management of any ACM in accordance with applicable local, state, and Federal laws and regulations.

Restrictions. For the purpose of this transfer, no restrictions exist with respect to ACM at NMCO.

6.5 LEAD-BASED PAINT

Lead-based paint (LBP) hazards are defined in the Federal Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X of P.L. 102-550, Act), as codified in 42 USC Section 4822 (Act) as "any condition that causes exposure to lead ... that would result in adverse health effects." Lead exposure is especially harmful to young children and pregnant women. The Act provides for regulation of the abatement of lead hazards from LBP, lead contaminated dust and lead contaminated soil for residential structures only. The Act refers to residential structures constructed before 1978 as target housing. The seller must disclose known lead-based paint or lead-based paint hazards on residential housing built before 1978, per EPA 40 Code of Federal Regulations (CFR) Part 745, and HUD 24 CFR Part 35.

The Navy is required by the Act and subsequent Department of Defense (DOD) base realignment and closure guidelines ("Asbestos, Lead Paint, and Radon Policies at BRAC Properties," memorandum from the Office of the Under Secretary of Defense, October 31, 1994) to survey and abate LBP hazards on target housing constructed before 1960. The DOD guidelines also stipulate that LBP surveys be conducted at target housing constructed between 1960 and 1978. No survey or abatement is required to be conducted at housing constructed after 1978. If a non-housing structure is identified by the reuse plan for future use as housing, the appropriate measures would be taken by the Navy depending on the age of the structure. However, one of the exceptions to the DOD Policy is that inspection and/or abatement of target housing is not required if the building is scheduled for demolition.

6.5.1 Residential

According to the Act, the term "residential" includes any house, apartment, or structure intended for human habitation. In addition, Navy practice ("Lead-Based Paint at BRAC Installations," prepared by Commander, Naval Facilities Engineering Command, Letter 5090 41CM/960102 April 16, 1996) is to treat structures which would typically accommodate children under 6 years of age for extended periods of

time, such as a child care facility, elementary school, or playground in the same manner as target housing, although the law does not specifically address them as such.

The "Lead-Based Paint Inspection of Family Housing Units at Naval Medical Center Oakland," dated April 14, 1996, presents the results of lead sampling for the existing housing units at NMCO, conducted by the Navy Public Works Center, Norfolk, VA, in accordance with guidelines set forth by the U.S Department of Housing and Urban Development. The survey indicates that lead-based paint is present on surfaces and in soil in residential areas (Table 6-5). Removal of elevated levels of lead in soil was recommended at the Barcelona and Santa Cruz housing units. This soil removal was completed in September 1997 (IT 1997).

The Oakland Base Reuse Authority (OBRA) Final Reuse Plan for the Naval Medical Center, dated August 1996, which was approved by OBRA in July 1996 indicates that there is no residential reuse planned for the following housing developments: Duplex Officer's Quarter's (Williams housing units), Officers Quarters (Quarters D and E), and Johnson's Circle. Therefore, these are treated as non-residential areas and are therefore not subject to the DOD policy on LBP. The only areas planned for residential reuse are the Barcelona/Santa Cruz areas. However, since the soil lead levels in some areas surrounding Quarters D and E were elevated above EPA action levels, the Navy removed the soil from these areas (SSPORTS 1999).

Notifications. This section serves as a notification that lead-based paint exists in residential buildings constructed before 1978 at NMCO which are part of this FOST. Lead exposure is especially harmful to young children and pregnant women. For purposes of this transfer, the transferee shall comply with all applicable Federal, state, and local laws and regulations relating to LBP. In accordance with 24 CFR, Part 35 and 40 CFR, Part 745, at the time of transfer, the disclosure information on lead-based paint and/or lead-based paint hazards shall include the elements in the "Sample Form for Transfer of Residential Dwellings" as shown in Appendix A. The disclosure information will contain the following:

- Statement by the Navy disclosing the presence of lead-based paint and/or lead-based paint hazards in paragraph (a)(i) of Appendix A:

  "This section serves as a disclosure that lead-based paint exists in residential buildings built prior to 1978 at NMCO which are part of this FOST. The basis for the determination that lead-based paint and/or lead-based paint hazards exists in the housing, the location of the lead-based

paint and/or lead-based paint hazards, and the conditions of the painted surfaces are contained in the reports listed below."

- The notice, in accordance with 24 CFR 35.88, shall include all reports available pertaining to lead-based paint and/or lead paint hazards in the housing area and will include the following documents to be listed in paragraph (b)(i) of Appendix A:

  (1) "Lead Management Plan" for Barcelona/Santa Cruz Housing (PWC Norfolk 1996)
  (2) "Removal Action for Lead Contamination in Soil for Barcelona/Santa Cruz Housing" (IT 1997)

- A lead hazard information pamphlet in accordance with the Residential Lead-Based Paint Hazard Reduction Act and 24 CFR Part 35 titled "Protect Your Family From Lead in Your Home" (EPA#747-K-94-001) as noted in paragraph (d) of Appendix A.

Restrictions. For the purpose of this transfer, no restrictions exist with respect to LBP in residential housing at NMCO.

6.5.2 Non-Residential

Under the Act, Federal agencies are subject to all Federal, State, and local requirements respecting LBP and LBP hazards (15 USC 2688). Currently, there are no Federal, state, or local requirements for surveying and abating LBP in non-residential facilities.

Prior to 1978, the use of lead-based paint was common throughout the United States, including at military installations. The use of lead-based paint, and the lead in the paint, was significantly higher prior to 1960 than later, and higher still prior to 1950. Based on the sampling performed above there is a likelihood that lead-based paint is present in non-residential structures. It is also likely that there is lead from lead-based paint on the soil near the structure, through the action of normal weathering and maintenance (e.g. scraping and repainting) over the years.

If EPA or a state develops generally applicable standards for the land uses permissible under the deed that require remediation of lead-based paint beyond that performed prior to the transfer of the property, then in accordance with the DOD's Future Land Use Policy and with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) section 120(h)(3)(A), EPA expects the Navy to perform or assure the performance of any additional remedial action found to be necessary with respect to lead from lead-based paint released to the soil during the ownership of the property by the Navy.

It is DTSC's and EPA's position that contamination of soil resulting from LBP constitutes a CERCLA release. Further, to transfer such property and satisfy the requirements under 120(h)(3) of CERCLA that "...all remedial action necessary to protect human health and the environment has been taken," the potential for soil contamination from LBP must be evaluated and necessary remedial actions taken. DTSC performed reconnaissance soil sampling and analysis for lead in non-residential areas in August 1997; results of these analyses are presented on Table 6-6. As a follow-up to the reconnaissance sampling, DTSC proposed limited sampling to assess whether lead in soil is present at concentrations that could pose unacceptable risks to future users in areas not previously used for residential purposes, but for which the reuse plan includes mixed use. An approach that was mutually acceptable to DTSC and the Navy was documented in a letter dated July 22, 1998 from Mr. Henry Gee (EFA West) to Mr. Anthony Landis (DTSC).

In August 1998, DTSC sampled for LBP at one current building (Building 67, Parcel 130) and at an empty site on which a former industrial building (Building 73, Parcel 134) was located. The results are presented in Tables 6-7 and 6-8 for Buildings 67 and 73 respectively, and ranged from 40.8 mg/kg to 777 mg/kg for the former building and 229 mg/kg to 674 mg/kg for the current building. The average values were 252 mg/kg and 472 mg/kg, respectively. Based on these data, DTSC concluded that the parcels designated for "mixed use" at NMCO will not present a risk to human health or the environment after the existing buildings have been demolished and the parcel regraded. DTSC also concluded that the parcels may be released for unrestricted use (DTSC 1998).

Notifications. The notification for the transfer document, i.e. the contract for sale, EDC agreement or deed, is the following:

This section serves as a notification that lead-based paint does exist in non-residential buildings at NMCO. Lead exposure is especially harmful to young children and pregnant women. Buildings constructed before 1978 may contain LBP. The recipient and its successor shall not permit the use, occupancy, demolition, renovation, or residential habitation of any structure unless the recipient and its successor complies with all applicable Federal, state, and local laws relating to LBP. Residential structures are defined as any house, apartment, or structure intended for human habitation, including but not limited to a non-dwelling facility commonly used by children under 6 years of age such as a child care center, elementary school, or playground.

Restrictions. For the purpose of this transfer, no restrictions exist with respect to LBP in non-residential buildings at NMCO.

TABLE 6-5

LEAD-BASED PAINT AT EXISTING HOUSING FACILITIES
NAVAL MEDICAL CENTER, OAKLAND

Parcel	Building Community (year built)	Lead Hazard			Comments
		Paint	Soil[a]	Dust	
102	Johnson Circle (1969)	X			Eleven components have LBP on surfaces. Interior: LBP hazard exists where minor damage found on surfaces. Exterior: Surfaces contain minor damage and require repair and maintenance. Not planned for residential reuse per the approved reuse plan.
111	Barcelona Santa Cruz (1974)	X	X		Two components have LBP on surfaces. Interior: All LBP intact/minimum hazard. Exterior: Downspouts on all units contain LBP above action levels. Lead in soil up to 1,684 ppm. Remediation of lead in soil completed in summer 1997 (IT 1997).
115	Officer Quarters D Williams (1943-1944)		X		Twenty-five components have LBP on surfaces. All interior and exterior paint intact. Lead in soil up to 1,260 ppm. Reuse of these quarters will not be residential per the approved reuse plan. Remediation of lead in soil completed February 1999 (SSPORTS 1999).
115	Officer Quarters E Williams (1943-1944)				Twenty-seven components have LBP on surfaces. All interior and exterior paint intact. Lead in soil up to 519 ppm. Reuse of these quarters will not be residential per the approved reuse plan. Remediation of lead in soil completed February 1999 (SSPORTS 1999).
140	Duplex Officer Quarters (1956)	X	X	X	Forty components have LBP on surfaces. Interior: LBP hazard exists where minor damage found on surfaces with high potential for contact with children. Exterior: LBP hazards at doorways and all windows. Lead in soil up to 451 ppm. One unit has lead in dust above recommended limits. Demolition of these quarters is anticipated per the approved reuse plan.
140	Officer Quarters A Williams (1943-1944)	X	X		Eighteen components have LBP on surfaces. Interior: Stairway contains LBP above action levels. Exterior: LBP hazards at doorways and all windows. Lead in soil up to 447 ppm. Demolition of these quarters is anticipated per the approved reuse plan.
140	Officer Quarters B Williams (1943-1944)				Twenty-five components have LBP on surfaces. Interior: All paint intact. Exterior: Major damage at paint surfaces which require repair and maintenance. Demolition of these quarters is anticipated per the approved reuse plan.
140	Officer Quarters C Williams (1943-1944)		X		Fourteen components have LBP on surfaces. Interior: All paint intact. Exterior: Major damage at paint surfaces that require repair and maintenance. Lead in soil up to 1,403 ppm. Demolition of these quarters is anticipated per the approved reuse plan.

Notes:
[a]Hazard defined as lead in soil at concentrations above action levels (400 ppm)
LBP Lead-based paint
Ppm Parts per million

6.6 POLYCHLORINATED BIPHENYLS

The Navy Public Works Center conducted a PCB survey and sampling program for oil-filled electrical equipment at NMCO in the early 1980s. PCB equipment is legally defined as equipment with oils containing PCBs in excess of 500 parts per million (ppm). "PCB-contaminated" equipment is legally defined as equipment with oils containing PCBs in excess of 50 ppm. Although equipment that contains oil with a PCB content of less than 50 ppm is not regulated under Federal management and disposal regulations, oil with a PCB content greater than 5 ppm must be disposed as "hazardous waste" in California.

All PCB- containing transformers were removed from NMCO and replaced with oil-containing transformers with non-detectable concentrations of PCBs by 1985. In 1994, a PCB survey was conducted. No PCB concentrations above 5 ppm were detected in industrial equipment (PWC 1994).

Notifications. For the purpose of this transfer, no notifications exist with respect to PCBs at NMCO.

Restrictions. For the purpose of this transfer, no restrictions exist with respect to PCBs at NMCO.

6.7 RADON

In 1994, a survey was conducted to determine radon levels in a representative sample of buildings at NMCO (Martin Marietta Energy Systems 1994). The sampling results indicated that concentrations of radon were well below the EPA action level of 4 picocuries per liter.

Notifications. For the purpose of this transfer, no notifications exist with respect to radon at NMCO.

Restrictions. For the purpose of this transfer, no restrictions exist with respect to radon at NMCO.

6.8 PESTICIDES

There is no evidence to suggest that pesticides, other than those ordinarily and routinely applied in a manner consistent with the standards for licensed application, were ever used at NMCO. Pesticides, insecticides, termiticides, and rodenticides were applied intermittently on an as needed basis at NMCO either by personnel from the Navy Public Works Pest Control Department or by contracted personnel.

TABLE 6-6

DTSC SOIL SAMPLE ANALYSIS
SUMMARY OF FINDINGS
NAVAL MEDICAL CENTER, OAKLAND

Parcel	Building Number	Building Description/ Former Use	Year Built	Demolished	Lead Concentration (mg/kg)
115	D Williams	Housing	1943-1944		1,260*
					6,400*
	E Williams	Housing	1943-1944		519*
					113*
121	71	Ward	Pre-1949	X	152
					92
					96
122	69	Quarters	1943		225
					362
					109
130	67	Dental Annex	1942		345
					2,440
					804
131	101	School	1943		418
					312
					483
134	73	Administration Building	1943	X	286
					195
					2,750
162	18	Open Mess	1924		256
					314
					119

Notes:
Lead concentrations from "Results of Soil Sampling from Lead-Based Paint, Naval Medical Center Oakland," DTSC 1997.

*Soil removal occurred at Parcel 115 in 1999. Confirmation sampling results for Quarters D and E subsequent to removal were below the EPA action level of 400 mg/kg.

TABLE 6-7

LEAD-BASED PAINT AT BUILDING 67, PARCEL 130
NAVAL MEDICAL CENTER, OAKLAND

Sample Number	Average Concentration (mg/kg)
130-D/E	674
130-F/G	229
130-H/J	631
130-K/L	355
Average	**472**

Notes:
From "Lead Sampling Results, Naval Medical Center Oakland," DTSC 1998.
mg/kg - milligrams per kilogram

TABLE 6-8

LEAD-BASED PAINT AT FORMER BUILDING 73, PARCEL 134
NAVAL MEDICAL CENTER, OAKLAND

Sample Number	Concentration (mg/kg)
134-D	42.2
134-E	450
134-F	40.8
134-G	777
134-H	109
134-J	358
134-K1	212
134-K2	190
134-L	89.7
Average	**252**

Notes:

From "Lead Sampling Results, Naval Medical Center Oakland," DTSC 1998.
mg/kg - milligrams per kilogram

A review of past records indicates the following pesticides and herbicides may have typically been used at NMCO:

- Borid
- Diazinon
- Diazinon 4E
- Drione
- Dursban 4E
- Dursban L.O
- Dursban T.C.
- Ficam-W
- Havahart #3
- Malathion
- PT-110
- PT-515
- Sevin 80W
- Thuricide

Parcel 157 is the only parcel reportedly used for pesticide storage and mixing. Pesticides exceeding the EPA's residential preliminary remediation goals for soil were not detected in this area. No pesticide intensive-use locations have been identified at NMCO.

Notifications. For the purpose of this transfer, no notifications are required with respect to pesticides at NMCO.

Restrictions. For the purpose of this transfer, no restrictions exist with respect to pesticides at NMCO.

6.9 RADIOACTIVE MATERIALS

A report of radiological evaluation of properties at NMCO was submitted to the U.S. Navy Radiation Safety Committee on November 1, 1996 and to the U.S. Nuclear Regulatory Commission on November 12, 1996. The Navy Environmental Health Center has confirmed that NMCO meets the requirements for transfer in the U.S. Nuclear Regulatory Commission NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination" and the U.S. Atomic Energy Commission Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors." Facilities at NMCO previously licensed for use of radioactive materials have now been released for unrestricted use, and the permits have been terminated by the Navy Radiation Safety Committee (NRSC 1996).

Notifications. For the purpose of this transfer, no notifications are required with respect to radioactive materials at NMCO.

Restrictions. For the purpose of this transfer, no restrictions exist with respect to radioactive materials at NMCO.

6.10 MEDICAL DEBRIS REMOVAL FROM PRIVATE PROPERTY ADJACENT TO NMCO

Non-biohazardous medical debris was discovered on adjacent property that was previously owned by the Navy at NMCO. This area is located east of Parcel 152. The area excavated consisted of soil and construction and medical debris of about 800 square feet. The debris removal was witnessed by the Alameda County Senior Health environmental specialist (Alameda County 1998). A final debris removal report was submitted to Alameda County who endorsed the satisfactory completion of the work. The final report was completed on October 21, 1998 (SSPORTS 1998).

6.11 SILVER RECOVERY UNIT

During the course of normal hospital medical operations, photographic images are often utilized. The use of photographic imaging generates waste solutions that contain silver. To minimize the cost of these imaging operations, silver recovery units are often installed. As the waste solutions are considered hazardous, these units are required to be permitted. One such silver recovery unit was installed at the NMCO facility. This unit was permitted under one of the tiered permits of Permit-by-Rule. In a letter dated March 31, 1995, the Navy notified the DTSC that the silver recovery unit was operationally discontinued and requested that the DTSC permit be terminated. Any remaining waste solution after discontinuation of the unit was manifested as hazardous waste.

Notifications. For the purpose of this transfer, no notifications exist with respect to the silver recovery unit at the facility.

Restrictions. For the purpose of this transfer, no restrictions exist with respect to the silver recovery unit at the facility.

6.12 GROUNDWATER WELLS

There are three groundwater wells present at the NMCO facility. Historical maps from 1963 indicate the presence of an abandoned well in the chiller room of Building 500 on Parcel 137 and a second abandoned well near Building 13 on Parcel 110. There is also one active well located near Building 125 on Parcel 143.

Notifications. If the new owner does not intend to use the active well, it is recommended that he/she take action to close this well.

Restrictions. For the purpose of this transfer, no restrictions exist with respect to groundwater wells at the facility.

7.0 ENVIRONMENTAL CONDITION OF PROPERTY

The Basewide Environmental Baseline Survey (EBS) identified 63 parcels at NMCO; 15 of the 63 parcels were classified as ECP area type 1, three were classified as ECP area type 2, and the remaining 45 parcels were classified as ECP area type 7. Based on the results of EBS sampling conducted in 1996 and the 1997 Defense Authorization Act, of the 45 parcels initially categorized as ECP area type 7, 34 were recategorized as ECP area type 1, eight were recategorized ECP area type 2, and three were recategorized as ECP area type 3. The ECP categories are defined as follows:

Area Type 1	Areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).
Area Type 2	Areas where only release or disposal of petroleum products has occurred.
Area Type 3	Areas where release of hazardous substances has occurred, but at concentrations that do not require removal or remedial action.

For parcels designated as ECP area type 1 or ECP area type 3, by definition, these parcels are suitable to transfer for unrestricted use. For parcels designated as ECP area type 2, the release of petroleum products was either at levels below residential action levels or was remediated to levels below residential action levels; ECP area type 2 parcels are also available to transfer for unrestricted use. Parcels classified as area type 1 will transfer under CERCLA Section 120(h)(4), those classified as area type 3 will be transferred under CERCLA Section 120(h)(3). Each parcel, its ECP category number, and status are included on Table 7-1.

TABLE 7-1

ENVIRONMENTAL CONDITION OF PROPERTY
NAVAL MEDICAL CENTER, OAKLAND

Parcel	ECP Category	Factors Potentially Affecting Transfer					Comments
		Former Storage Tanks	Known Asbestos Containing Materials	Lead-Based Paint	PCBs Exceeding EPA Action Levels	Radon Exceeding EPA Action Levels	
101	1						
102	1			X			Lead-based paint at Johnson Circle housing facility.
103	1						
104	1						
105	1						
106	1						
107	1						
108	2	X					ECP category 2 due to removed USTs. RWQCB closure letter 12/94.
109	1						
110	1	X	X				USTs suspected/no USTs present upon excavation. Asbestos abated in Buildings 8 and 11 by 5/24/95.
111	1			X			Lead-based paint and lead in soil at Barcelona/Santa Cruz housing facility. Remediation of lead in soil completed Fall 1997.
112	1						
113	1						
114	1		X				Asbestos abated 5/24/95.
115	2	X		X			ECP category 2 due to removed USTs. RWQCB closure letter 8/97. Remediation of lead in soil at Quarters D and E completed winter 1998.
116	1						
117	1		X				Asbestos abated 5/24/95.

TABLE 7-1 (Continued)

ENVIRONMENTAL CONDITION OF PROPERTY
NAVAL MEDICAL CENTER, OAKLAND

Parcel	ECP Category	Factors Potentially Affecting Transfer					Comments
		Former Storage Tanks	Known Asbestos Containing Materials	Lead-Based Paint	PCBs Exceeding EPA Action Levels	Radon Exceeding EPA Action Levels	
118	1						
119	1						
120	1						
121	1						
122	1						
123	1						
124	1						
125	1						
126	1						
127	1						
128	1						
129	1						
130	1						
131	1						
132	2	X					ECP category 2 due to removed UST. RWQCB closure letter 7/97.
133	1						
134	1		X				Asbestos abated 5/24/95.
135	1						

TABLE 7-1 (Continued)

ENVIRONMENTAL CONDITION OF PROPERTY
NAVAL MEDICAL CENTER, OAKLAND

Parcel	ECP Category	Factors Potentially Affecting Transfer					Comments
		Former Storage Tanks	Known Asbestos Containing Materials	Lead-Based Paint	PCBs Exceeding EPA Action Levels	Radon Exceeding EPA Action Levels	
136	1						
137	2	X					ECP category 2 due to removed UST. RWQCB closure letter 7/97.
138	1						
139	2	X					ECP category 2 due to removed UST. RWQCB closure letter 7/97.
140	1			X			Lead-based paint and lead in soil at Officer Quarters A Williams. Lead in soil at Officer Quarters C Williams. Buildings planned for demolition.
141	1						
142	1						
143	3						ECP category 3 based on sampling and analysis results from soil samples adjacent to sewer lines and sediment samples from Rifle Range Creek.[a]
144	1						
145	1						
146	1						
147	1						
148	1		X				Asbestos abated 5/24/95.
149	1		X				PCBs detected below action level in transformer. Asbestos abated 5/24/95.
150	1						
151	2	X					ECP category 2 due to removed USTs with apparent release; subsurface investigations performed, no constituents of concern detected. RWQCB closure letter 8/97.

TABLE 7-1 (Continued)

ENVIRONMENTAL CONDITION OF PROPERTY
NAVAL MEDICAL CENTER, OAKLAND

Parcel	ECP Category	Factors Potentially Affecting Transfer					Comments
		Former Storage Tanks	Known Asbestos Containing Materials	Lead-Based Paint	PCBs Exceeding EPA Action Levels	Radon Exceeding EPA Action Levels	
152	1						
153	2	X					ECP category 2 due to removed AST and detected concentration of petroleum.
154	1	X	X				Petroleum UST closed in place. RWQCB closure letter 8/97. Asbestos abated 5/24/95.
155	3						ECP category 3 due to PCBs in soil exceeding the PRG in one sample.[a]
156	1						
157	3		X				ECP category 3 due to pesticide storage.[a] Asbestos abated 5/24/95.
158	1						
159	2	X	X				ECP category 2 due to removed USTs. RWQCB closure letters 12/94 and 7/97. Hydraulic lift removed 1997. Asbestos abated 5/24/95.
160	3						ECP category 3 due to pesticide concentrations lower than action level.[a]
161	1						
162	1		X				Maximum detected concentration of radon (1.5 Pci/L - below action level). Asbestos abated 5/24/95.
163	1		X				Asbestos abated 5/24/95.

Notes:

a	"EBS Sampling and Analysis Summary Report" by PRC EMI and U&A, December 17, 1996.
AST	Aboveground storage tank
ECP	Environmental condition of property
PCB	Polychlorinated biphenyl
Pci/L	Picocuries per liter
RWQCB	Regional Water Quality Control Board
UST	Underground storage tank

8.0 NOTICE OF HAZARDOUS SUBSTANCES

Hazardous substances were stored on several parcels at NMCO as part of routine activities. The environmental baseline survey provides a parcel-by-parcel description of the hazardous substances stored, released, or disposed at NMCO. As required by CERCLA Section 120(h)1 and implemented by 40 Code of Federal Regulations 373.3, Table 8-1 of this FOST provides the required hazardous substances notification. The general requirements for the notice are as follows: Whenever any department, agency, or instrumentality of the United States enters into a contract to transfer real property, notice of any hazardous substances, as defined by CERCLA, stored for more than one year must be included in the transfer documents. The notice applies to storage of hazardous substances greater than one year and greater than or equal to 1,000 kilograms or the substance's CERCLA reportable quantity. The notice must also describe any release or disposal of hazardous substances greater than or equal to 1,000 kilograms or the substance's CERCLA reportable quantity. In the basewide EBS (ERM West 1994), hazardous materials/substances were noted as historically being stored on Parcels 105, 106, 113, 126, 132, 136, 137, and 154 at NMCO. However, the available information indicates that the quantities stored on Parcels 106, 113, 126, 132, and 137 were below the requirement for the notice. As such Table 8-1 includes information for Parcels 105, 136, and 154 only.

TABLE 8-1

NOTICE OF PAST PRESENCE OF HAZARDOUS SUBSTANCES STORED, RELEASED, OR DISPOSED NAVAL MEDICAL CENTER, OAKLAND

Parcel[1]	Building Number	Building Use	Substance	Quantity[2] (kg)	Quantity[2] (lb)	CASRN	Regulatory Synonym	RCRA Waste No.	Date[3]	S/R/D	Action Taken
105	216	Compressed Gas Storage	Acetylene	Unknown	Unknown				1942-1995	S	Substance Removed
			Dichlorodiflouromethane	1300	2860	75718	Methane, dichlorodifluoro-	U075	1942-1995	S	Substance Removed
136	No Bldg.	Open Space	Halogenated Solvents	750-1125	1650-2475	Unknown	NA	F001, F002	1942-1995	S	Substance Removed
154	22	Main Boiler Plant	Water Treatment Chemicals	3750-5630	8250-12,386	Unknown	NA	Unknown	1942-1995	S	Substance Removed

Notes:

[1] - Parcels not included did not have documented storage, release, or disposal above reportable quantities

[2] - Ranges are due to a range of densities used to calculate kilograms from gallons. Densities used to determine the quantities ranged from 1 to 1.5 kg/L

[3] - ERM West, Inc., 1995. "Basewide Environmental Baseline Survey Report, Naval Medical Center, Oakland." Prepared for EFA-West 9 June 1995.

CASRN - Chemical Abstracts Service Registry Number
Dates cited in this notice are from the opening of NMCO to the time of the EBS report (ERM-West, Inc. 1995).
kg - Kilograms lb - pounds
S/R/D - Stored/Released/Disposed RCRA - Resource Conservation and Recovery Act

The information contained in this notice is required under the authority of regulations promulgated under section 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund") 42 U.S.C. section 9620(h).

Notice is hearby given that the information provided contains a notice of hazardous substances that are known and documented to have been used for one year or more, or known to have been released or disposed on certain portions of NMCO, and the dates that such storage, release, or disposal took place. 40 CFR Section 373.3(b) requires that the aforementioned statement be prominently displayed in this notice.

Chemicals specifically excluded from reporting were: incidental quantities of household-type cleaning chemicals and consumer products. Hazardous substances notification is not required for hazardous substances stored in quantities less than 1, 000 kilograms or the CERCLA RQ, or 1 kilogram of acutely hazardous substances (40 CFR 373.2(b)).

9.0 REQUIRED ENVIRONMENTAL COVENANTS

The parcels at NMCO deemed suitable to transfer in this document will be transferred in accordance with federal real property disposal laws. The notice of hazardous substances as required by CERCLA Section 120(h)(1) is found in Table 8-1. In addition, it should be noted the transferee may be entitled to the statutory indemnification for closing bases pursuant to Section 330 of the National Defense Authorization Act for Fiscal Year 1993, Public Law 102-484, as amended by Section 1002 of the National Defense Authorization Act for Fiscal Year 1994, Public Law 103-160. The statute provides that, subject to certain conditions, the Secretary of Defense shall hold harmless and indemnify persons that acquire ownership or control of any facility at a military installation that is closing or closed pursuant to a base closure law from any claim for personal injury or property damage that results from the release of hazardous substances or petroleum products as a result of Department of Defense activities. The indemnification does not apply to the extent that persons seeking indemnification contributed to a release or threatened release. The deed will contain the deed covenants required by Sections 120(h)(3) and 120(h)(4) of CERCLA. The deed for conveyance of this property will contain the following:

For parcels with ECP type category 3, the following applies:

> Under 42 U.S.C. §9602(h)(3), with respect to any portion of the Real Estate on which any hazardous substance was stored for one year or more, known to have been released, or disposed:
>
> (A) Grantor covenants that all remedial action necessary to protect human health and the environment with respect to any such substance remaining on the Property has been taken before the date of transfer to Grantee; and
>
> (B) any additional remedial action found to be necessary after the date of such transfer shall be conducted by the Grantor; and
>
> (C) Grantee covenants that Grantor shall have access to the Property in any case in which remedial or corrective action is found to be necessary after the date of such transfer.
>
> (D) Grantor is hereby giving notice to Grantee of Table 8-1 of the FOST entitled, "Notice of Past Presence of Hazardous Substances Stored, Released, or Disposed."

For parcels with ECP type category 2, the following applies:

> With respect to any portion of the Real Estate where only release or disposal of petroleum has occurred:
>
> Grantee covenants that Grantor shall have access to the Property in any case in which remedial action or corrective action is found to be necessary after the date of such transfer.

For parcels with ECP type category 1 the following applies:

Under 42 U.S.C. §9620(h)(4)(D), with respect to any portion of the Real Estate where no hazardous substances and no petroleum products or their derivatives were known to have been released or disposed:

(A) Grantor covenants that any response action or corrective action found to be necessary after the date of transfer of the Property shall be conducted by the Grantor; and

(B) Grantee covenants that the Grantor shall have access to the Property in any case in which a response action or corrective action is found to be necessary after the date of the conveyance of the Property or shall have access where necessary to carry out a response action or corrective action on adjoining property.

10.0 SUMMARY OF NOTIFICATIONS AND RESTRICTIONS

Following is a summary of the notifications applicable to the transfer of parcels at Naval Medical Center, Oakland. There are no specific environmental restrictions applicable to the transfer of parcels at Naval Medical Center, Oakland.

10.1 NOTIFICATIONS

The notifications contained in this section are based upon findings summarized in the disclosures discussed in Sections 6.1 through 6.9.

10.1.1 Underground Storage Tanks

This section serves as a notification that the following UST sites at NMCO contain residual contamination from petroleum products.

Parcel #	Tank ID
108	510A,-B,-C,-D
115	L63D, -E
132	505A
137	500A
139	512A
151	214A
154	22-1,-2
159	141-A, -B

The levels of residual contamination are of no significant impact and the tanks meet the low-risk criteria for closure as identified in the San Francisco Bay RWQCB closure letters. For specific information on the individual sites, refer to the individual reports for the sites. This information may be found at the San Francisco Bay RWQCB records. Also, files are maintained at EFA West or its successor command.

10.1.2 Former Hydraulic Lift at Parcel 159

This section serves as a notification that residual concentrations of TPH exist at depths between 12 and 14 feet from the top of the slope at Parcel 159. The residual concentrations were measured in 1997. Due to biodegradation and natural attenuation, it is likely that the concentrations measured in 1997 have decreased substantially. The U.S. Environmental Protection Agency, the California Department of Toxic Substances Control, the California Department of Fish and Game, and the California Regional Water Quality Control Board have been involved in studies to evaluate potential risk to human health and the environment from these residual concentrations. The following reasons are the basis for the conclusion that there is no anticipated impact to human health or the environment from TPH concentrations remaining at the parcel:

1) studies on frog embryos showed no statistically significant impacts associated with residual TPH concentrations,
2) TPH concentrations in the creek bank measured in December 1998 do not significantly differ from ambient levels, and
3) residual concentrations of TPH are not migrating

10.1.3 Asbestos

Asbestos-containing materials exist in buildings 8, 11, 14, 18, 22, 70, 73, 110, 111, 115, 131, 501, 20B, and in a pipe outside of Building 22 at NMCO. This asbestos-containing material currently poses no human health or environmental problems; however, if the asbestos-containing material is not managed in compliance with the site operations and maintenance plan, and applicable local, state, and Federal laws and regulations, it may become a hazard.

10.1.4 Lead-Based Paint

Following are the notifications for residential and non-residential structures, respectively.

10.1.4.1 Lead-Based Paint at Residential Structures

This section serves as a notification that lead-based paint exists in residential buildings constructed before 1978 at NMCO which are part of this FOST. Lead exposure is especially harmful to young children and pregnant women. For purposes of this transfer, the transferee shall comply with all applicable Federal, state, and local laws and regulations relating to LBP. In accordance with 24 CFR, Part 35 and 40 CFR, Part 745, at the time of transfer, the disclosure information on lead-based paint and/or lead-based paint hazards shall include the elements in the "Sample Form for Transfer of Residential Dwellings" as shown in Appendix A. The disclosure information will contain the following:

- Statement by the Navy disclosing the presence of lead-based paint and/or lead-based paint hazards in paragraph (a)(i) of Appendix A:

  "This section serves as a disclosure that lead-based paint exists in residential buildings built prior to 1978 at NMCO which are part of this FOST. The basis for the determination that lead-based paint and/or lead-based paint hazards exists in the housing, the location of the lead-based paint and/or lead-based paint hazards, and the conditions of the painted surfaces are contained in the reports listed below."

- The notice, in accordance with 24 CFR 35.88, shall include all reports available pertaining to lead-based paint and/or lead paint hazards in the housing area and will include the following documents to be listed in paragraph (b)(i) of Appendix A:

  (1)"Lead Management Plan" for Barcelona/Santa Cruz Housing (PWC Norfolk 1996)
  (2)"Removal Action for Lead Contamination in Soil for Barcelona/Santa Cruz Housing" (IT 1997)

- A lead hazard information pamphlet in accordance with the Residential Lead-Based Paint Hazard Reduction Act and 24 CFR Part 35 titled "Protect Your Family From Lead in Your Home" (EPA#747-K-94-001) as noted in paragraph (d) of Appendix A.

10.1.4.2 Lead-Based Paint at Non-Residential Structures

Lead-based paint does exist in non-residential buildings at NMCO. Lead exposure is especially harmful to young children and pregnant women. Buildings constructed before 1978 may contain LBP. The recipient and its successor shall not permit the use, occupancy, demolition, renovation, or residential habitation of any structure unless the recipient and its successor complies with all applicable Federal, state, and local laws relating to LBP. Residential structures are defined as any house, apartment, or

structure intended for human habitation, including but not limited to a non-dwelling facility commonly used by children under 6 years of age such as a child care center, elementary school, or playground.

10.1.5 Groundwater Wells

If the new owner does not intend to use the active well, it is recommended that he/she take action to close this well.

10.2 RESTRICTIONS

There are no restrictions for the transfer of the Property at NMCO.

11.0 UNRESOLVED REGULATORY AGENCY COMMENTS

Written regulatory agency comments were addressed and/or incorporated into this document. There are no unresolved regulatory agency comments.

12.0 FINDING OF SUITABILITY TO TRANSFER

Based on the above information, I find that the property is suitable to transfer by deed for the intended purpose because the requirements of CERCLA 120(h)(3) and 120(h)(4) have been met for the property in that all remedial action necessary to protect human health and the environment with respect to CERCLA hazardous substances on the property has been taken, taking into account potential risk of future liability.

Therefore, I find that the property fully complies with all applicable laws and policies and is environmentally suitable for transfer. The reuse, as outlined in the reuse plan for NMCO, does not present a current or future risk to human health and the environment. Based on the foregoing information and analysis, the property covered by this FOST is suitable for transfer.

G.J. Buchanan

G.J. Buchanan
Captain, CEC, USN
Commanding Officer
Engineering Field Activity West
Naval Facilities Engineering Command

9/30/99

Date

APPENDIX A

SAMPLE FORM FOR TRANSFER OF RESIDENTIAL DWELLINGS

Disclosure of Information on Lead-Based Paint and Lead-Based Paint Hazards

Lead Warning Statement

Every purchaser of any interest in residential real property on which a residential dwelling was built prior to 1978 is notified that such property may present exposure to lead from lead-based paint that may place young children at risk of developing lead poisoning. Lead poisoning in young children may produce permanent neurological damage, including learning disabilities, reduced intelligence quotient, behavioral problems, and impaired memory. Lead poisoning also poses a particular risk to pregnant women. The seller of any interest in residential real property is required to provide the buyer with any information on lead-based paint hazards from risk assessments or inspections in the seller's possession and notify the buyer of any known lead-based paint hazards. A risk assessment or inspection for possible lead-based paint hazards is recommend prior to purchase.

Navy Disclosure

(a) Presence of lead-based paint and/or lead-based paint hazards (check one below):

(i)_____ Known lead-based paint and/or lead-based paint hazards are present in the housing (explain).

_____

(ii)_____ Navy has no knowledge of lead-based paint and/or lead-based paint hazards in the housing.

(b) Records and reports available to the purchaser (check one below):

(i)_____ Navy has provided the purchaser with all available records and reports pertaining to lead-based paint and/or lead-based paint hazards in the housing (list all documents below).

(1)
(2)

(ii)_____ Navy has no reports or records pertaining to lead-based paint and/or lead-based paint hazards in the housing.

Purchaser's Acknowledgment (initial)

(c)_____ Purchaser has received copies of all information listed above.

(d)_____ Purchaser has received the pamphlet *Protect Your Family from Lead in Your Home.*

(e)_____ Purchaser has (check (i) or (ii) below):

(i)_____ received a 10-day opportunity (or mutually agreed upon period) to conduct a risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards; or

(ii)_____ waived the opportunity to conduct a risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards.

Certification of Accuracy

The following parties have reviewed the information above and certify, to the best of their knowledge, that the information they have provided is true and accurate.

_____ _____

Navy Representative Date Purchaser Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

VIA FACSIMILE
(650) 244-2774

August 30, 1999

Commanding Officer
Engineering Field Activity, West
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, CA 94066-5006
ATTN: Mr. Baha Zarah

Re: Final Finding of Suitability to Transfer for Naval Medical Center Oakland

Dear Mr. Zarah:

The U.S. Environmental Protection Agency (U.S. EPA) has received the document entitled "Final Finding of Suitability to Transfer (FOST) for Naval Medical Center, Oakland, California" (Final FOST for NMCO). The Final FOST was prepared on behalf of the Department of the Navy by Tetra Tech EMI and Uribe & Associates, and is dated August 1999 (transmitted electronically on August 2, 1999). In earlier correspondence U.S. EPA has commented on a June 1997 draft FOST (correspondence dated July 11, 1997), an August 1997 draft-final FOST (correspondence dated September 17, 1997), and most recently a March 1999 pre-final FOST (transmitted electronically on April 29, 1999). At the time of the draft-final FOST, lead-based paint (LBP) was the sole unresolved agency comment (see correspondence dated September 17, 1997).

Without independent investigation or verification of certain information contained in the documentation, the undersigned concurs, to the extent set forth below, with the Navy's determination that all remedial action necessary to protect human health and the environment with respect to any hazardous substances remaining on the Property has been taken at NMCO. The review of the documentation was completed pursuant to CERCLA Section 120(h)(3)(B), and the sole purpose of the concurrence is to satisfy the requirements of this provision. The undersigned expressly reserves all rights and authorities relating to information not contained in the documentation, whether such information is known as of this date, or discovered in the future.

If you have any questions, please contact Phillip Ramsey, of my staff at (415) 744-2365 or you may also call me at (415) 744-2384.

Sincerely,

Tom Huetteman
Chief, Navy Section
Federal Facilities Cleanup Branch

cc: Mr. Larry Ramos
Engineering Field Activity, West
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, CA 94066-5006

Ms. Mary Rose Cassa
California Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2721

Mr. Michael Bessette Rochette
California Regional Water Quality Control Board - San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Mr. Mel Blare
Oakland Base Reuse Authority (OBRA)
317 Murmansk Street, Bldg. 590
Oakland Army Base, CA 94626

Draft
Storm and Sanitary Sewer Sampling Plan
Naval Medical Center, Oakland
Contract N62474-92-D-3607

Delivery Order 0004

Prepared for:

Engineering Field Activity West
Naval Facilities Engineering Command
San Bruno, California

Prepared by:

ERM

ERM-West, Inc.
1777 Botelho Drive, Suite 260
Walnut Creek, CA 94596

9 January 1995

ERM-West, Inc.

1777 Botelho Drive
Suite 260
Walnut Creek, CA 94596
(510) 946-0455
(510) 946-9968 (Fax)

January 6, 1995

Mr. Larry Lind, Code 09EC2LL
Engineer in Charge
EFA West
Office of Environmental Management
900 Commodore Drive
San Bruno, California 94066-5006

ERM

SUBJECT: Contract No. N62474-92-D-3607
(DO #0004, MOD #03)
Draft Storm and Sanitary Sewer Sampling Plan
Naval Medical Center Oakland

Dear Larry:

ERM-West, Inc. is pleased to transmit the enclosed copies of the *Draft Storm and Sanitary Sewer Sampling Plan* for the Naval Medical Center Oakland for your review and comments.

Please feel free to call me with any questions you may have.

Sincerely,

ERM-WEST, INC.

Gary B. Fritze
Project Manager

GBF/gbf/2121.67.30

Enclosure: Noted

cc: Baha Zarah -- EFA West
Larry Douchand -- NMCO
Mary Rose Cassa -- DTSC
Barbara Smith -- US EPA/Region IX
Vincent Christian -- RWQCB

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The Navy has designated Naval Medical Center, Oakland (NMCO) in Alameda County, California for base realignment and closure (BRAC). The goal of the BRAC program is to transfer the property and facilities of closing installations to the community as quickly as possible. To facilitate the BRAC process, the Navy has initiated the Environmental Baseline Survey (EBS) survey program to assess the environmental concerns associated with the BRAC installations.

This work plan presents the sampling program that has been developed to guide the assessment of the integrity and potential for past or current environmental impacts from sanitary and storm sewers at NMCO. This document outlines the sampling rationale and methodology appropriate for various classes of compounds potentially present at NMCO in:

- Soil and groundwater in corridors adjacent to sewer lines, and
- To a limited extent, in sediments contained within sewer lines.

For the purposes of this workplan, target corridors are those corridors where some evidence indicates a release or releases may have occurred in the past based on historical use or storage, or general anecdotal reports. Sampling will be conducted only within and adjacent to target corridors. Sediment currently present within sanitary sewer lines, manholes, sumps, and grease traps can be considered contained solid waste. Therefore, a limited number of sediment samples will be collected for waste characterization purposes.

Thirty-two sewer corridor sampling locations and three sewer sediment sampling locations were selected from 72 potential sampling points on 12 sewer line target corridors at NMCO. Up to 20 additional target corridor sampling locations may be identified based on sewer video footage that may become available. The target corridors cover approximately 11,250 linear feet. Of this length, 9,850 feet are sanitary sewers and 1,400 feet are storm sewers. The corridor sampling locations are adjacent to 28 manholes, three lateral tie-ins, and one storm sewer catch basin.

INTRODUCTION

The Navy has designated Naval Medical Center, Oakland (NMCO) in Alameda County, California for base realignment and closure (BRAC). The goal of the BRAC program is to transfer the property and facilities of closing installations to the community as quickly as possible. To facilitate the BRAC process, the Navy has initiated the Environmental Baseline Survey (EBS) survey program to assess the environmental concerns associated with the BRAC installations.

The NMCO facility has historically operated as a hospital and medical research facility. Therefore, the site is not expected to exhibit major environmental impacts typical of more industrial military installations. Many pre-existing structures such as wards, quarters, and storehouses have been demolished. Newer buildings have been constructed on some of these sites while others remain vacant.

This work plan presents the sampling program that has been developed to guide the assessment of the integrity and potential for past or current environmental impacts from sanitary and storm sewers at NMCO. This document outlines the sampling rationale and methodology appropriate for various classes of compounds potentially present at NMCO in:

- Soil and groundwater in corridors adjacent to sewer lines, and
- To a limited extent, in sediments contained within sewer lines.

The proposed investigation is consistent with the State of California Preliminary Endangerment Assessment (PEA) approach (Cal-EPA 1994).

The development of this work plan began with a review of existing EBS data regarding waste water, sanitary sewers, storm water, spills, and chemical usage to identify potentially impacted sewer line target corridors with significant upstream sources. The identified corridors will be characterized to meet the following objectives:

- Assess line integrity by determining locations of potential releases due to cracks, holes, offsets, collapses, or root

penetration that may appear on existing sewer line video surveys;

- Use systematic sampling to determine nature and extent of impacts of releases to subsurface soil, if any, in target corridor locations where integrity appears compromised;

- Use systematic-random sampling to determine nature and extent of impacts of releases to subsurface soil, if any, in target corridor locations where integrity is suspected of being compromised based on general sewer construction (i.e., at manholes, catch basins, and lateral tie-ins); and

- Use limited systematic-random sampling and analysis of sewer sediment in "worst case" manholes in two sewer line target corridors to determine waste characteristics and possible disposal restrictions for sewer sediment.

It must be emphasized that the likelihood of substantial releases from the NMCO sewer system is low. In addition to the non-industrial nature of the facility, the following factors would also serve to mitigate any potential releases:

- The terrain at NMCO is relatively steep; thus, discharges to the sewer lines are likely to flow rapidly and preferentially through the pipes, rather than leaking or seeping out through holes, cracks, or misalignments.

- Typically, sewer lines carry wastes in dilute concentrations, so that significant leakage of a consistently contaminated stream would be required before chemicals of concern would be expected to build up in surrounding soils.

- The radioactive compounds used at NMCO typically have short half-lives (on the order of days, rather than weeks, months, or years), so that they would be expected to rapidly become inert.

This sewer line investigation plan is designed to evaluate the actual conditions. If extensive releases are unexpectedly encountered, this workplan may be expanded to accommodate the changed conditions.

BACKGROUND

The NMCO waste water system consists of underground sanitary sewers, underground storm sewers, gutters, and ditches as shown in Figure 2-1. Storm water discharges to Rifle Range Creek through approximately twelve outfalls. The creek ultimately flows to San Francisco Bay. Approximately 5,000 feet of Oakland city sanitary sewer lines cross the NMCO facility in easements along Rifle Range Creek and along the eastern property boundary. NMCO maintains approximately 15,000 feet of additional sanitary sewer lines and approximately 5,000 of underground storm sewer lines. Flow in sanitary lines is by gravity from north to south. Sanitary lines connect with Oakland city sewer lines both within the NMCO facility boundaries and at the southwestern property line along Mountain Boulevard. These lines eventually flow to the East Bay Municipal Utilities District (EBMUD) waste water treatment plant, which discharges to San Francisco Bay.

A significant sanitary sewer system improvement program was undertaken at NMCO in the mid-1980s. According to information obtained by ERM, a contract (Contract Number N6837-85-RCP-0062) was issued by the Navy to examine all sanitary sewer lines, repair 6,130 feet of sanitary sewer line, and to slip line an additional 2,520 feet. The drawings and plans associated with this work could not be located. However, the contracting information indicates that 50 change orders were approved in connection with this work; thus, it appears that additional repairs and/or slip lining are likely to have occurred. According to interview information, this contract represented a total repair of the sanitary sewer system at NMCO. The excavated soil was reportedly replaced into the excavation.

Video surveying of some NMCO sewer lines has previously been performed to assess structural integrity. If available, these surveys will be reviewed; if necessary, additional video surveying may be performed to assess conditions in unsurveyed lines with significant upstream sources.

As a result of this sanitary sewer repair work, it appears that the primary concern associated with the sanitary sewer system are releases that are likely to have occurred prior to 1985 (prior to the start of the repair work). It is assumed that the relined section

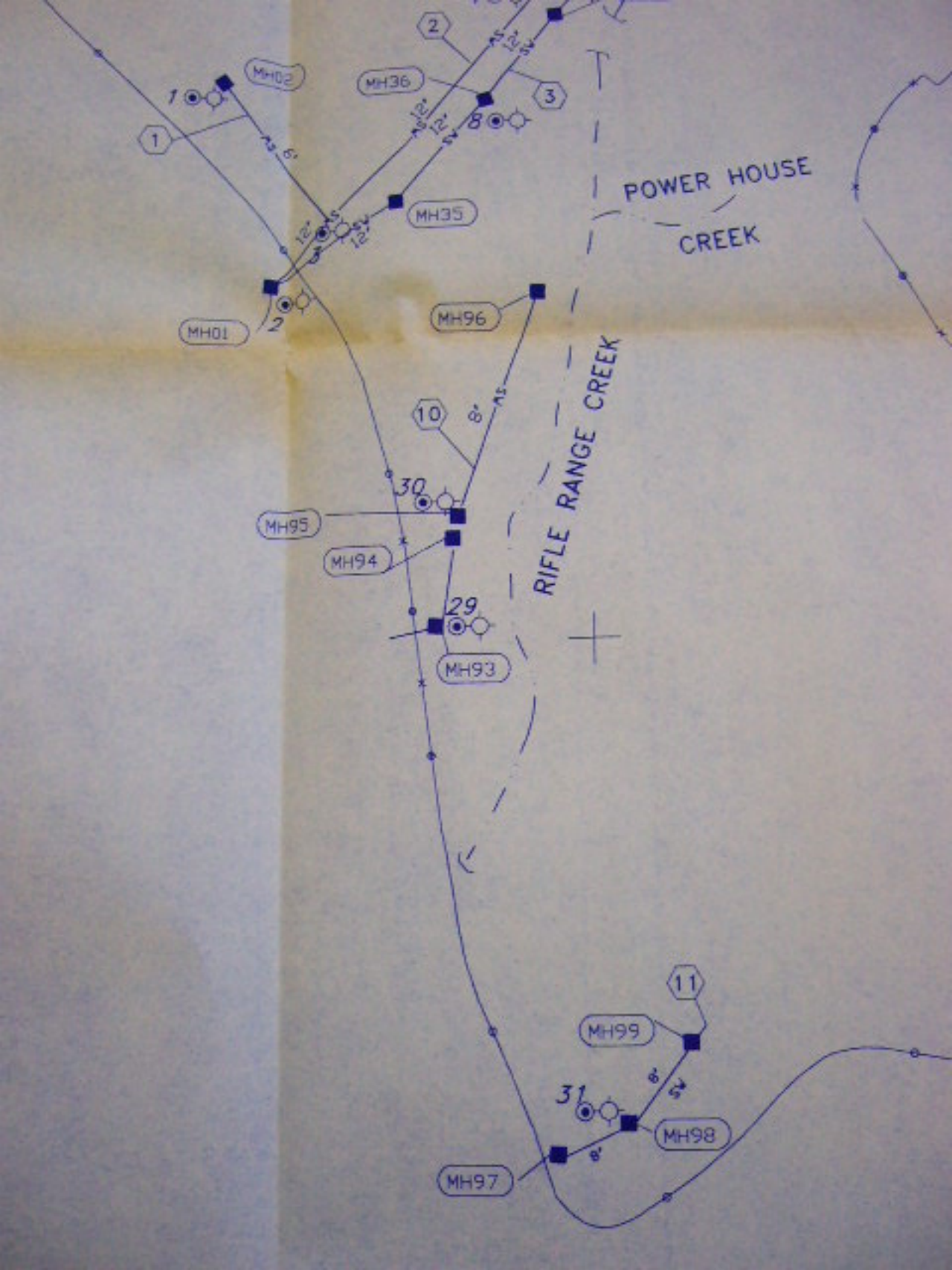
typically represented the sewers with the greatest amount of damage (i.e., the greatest number of leaks). Integrity of relined sections will be assumed not to have been compromised since relining, unless available information indicates otherwise.

For the purposes of this workplan, certain target sewer line corridors (target corridors) were identified. Target corridors (Figure 2-2) are those corridors where some evidence indicates a release or releases may have occurred in the past based on historical use or storage, or general anecdotal reports. To be considered for the sampling effort, a release would be expected to have resulted in a release of sufficient quantities of chemicals to leave residual concentrations that are likely to exceed action levels. Specific evidence leading to classification of a sewer line segment as a target corridor may include: former or current waste generating activity upstream of the line area; the presence of visible staining or odors; former or existing waste and bulk storage or handling facilities; or specific records of releases of significant quantities.

Sampling will be conducted only within and adjacent to target corridors. The number and locations of samples will be determined by the evidence of releases and the nature of suspected releases as determined by a review of EBS data. Sampling of subsurface soil in target corridors will follow a two-phase approach: 1) a screening-level phase, and 2) a follow-up phase, where necessary. During the screening-level phase, field sample analysis techniques will be employed as much as possible. If screening does not indicate the presence of suspected compounds of concern, then a limited number of samples will be sent to an analytical laboratory for confirmatory analysis. If screening and confirmatory sampling do not indicate the presence of compounds at levels greater than appropriate unrestricted (i.e., residential) subsurface action levels (i.e., the most conservative levels), no further sampling will be conducted in the target corridor.

If concentrations exceeding unrestricted subsurface action levels are detected during the screening-level phase, then a follow-up phase of sampling may be conducted. The need for a follow-up phase will depend on the future planned use of the property. In some cases, industrial or commercial action levels may apply, and although residential action levels may be exceeded, no further sampling would be required.

If a follow-up investigation is required, it will consist of additional sampling that may include both field and laboratory analysis. The sampling effort during the follow-up phase will be sufficient to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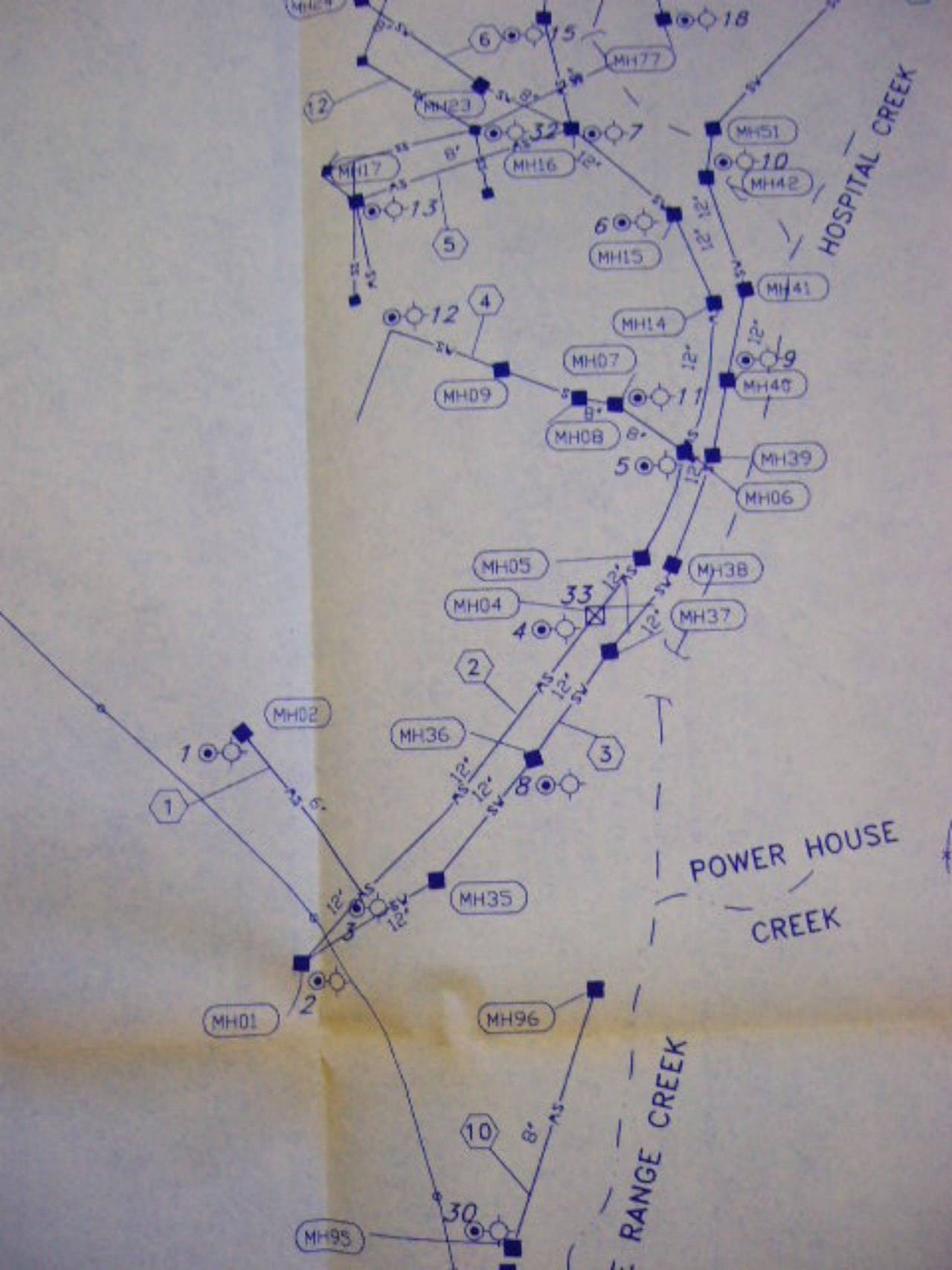
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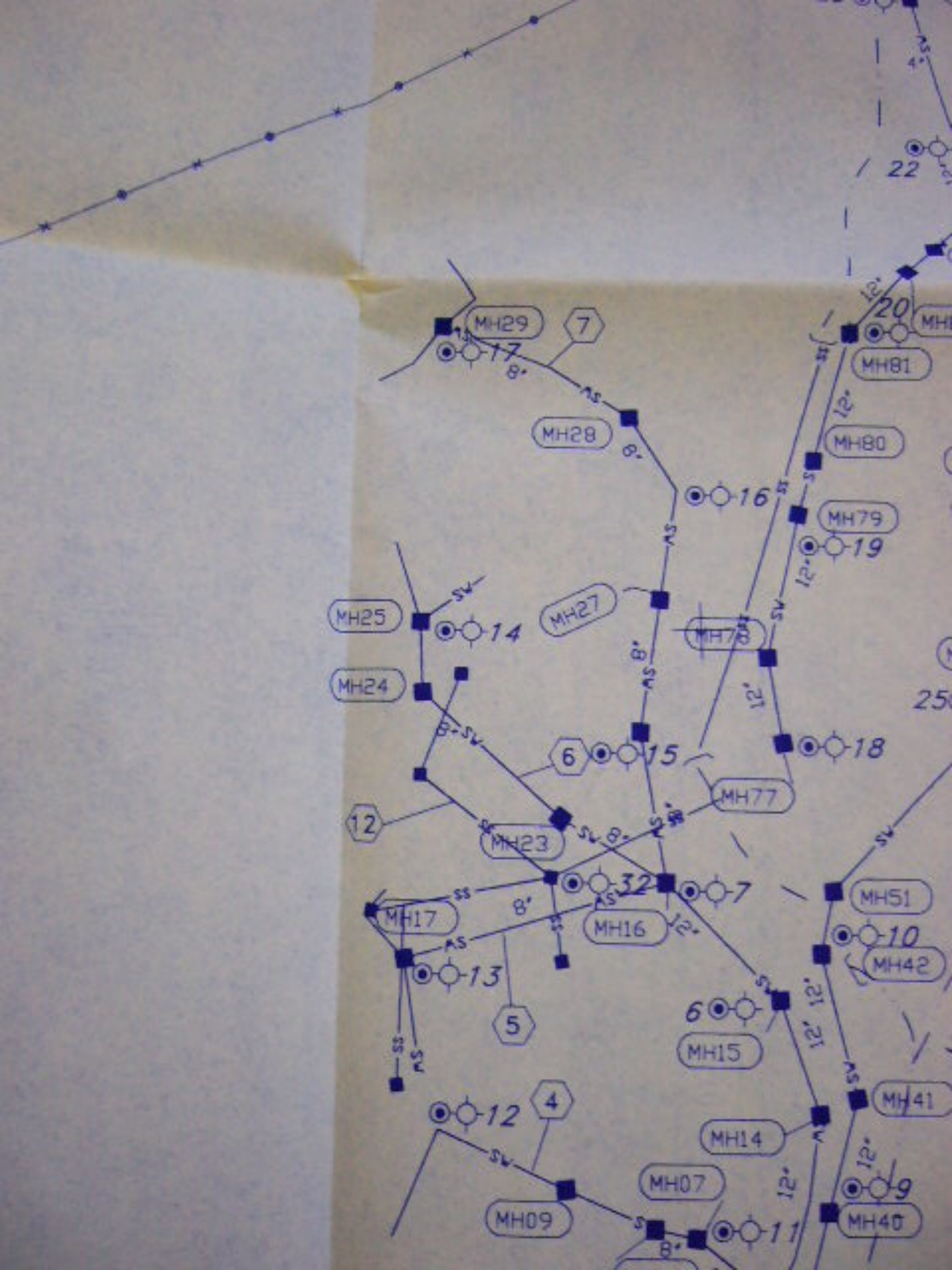

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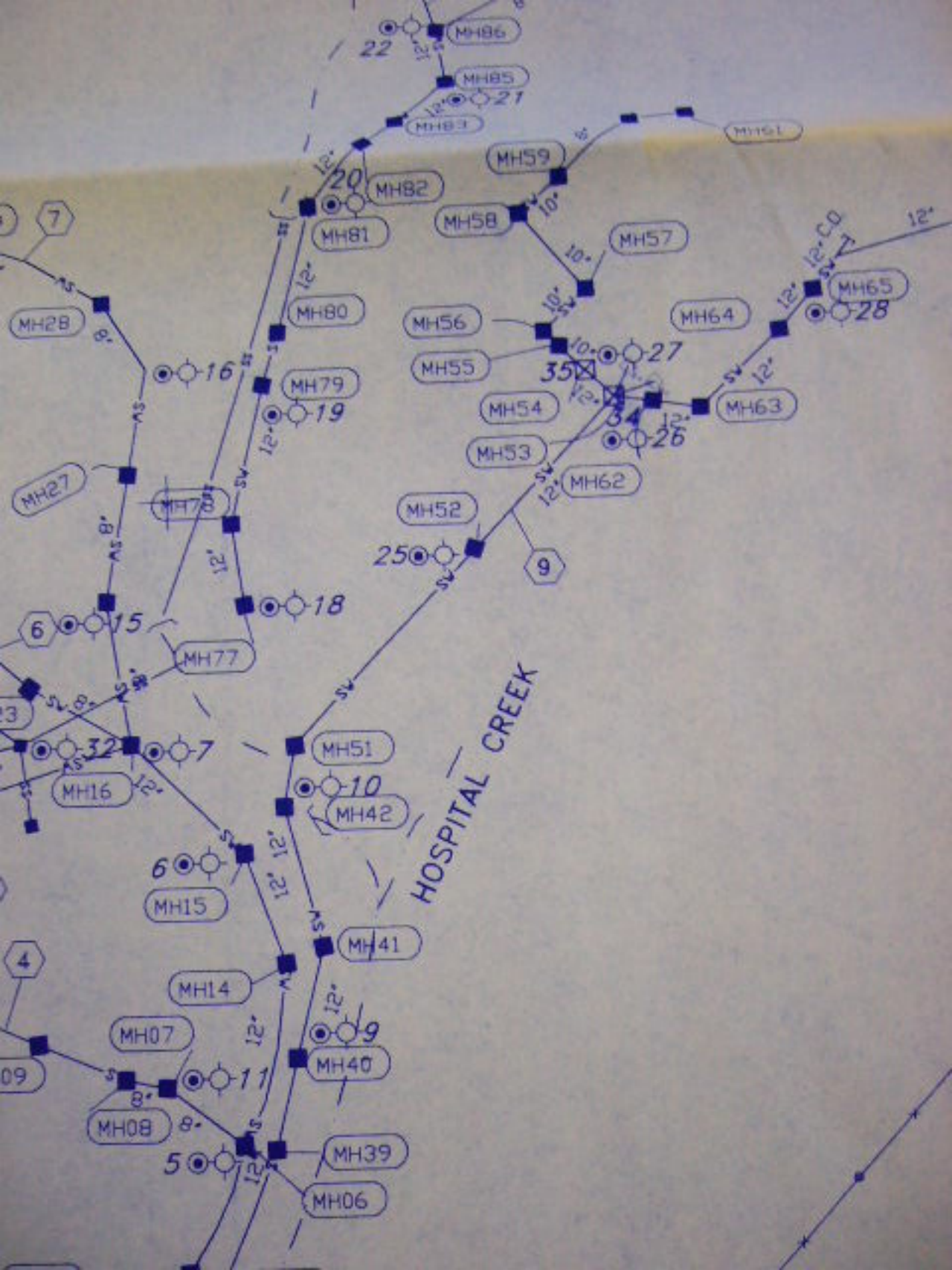
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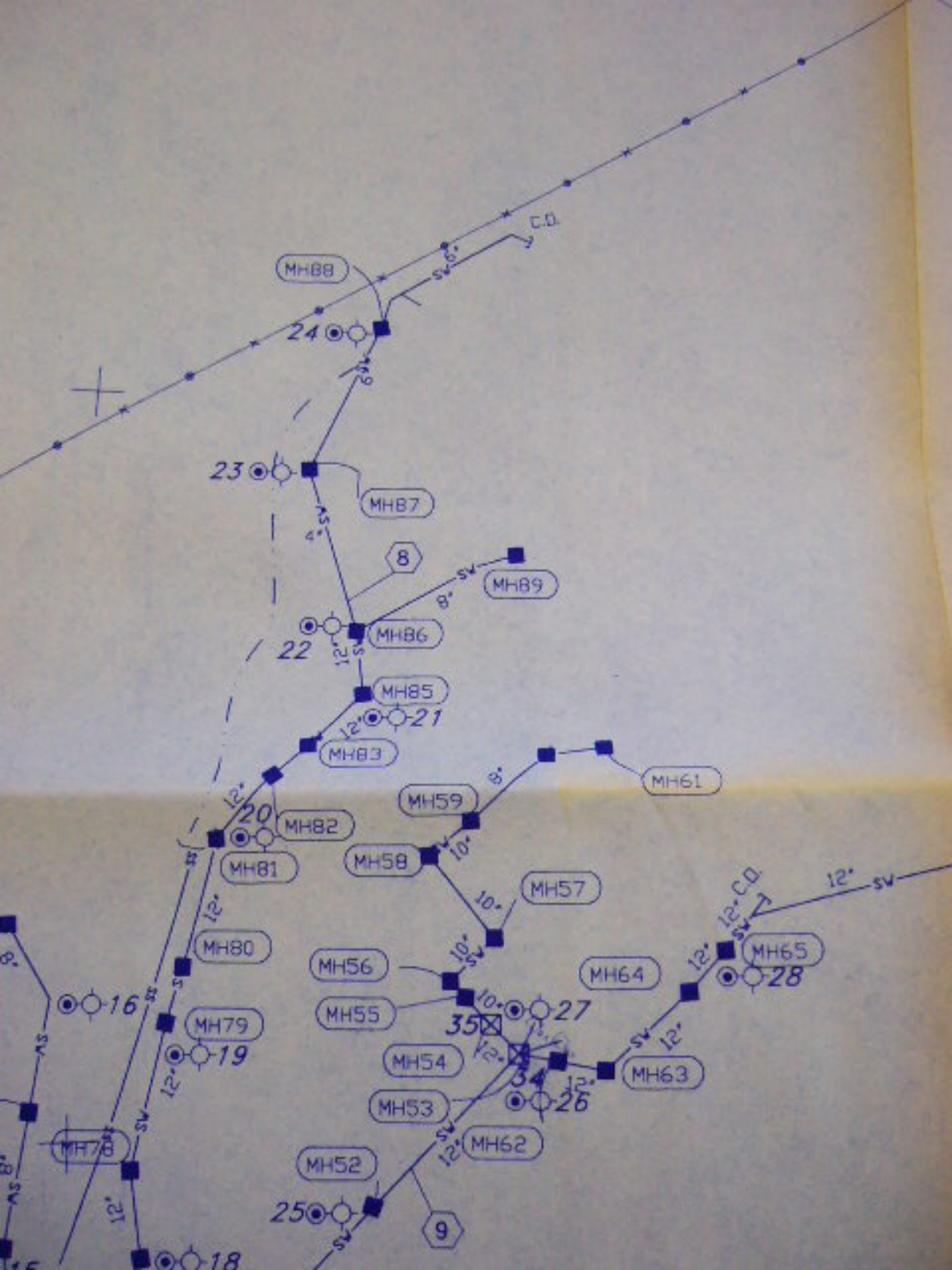
HOSPITAL CREEK



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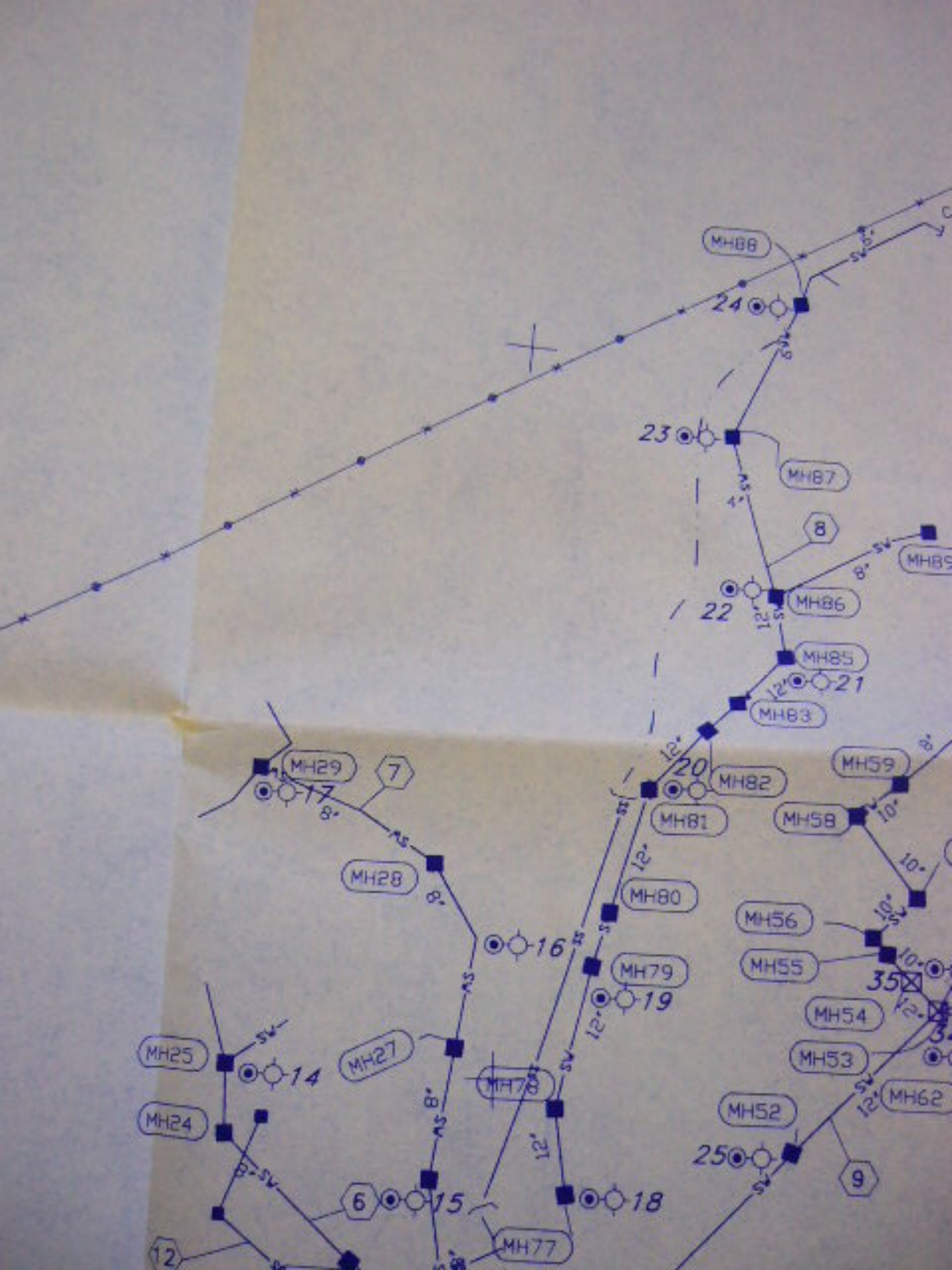
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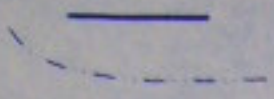
LEGEND

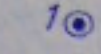


PARCEL BOUNDARY

CREEK



TARGET CORRIDORS 1-12



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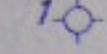
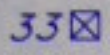


SUBSURFACE SOIL SAMPLE & No.



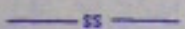
SEWER MANHOLE SEDIMENT SAMPLE & No.



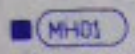
STORM SEWER MANHOLE



STORM SEWER CATCH BASIN



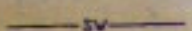
STORM SEWER



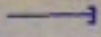
SANITARY SEWER
MANHOLE (MH) NO.



GREASE TRAP



SEWER LINE



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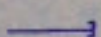

CAPPED

delineate the extent of chemicals in soil. Areas of subsurface impacts with concentrations greater than the appropriate action levels will be delineated to ± 50 feet. Subsurface sampling will assess the extent of chemicals in unsaturated zone soil in the vertical interval adjacent to the sewer line from approximately four to six feet below ground surface (bgs).

The presence or absence of groundwater impacts will be determined where deemed appropriate based on soil concentrations and the nature of the chemicals. If necessary, characterization of the horizontal and vertical extent of groundwater impacts will be addressed on a facility-wide basis in conjunction with other groundwater monitoring investigations.

Past subsurface investigations indicate that most of the NMCO is underlain by approximately less than five of unconsolidated deposits. This material overlies weathered rhyolitic bedrock over most of the site. Groundwater is encountered at varying depths under the facility, usually greater than ten feet below ground surface. Higher water tables may be encountered near stream channels. The depth to the water table under the facility is likely to be influenced by seasonal fluctuations. Sampling protocols have been developed with these hydrogeological characteristics in mind. Actual sampling may incorporate changes to the guidelines in these protocols where different conditions are known or suspected to exist.

Sediment currently present within sanitary sewer lines, manholes, sumps, and grease traps can be considered contained solid waste. Therefore, a limited number of sediment samples will be collected for waste characterization purposes. Sediment in storm sewer lines will not be sampled unless other investigations indicate impacts to Rifle Range Creek sediment from NMCO storm sewer discharges[1].

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1 Rifle Range Creek (including areas near the storm sewer outfalls) has been identified as a Target Area and will be sampled as part of the overall sampling plan developed for NMCO. Thus, if the results of that sampling indicate a need to investigate the storm sewer line sediment, the sewer sampling program will be expanded.

SAMPLING PROTOCOLS

Three sampling protocols have been developed. They include one protocol for assessing sewer line corridors and two follow-up protocols for soil and groundwater sampling. A protocol for sewer sediment sampling is not presented due to the limited nature of this aspect of the investigation. Sewer sediment sampling is discussed in Section 4. General discussions of classes of compounds of concern at the facility follow the protocols. The following protocols have been developed:

- Screening-Level Protocol for Sanitary and Storm Sewer Corridors;
- Follow-Up Protocol for Isolated and/or Low Concentration Elevated Results in Soil; and
- Follow-Up Protocol for Multiple High Concentration Results.

Each protocol provides an overview of the concerns associated with its subject. The section following the protocols briefly discusses occurrence and migration issues, and then provides sampling guidance for potentially released compounds of concern identified from current chemical inventories and historical records reviewed in the NMCO EBS. These compounds include metals, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), and radioactive materials. The sampling protocols are provided below.

Screening-Level Protocol for Sanitary and Storm Sewer Corridors

The screening-level protocol for sewer line corridors is divided into two subsections. The first subsection discusses the occurrence and migration of released chemical compounds from sewer lines, and the second discusses the sampling and analysis required to characterize the targeted sewer line corridors to meet the objectives of this investigation described in Section 1.

Occurrence and Migration

For the purposes of this protocol the term sewer line refers to underground sanitary and storm sewers. Sewer lines are primarily used to collect and convey various waste streams for treatment and/or disposal. The NMCO sanitary and storm sewer systems currently operate independently of each other, although they were historically partially or totally combined. Sanitary sewers collect and convey sanitary waste streams from hospital, medical research, maintenance, and residential facilities directly to the EBMUD treatment plant. Storm sewers collect surface runoff water generated on site primarily for discharge to Rifle Range Creek, which ultimately discharges into San Francisco Bay.

Releases from sewer lines are most often the result of 1) failures at connections between lateral tie-ins and the sewer main, 2) sewer line to manhole or catch basin connection leaks, or 3) corrosion holes, pipe section offsets, collapses, stress fractures, and root penetration. The migration pattern of released chemicals from sewer lines depends on the specific chemicals involved. Nonetheless, because the chemicals released are typically dissolved in water, initial migration paths are likely to mimic the flow of the water. Because sewer line trenches are typically backfilled with more permeable materials than the native soils, the trenches themselves frequently act as preferred migration pathways. Due to the lack of detailed information regarding the sewer line repairs a this facility, the investigation program will focus on potential releases near lateral tie-ins, and manhole/catch basin to sewer line connections.

Sampling and Analysis

Because of the subsurface nature of sewer line releases, screening-level sampling in target corridors will be concentrated on subsurface soil. Information collected during the EBS was used to identify sewer laterals exiting facilities (Table 3-1) that currently contain, or have previously contained, operations that generate hazardous wastes. Samples will be collected from near these lateral tie-ins and near downstream manholes. All samples will be collected from above the water table and below or adjacent to the sewer line unless conditions indicate sampling at other depths is appropriate.

Sampling will focus on identifying issues of concern caused by historical or current facility process waste streams as opposed to non-point urban runoff sources such as paved parking areas and roadways.

TABLE 3-1

Sanitary Sewer Source List

Naval Medical Center Oakland

Building	Parcel	Activity	Possible Route (Parcels)
1	125	Laboratory	110,136,144,143,157,156,158,160,159
3	136	X-Ray Machine	144,143,157,156,158,160,159
4	125/136	Laboratories Biochemistry Laboratory	144,143,157,156,158,160,159
10	110	Electric Shop Carpenter Shop	125,136,144,143,157,156,158,160,159
11	110	Shops Equipment Spray Cleaning Operation	125,136,144,143,157,156,158,160,159
12	110	Service Station	125,136,144,143,157,156,158,160,159
13	110	Paint Shop	125,136,144,143,157,156,158,160,159
14	114	Autopsy Building	125,136,144,143,157,156,158,160,159
26B	144	Hobby Shop	unknown
27	144	Occupational Therapy Wood Shop	unknown
31	144	Hobby Shop	unknown
34	136	Dental Building	144,147,157,156,158,160,159
36	116	Firestation	110,125,136,144,143,157,156,158,160,159
45	125, 137	Surgery	136,144,143,157,156,158,160,159
46	125	Laboratory Isotopes Laboratory Biochemistry Laboratory	110,125,136,144,143,157,156,158,160,159
63	104	Medical Equipment Repair Shop	123,107,109,131,135,142,147,146
65	123	Drug Screening Laboratory	107,109,131,135,142,147,146
67	130	Dental Annex	163,128,135,142,147,146
73	134	Dark Room	142,147,146
75	133	Dark Room	108,142,147,146
78	132	Laboratory Surgery	146

TABLE 3-1 (CONT.)

Sanitary Sewer Source List

Naval Medical Center Oakland

Building	Parcel	Activity	Possible Route (Parcels)
101	131	Laboratories	135,142,147,146
102	147	Machine Shop Clinical Laboratory	146
105	128	Surgery	135,142,147,146
112	159	Type Writer Repair Shop	N/A
115	114	Animal Laboratory	125,136,144,143,157,156,158,160,159
117	159	Service Station	N/A
117P	159	Service Station	N/A
132	144	Environmental Sanitation Laboratory	unknown
137	158	Water Treatment Plant To Swimming Pool	160,159
138	158	Swimming Pool	160,159
214	151	Service Station	158,160,159
500	137	Laboratories, Morgue, Surgery	136,143,148,146
512	139	Boiler System	137,136,143,148,146

1. Building usage was generated from NMCO building list.
2. Potential routes were determined from a drawing of NMCO sanitary sewers obtained from PWCSF-Naval Supply Center Oakland.
3. N/A = Not Applicable (No parcels are located downstream of the sewer lines on this parcel.)

Initial Field-Screening Sampling. The sewer line investigation will proceed in several steps. Sampling of sewer lines will commence with field-screening of subsurface soil samples from target corridor locations described previously. Field-screening samples may be collected using a hollow-stem auger, cone penetration techniques (CPT), hand auger, or another equivalent method following applicable NMCO SOPs.

Samples will be analyzed for metals using X-ray fluorescence (XRF) techniques in accordance with the corresponding NMCO SOPs. Field test kits will be used to quantify TPH in soil samples and a Geiger counter will be used to detect radioactive materials in soil. Soil gas sampling will also be performed adjacent to the soil boring location following the appropriate NMCO SOPs. Samples will be analyzed using a portable gas chromatograph (GC). Appropriate field screening technologies for SVOCs have not been developed. Therefore SVOCs will only be analyzed in samples submitted for laboratory analysis. This is a reasonable approach because it is unlikely that elevated levels of SVOCs would be present at a sampling location without accompanying elevated concentrations of at least one of the other field screening analytes. Although upstream sources for all potential screening-level analytes have not been identified on all target corridors, the full suite of field screening parameters will be analyzed in samples from all proposed corridor sampling locations as a conservative measure.

Follow-Up Protocol for Isolated and/or Low Concentration Elevated Results in Soil

In target areas where field and/or laboratory results indicate that collected samples contain elevated concentrations of compounds of concern, a follow-up phase of sampling will be conducted. In the case of compounds where field analyses are to be performed, this follow-up phase may or may not be separated in time from the screening-level phase of sampling. This protocol addresses follow-up sampling for two scenarios. Under one scenario, screening phase results may show no elevated concentrations of suspected compounds of concern in a particular target area. In this case, no follow-up sampling is required for those compounds in that area. In a second scenario, screening phase results may indicate either isolated elevated results or larger areas with only moderately elevated concentrations. Under this scenario, follow-up sampling will be conducted to 1) confirm previous results, and 2) expand

vertical and horizontal coverage to ensure that areas with elevated concentrations have been adequately delineated.

As stated in the beginning of this section, the goals of follow-up sampling are to define the horizontal limits of subsurface impacts to ± 50 feet, and to determine presence or absence of groundwater impacts.

To eliminate the need for further sampling, a low concentration sample must be bounded on three sides by screening phase samples that:

- Are located within 50 feet of the sample; and
- Do not contain any compounds above action levels.

If these criteria have not been met by screening phase sampling, follow-up samples should be collected and analyzed to satisfy these criteria. Sampling may be expanded beyond the limits of the initial target corridor as necessary to delineate horizontal extents. Care should be taken to avoid introducing surface chemicals to subsurface soil in collection of subsurface samples.

If screening-level or initial follow-up subsurface samples do not contain elevated concentrations, no further sampling is needed. If the samples do show elevated concentrations, additional samples should be collected from points 50 feet away from the initial sample in three directions (initial location at center of triangle defined by new sampling locations). Additional sampling points should be added until all elevated locations or areas are bounded in at least three directions by points within 50 feet where concentrations do not exceed action levels.

The follow-up protocols address additional sampling in a generic manner. Specific site conditions or compounds may indicate other more appropriate delineation methods. In very large impacted areas the horizontal distance delineation criteria may be increased if appropriate.

Groundwater sampling is not anticipated to be necessary in areas with isolated or low concentration screening-level results. If conditions indicate otherwise, sampling will follow guidelines in the Follow-Up Protocol for Multiple High Concentration Results in Soil.

Follow-up Field-Screening Sampling

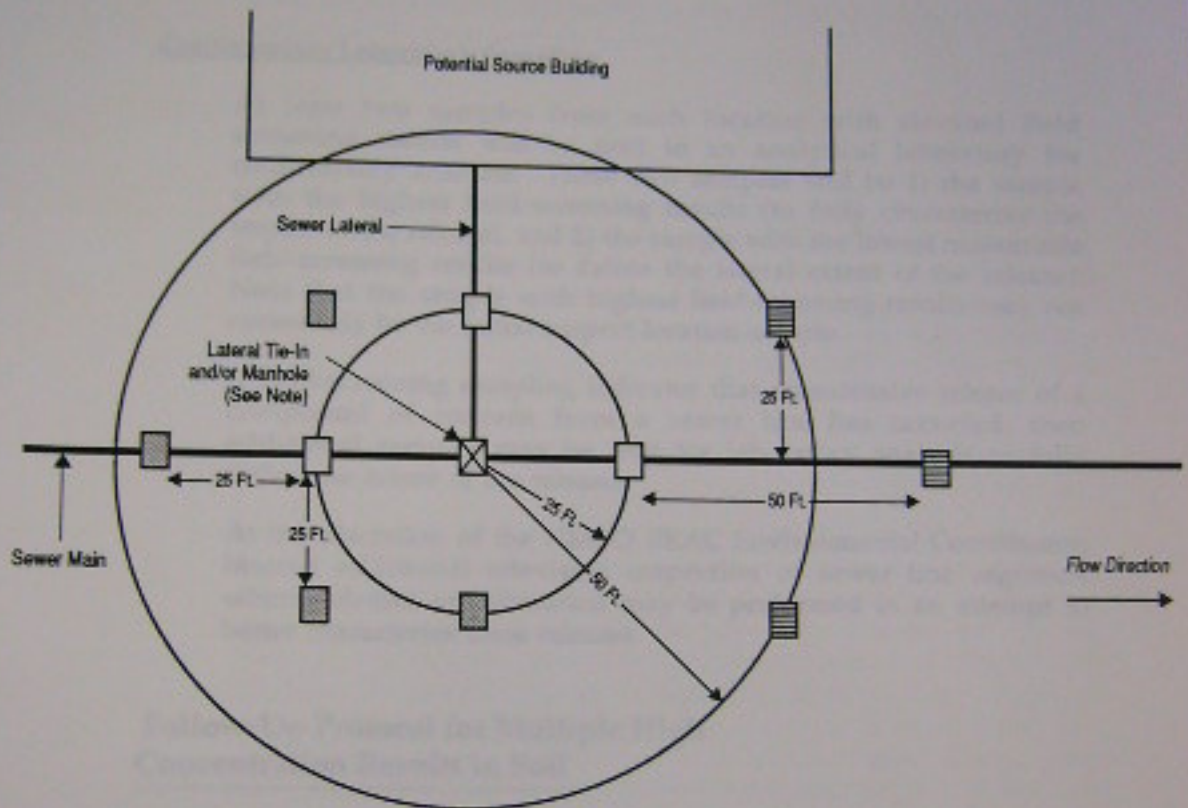
If results from the initial field-screening sampling indicate that concentrations of compounds detected exceed action levels for either XRF, test kit, or Geiger counter soil analysis or GC soil gas analysis then additional target corridor investigation will be required.

Follow-up field-screening sampling will commence at each identified area of concern around the lateral/sewer main or sewer line/manhole connection as shown in Figure 3-1. Sample locations identified on this figure are to be used when performing follow-up investigations for either subsurface soil or soil gas sampling. Sample locations may be adjusted based on field conditions.

The first follow-up field screening action will be to collect three samples from around the suspect location as shown in Figure 3-1. (These samples are identified, on the figure, by unshaded markers and are labeled as "automatic follow-up sampling locations.") The three samples are located along the upstream and downstream sewer line corridors. If the geometry of the suspect location is significantly different from the arrangement shown in Figure 3-1, additional samples may be collected as needed.

If results from the first follow-up field sampling also exceed residential action levels, then additional follow-up field screening sampling will be performed. If the first results indicate that contamination is migrating downgradient, then the additional follow-up sampling will include one sample from along the sewer line 75 feet downgradient of the suspect location and two samples from 25 feet on either side of the line at 50 feet downgradient of the suspect location (see Figure 3-1). If the first results indicate the plume is migrating from or toward the upstream or adjacent directions, then additional follow-up sampling will include one sample from along the sewer line 50 feet upstream from the suspect location, one sample 25 feet away from the suspect location opposite the connecting line and/or uphill, and two samples from 25 feet on either side of the main at 25 feet upgradient of the tie-in (see Figure 3-1). Locations for downgradient sampling are farther from the suspect location than upgradient sample locations due to potential preferential pathways of subsurface flow that may exist in the sewer line backfill.

If the extent of the subsurface impact is not delineated at the end of these two rounds of follow-up field sampling, then additional field sampling may be performed. Additional sample locations will be determined based on concentration trends indicated by the first two



LEGEND

- Initial sampling location.
- Automatic follow-up sampling locations for suspect tie-ins.
- Pattern of placing additional follow-up sampling locations downstream of tie-in.
- Pattern of placing additional follow-up sampling locations upstream and side-gradient of tie-in.

Note: Sampling pattern for in-line manholes would be similar except that the sample location shown here on the lateral line would become a sidegradient sample.

Figure 3-
Typical Screening Lev
and Follow Up Sewer Samplir
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rounds of follow-up sampling. Sample locations will be appropriately modified to account for any site-specific features and will follow the general strategy of sampling developed above and shown in Figure 3-1.

Confirmatory Laboratory Sampling

At least two samples from each location with elevated field screening results will be sent to an analytical laboratory for confirmatory analysis. These two samples will be 1) the sample with the highest field-screening results (to fully characterize the impact of the release), and 2) the sample with the lowest measurable field-screening results (to define the lateral extent of the release). Note that the sample with highest field-screening results may not necessarily be the initial suspect location sample.

If field-screening sampling indicates that an extensive release of a compound of concern from a sewer line has occurred, then additional samples may be sent for laboratory analysis to fully define the extent of the release.

At the discretion of the NMCO BRAC Environmental Coordinator, limited additional television inspection of sewer line segments where releases are identified may be performed in an attempt to better characterize these releases.

Follow-Up Protocol for Multiple High Concentration Results in Soil

Where multiple screening phase samples show high concentrations of compounds of concern, follow-up sampling will generally follow the isolated and low concentration results protocol. Horizontal coverage will be expanded to the limits of the elevated concentrations. Delineation may extend beyond initial target corridors.

Where significant subsurface releases of mobile compounds are indicated, limited groundwater samples will be collected in or near the target corridor using a HydroPunch sampler or monitoring wells. Temporary or new permanent monitoring wells may be installed if appropriate. Groundwater sampling and well installation will follow the relevant NMCO SOPs.

Multiple high concentration results are not expected in most target corridors. Follow-up sampling in new areas where multiple high concentrations are identified will be very site-specific and may diverge significantly from these protocols. Follow-up sampling in these new areas will be coordinated with any ongoing activities at existing NMCO investigation sites.

Compounds of Concern

Compounds of concern associated with NMCO sewers from a variety of sources include metals, VOCs, SVOCs, TPH, and radioactive materials. These compounds were identified from current chemical inventories and historical records reviewed in the NMCO EBS. Occurrence and migration issues and sampling guidance for potentially released compounds of concern are presented here.

Metals

Metals currently or formerly present at NMCO include lead from piping and lead-based paint, mercury from thermometers and other medical equipment, and silver from photographic developing facilities (e.g., X-ray laboratories). Potential sources include the hospital, laboratories, clinics, waste storage areas, and maintenance facilities. Metals occur in particulate form in dust, filings, turnings, or paint chips and may be carried in suspension. Mercury exists as a dense liquid and a vapor at ambient temperatures. Many metal salts are water soluble. Many metals are also soluble in strongly acidic or basic waste streams. They tend to precipitate from solutions when pH changes at discharge points or confluences with other waste streams. Metallic cations are commonly adsorbed to organic matter and fine particles such as clays. Some metals form complexes with organic compounds. Most metals are relatively immobile in soil and groundwater unless they are carried in a low or high pH plume. Many metals oxidize with exposure to air and can stain soil and piping with characteristic colors. Some metals are also preferentially metabolized by particular bacteria.

VOCs

VOCs expected at NMCO primarily consist of compounds present in solvents, degreasers, and fuels, and include such compounds as such as trichloroethene (TCE), 1,1,1-trichloroethane (TCA), acetone,

chloroform, benzene, and carbon tetrachloride. Sources include leaking underground storage tanks, vehicle maintenance areas, paint shops, and testing laboratories. Surface VOC releases are subject to rapid volatilization and are therefore not of concern. Subsurface releases of VOCs may be of concern. VOCs may occur in the following forms: liquid or vapor phases in soil pore spaces; dissolved phases (i.e., aqueous phases) in groundwater; light non-aqueous phase liquids (LNAPLs) at the water table; or dense non-aqueous phase liquids (DNAPLs) below the water table. Many VOCs are relatively insoluble and adsorb readily to organic matter in soil. Others, such as benzene, are more soluble and are therefore transported more readily in groundwater. Past releases from underground storage tanks are known sources of subsurface VOCs at NMCO.

SVOCs

SVOCs consist of acid extractable organic compounds such as phenols and base/neutral extractable organic compounds such as polynuclear aromatic hydrocarbons (PAHs) and phthalates. Most SVOCs occur as mixtures in coal tar and its derivatives such as creosote, solvent naphtha, and pitch. Many can also be synthesized and occur in petroleum products such as road asphalt and roofing tar. SVOCs at NMCO are expected to occur in locations such as maintenance shops and laboratories. The presence of SVOCs in asphalt pavement and roofing tar at the facility is not of concern. Most SVOCs are relatively insoluble. Many are also highly viscous or solid at ambient temperatures.

TPH

Petroleum hydrocarbons consist of mixtures of paraffins, cyclic aromatic hydrocarbons, and benzene hydrocarbons. These compounds are commonly used as fuels and lubricants. They are referred to collectively in environmental media as total petroleum hydrocarbons (TPH). TPH products exist as clear to dark brown or yellowish oily liquids at room temperature. They generally have a strong odor and can be slightly to very volatile. Many burn readily. They are relatively insoluble in water and often occur as floating layers on the water table when released in soil. In most cases, significant TPH impacts can be qualitatively identified based on hydrocarbon odors and dark staining. Potential TPH sources at NMCO include gasoline, diesel fuel, motor oil, hydraulic fluid, and heating oil released from underground and aboveground storage tanks and piping, vehicles, and maintenance activities. Petroleum

hydrocarbons tend to accumulate in vehicle parking areas and on roadways.

Radioactive Materials

Ionizing radiation occurs as electromagnetic waves, such as gamma rays, and ionizing particles, such as alpha and beta particles emitted during decay of radioactive isotopes. Some radioactive isotopes are naturally occurring and contribute to background levels of radiation. Information collected during the EBS identified eight current or former radioactive materials/waste use or storage locations at NMCO (Buildings 17, 36/85, 37, 65, 75, 107, 110, and 500). These materials include radio pharmaceuticals, radio immunoassays, radioactive tracers, radioactive check sources, and contaminated equipment used in research, treatment, and imaging in the hospital and laboratories at NMCO. Most radioisotopes used have short half-lives, typically less than 10 days. Many of the radioactive sources were also sealed so that probability of release was minimal. As of December 1994, Building 17 and Building 500 are the only locations where use or storage of radioactive materials/waste is authorized.

SAMPLING LOCATIONS

Three sewer sediment sampling locations and 32 sewer corridor screening phase sampling locations shown on Figure 22 were selected from 72 potential sampling points on 12 sewer line target corridors at NMCO (Table 4-1). Figure 2-1 provides a more detailed overview of the sewer lines at NMCO. Up to 20 additional target corridor sampling locations may be identified based on sewer video footage that may become available. The target corridors cover approximately 11,250 linear feet. Of this length, 9,850 feet are sanitary sewers and 1,400 feet are storm sewers. The corridor sampling locations are adjacent to 28 manholes, three lateral tie-ins, and one storm sewer catch basin. Sample numbers, types, media, locations, analytical parameters, and analytical methods are listed in Table 4-2. A summary of proposed sampling and analysis is presented in Table 4-3.

Target Corridor Sampling Locations

Sampling locations were chosen within the target corridors on a systematic-random basis. Approximately 45 percent of the potential sampling points were chosen to provide comprehensive coverage while preserving information identifying discrete sources. Twenty additional corridor locations may be chosen based on video evidence of the most significant sewer line breaks observed. These locations will be selected so as not to duplicate coverage at the other 32 corridor locations. The 32 locations will provide corridor screening samples at an approximate average spacing of one sample per 350 linear feet of target corridor. The addition of 20 locations identified by video would decrease this spacing to approximately one sample per 200 linear feet.

As stated previously, sewer line target corridors were identified based on potential for impacts due to the nature of upstream sources. Sewer lines not covered by target corridors will not be sampled in this investigation. These sewer lines include Oakland city sewers and sewers servicing upstream sources that generally do not produce hazardous waste streams (e.g., residential and

TABLE 4-1

Sewer Line Target Corridors
Naval Medical Center Oakland

Sewer Line Target Corridor Number and Name	Approximate Corridor Length	Potential Sampling Points	Number of Manholes	Manhole Numbers	Lateral Tie-Ins Without Manholes
1) Building 505	300 feet	1	1	MH02	0
2) Blackwood St. West	1,500 feet	8	7	MH01, 04-06, 14-16	1
3) Blackwood St. East	1,300 feet	8	8	MH35-42	0
4) Building 75	450 feet	4	3	MH07-09	1
5) Building 73	500 feet	2	1	MH17	1
6) Building 67	450 feet	3	3	MH23-25	0
7) Building 63/65	900 feet	5	4	MH26-29	1
8) Parcel 110	1,600 feet	12	11	MH77-83, 85-88	1
9) Building 500	1,900 feet	16	15	MH51-65	1
10) Parcel 159	600 feet	5	5	MH93-96	1
11) Building 17	350 feet	3	3	MH97-99	0
12) Parcel 135 (Storm Sewer)	1,400 feet	5	0	5 Catch Basins	0
Totals: 12 Target Corridors	11,250 feet	72	61	---	7

Note: See Figure 2-1 for features referenced in this table.

TABLE 4-2

Summary of Recommended Sewer Samples
Naval Medical Center Oakland

Sample Number	Sample Depth*	Sample Type	Sample Media	Sample Location	Target Analytes	Analytical Method
SEW-1-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 1, MH02	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-1-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 1, MH02	VOCs	GC
SEW-2-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 2, MH01	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-2-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 2, MH01	VOCs	GC
SEW-2-4-S-V-DDMMYY**	4.0-6.0'	Subsurface	Soil	Corridor 2, MH01	Metals, VOCs, SVOCs, TPH	CLP RAS, Modified EPA 8015
SEW-3-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 2, Lateral	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-3-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 2, Lateral	VOCs	GC
SEW-4-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 2, MH04	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-4-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 2, MH04	VOCs	GC
SEW-5-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 2, MH06	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-5-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 2, MH06	VOCs	GC
SEW-5-4-S-V-DDMMYY**	4.0-6.0'	Subsurface	Soil	Corridor 2, MH06	Metals, VOCs, SVOCs, TPH	CLP RAS, Modified EPA 8015
SEW-6-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 2, MH15	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-6-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 2, MH15	VOCs	GC
SEW-7-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 2, MH16	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-7-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 2, MH16	VOCs	GC
SEW-7-4-S-V-DDMMYY**	4.0-6.0'	Subsurface	Soil	Corridor 2, MH16	Metals, VOCs, SVOCs, TPH	CLP RAS, Modified EPA 8015
SEW-8-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 3, MH36	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-8-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 3, MH36	VOCs	GC
SEW-9-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 3, MH40	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-9-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 3, MH40	VOCs	GC
SEW-10-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 3, MH42	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-10-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 3, MH42	VOCs	GC
SEW-10-4-S-V-DDMMYY**	4.0-6.0'	Subsurface	Soil	Corridor 3, MH42	Metals, VOCs, SVOCs, TPH	CLP RAS, Modified EPA 8015
SEW-11-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 4, MH08	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-11-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 4, MH08	VOCs	GC
SEW-12-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 4, Lateral	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-12-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 4, Lateral	VOCs	GC

TABLE 4-2

Summary of Recommended Sewer Samples
Naval Medical Center Oakland

Sample Number	Sample Depth*	Sample Type	Sample Media	Sample Location	Target Analytes	Analytical Method
SEW-13-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 5, MH17	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-13-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 5, MH17	VOCs	GC
SEW-14-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 6, MH23	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-14-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 6, MH23	VOCs	GC
SEW-15-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 7, MH26	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-15-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 7, MH26	VOCs	GC
SEW-16-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 7, Lateral	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-16-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 7, Lateral	VOCs	GC
SEW-16-4-S-V-DDMMYY**	4.0-6.0'	Subsurface	Soil	Corridor 7, Lateral	Metals, VOCs, SVOCs, TPH	CLP RAS, Modified EPA 8015
SEW-17-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 7, MH29	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-17-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 7, MH29	VOCs	GC
SEW-18-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 8, MH77	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-18-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 8, MH77	VOCs	GC
SEW-19-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 8, MH79	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-19-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 8, MH79	VOCs	GC
SEW-20-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 8, MH81	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-20-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 8, MH81	VOCs	GC
SEW-21-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 8, MH85	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-21-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 8, MH85	VOCs	GC
SEW-21-4-S-V-DDMMYY**	4.0-6.0'	Subsurface	Soil	Corridor 8, MH85	Metals, VOCs, SVOCs, TPH	CLP RAS, Modified EPA 8015
SEW-22-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 8, MH86	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-22-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 8, MH86	VOCs	GC
SEW-23-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 8, MH87	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-23-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 8, MH87	VOCs	GC
SEW-24-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 8, MH88	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-24-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 8, MH88	VOCs	GC
SEW-25-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 9, MH52	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-25-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 9, MH52	VOCs	GC

TABLE 4-2

Summary of Recommended Sewer Samples
Naval Medical Center Oakland

Sample Number	Sample Depth*	Sample Type	Sample Media	Sample Location	Target Analytes	Analytical Method
SEW-26-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 9, MH53	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-26-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 9, MH53	VOCs	GC
SEW-27-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 9, MH54	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-27-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 9, MH54	VOCs	GC
SEW-28-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 9, MH65	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-28-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 9, MH65	VOCs	GC
SEW-29-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 10, MH93	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-29-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 10, MH93	VOCs	GC
SEW-30-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 10, MH95	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-30-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 10, MH95	VOCs	GC
SEW-31-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 11, MH98	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-31-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 11, MH98	VOCs	GC
SEW-32-4-S-S-DDMMYY	4.0-6.0'	Subsurface	Soil	Corridor 12, Catch Basin	Metals, TPH, Radiation	XRF, Test Kit, Geiger Counter
SEW-32-4-V-S-DDMMYY	4.0'	SVS	Vapor	Corridor 12, Catch Basin	VOCs	GC
SEW-32-4-S-V-DDMMYY**	4.0-6.0'	Subsurface	Soil	Corridor 12, Catch Basin	Metals, VOCs, SVOCs, TPH	CLP RAS, Modified EPA 8015
***						
SEW-33-0-SED-V-DDMMYY	0-0.5	Sewer	Sediment	Corridor 2, MH301	Waste Characteristics and Radiation	SW-846 Ch. 7, TCLP, EPA 9000
SEW-34-0-SED-V-DDMMYY	0-0.5'	Sewer	Sediment	Corridor 9, MH126	Waste Characteristics and Radiation	SW-846 Ch. 7, TCLP, EPA 9000
SEW-35-0-SED-V-DDMMYY	0-0.5'	Sewer	Sediment	Corridor 9, MH127	Waste Characteristics and Radiation	SW-846 Ch. 7, TCLP, EPA 9000

Notes:

*Sample depth for subsurface soil and vapor samples will approximately correspond to sewer line invert depth based on observations at nearby manholes.

**Represents possible sample for confirmatory analysis (at least 20% of total locations), actual sample location to be determined in the field.

***Up to 20 additional corridor samples may be collected at locations to be determined from existing videotapes of sewer lines (sample numbers = 36-55).

TABLE 4-3

Sampling and Analysis Summary
Naval Medical Center Oakland

Sample Types	Proposed Number of Samples	Potential Additional Video Samples	Potential Total Number of Samples
Subsurface Soil	32	20	52
Soil Vapor	32	20	52
Sewer Sediment	3	0	3

Analytes and Methods	Media	Proposed Number of Samples	Potential Additional Video Samples	Potential Total Number of Samples
Toxicity, Full TCLP	Sediment	3	0	3
Ignitability, SW-846 Ch. 7	Sediment	3	0	3
Corrosivity, SW-846 Ch. 7	Sediment	3	0	3
Reactivity, SW-846 Ch. 7	Sediment	3	0	3
Metals, XRF	Soil	32	20	52
Metals, CLP RAS	Soil	7	4	11
Metals, CLP RAS	Leachate	3	0	3
VOCs, GC	Soil Vapor	32	20	52
VOCs, CLP RAS	Soil	7	4	11
VOCs, CLP RAS	Leachate	3	0	3
SVOCs, CLP RAS	Soil	7	4	11
SVOCs, CLP RAS	Leachate	3	0	3
TPH, Test Kit	Soil	32	20	52
TPH, EPA 8015 Mod.	Soil	7	4	11
TPH, EPA 8015 Mod.	Leachate	3	0	3
Radiation, Geiger Counter	Soil	32	20	52
Radiation, EPA 9000	Sediment	3	0	3

recreational buildings and facilities). The City of Oakland sewers have not been included in the sampling effort for several reasons:

- The sewers are located in steep terrain, which would pose access and sampling difficulties;
- The sewers are located in an easement granted to the City by the Navy; and,
- The sewer located along Rifle Range Creek appears to only have one feed from a Navy facility, and is therefore of low concern.

If significant concerns are identified as a result of the proposed sampling effort, then additional sampling may be conducted to evaluate sewer line corridors not currently addressed, including the City of Oakland sewer lines.

General information about the 12 target corridors (that is not included in Table 4-1) is provided below.

Target Corridor 1: Parcel 132

Building 78 was formerly located on Parcel 132 and housed laboratory and surgical facilities that may have generated hazardous wastes including metals, VOCs, SVOCs, TPH, and radioactive materials.

Target Corridor 2: Blackwood Street West

This corridor receives flows from target corridors 1, 4, 5, 6, and 7 as well as discharges from an existing machine shop and former clinical laboratory in Building 102. Hazardous wastes that may have been discharged to this line include metals, VOCs, SVOCs, TPH, and radioactive wastes.

Target Corridor 3: Blackwood Street East

These sewers carry wastes from Corridor 9 (the hospital and boiler house) across Rifle Range Creek to the Oakland city sewer at Mountain Boulevard. No additional lines join this sewer along Blackwood Street so expected hazardous wastes in the line are the same as those in Corridor 9.

Target Corridor 4: Building 75

Building 75 contains the Radiation Safety Department and an X-ray dark room. Leaking underground storage tanks have been removed from the former filling station located adjacent to Building 75 (Parcel 108). Expected wastes associated with these sources include metals, VOCs, SVOCs, TPH, and radioactive wastes.

Target Corridor 5: Building 73

This building contained a former dark room and medical facilities including a newborn nursery. Demolished buildings on adjacent Parcel 128 included wards and operating rooms. Hazardous sewer wastes expected in this corridor are metals and VOCs, particularly those associated with photographic processing.

Target Corridor 6: Building 67

This corridor carries waste from the dental lab and allergy clinic in Building 67. Hazardous materials used in this building include solutions for developing X-rays, adhesives, solvents, sterilization chemicals, and mercury compounds. Wastes impacting sewers may include metals and VOCs.

Target Corridor 7: Building 63/65

Buildings served by this sewer included medical equipment repair facilities and the Navy Drug Screening Laboratory. Hazardous materials stored and used in these buildings include flammable liquids, radioactive check sources, radioactive wastes, diesel fuel, solvents, acids, and paints. This corridor may contain metals, VOCs, SVOCs, TPH, and radioactive wastes.

Target Corridor 8: Parcel 110

This corridor has collected sewer discharges from existing or demolished Buildings 1, 4, 5, 6, 10, 11, 12, 13, 15, 36, 45, 46, 50, 51, 85, 89, and 115, among others. Currently or previously these buildings have functioned as or housed a laundry, an electrical shop, paint shops, laboratories, surgical wards, warehouses, an autopsy facility, incinerators, and a service station. Materials used or stored in these buildings include paint, varnish, pesticides, adhesives, thinner, cutting oils, lubricants, lead-acid batteries, gasoline, motor oil, diesel fuel, radioactive waste, surfactants, and formaldehyde. This

corridor could potentially contain metals, VOCs, SVOCs, TPH, and radioactive wastes.

Target Corridor 9: Building 500

This corridor carries sanitary waste from the Navy Hospital (Building 500) and the boiler house (Building 512). It may have formerly served nine buildings on Parcel 136 that have been demolished. These buildings included X-ray facilities, a blood bank, laboratories, and flammable materials storage facilities. A variety of materials including flammable liquids, lead-acid batteries, long-lived radio nuclides, photographic developing solutions, solvents, sterilizers, mercury, formaldehyde, methanol, boiler treatment chemicals, diesel fuel, and fuel oil are used at and potentially discharged to sewers from Buildings 500 and 512. This corridor could contain metals, VOCs, SVOCs, TPH, and radioactive wastes.

Target Corridor 10: Parcel 159

This corridor services seven buildings that make up the NMCO transportation area. The area has contained a typewriter repair shop, a service station, vehicle storage facilities, oil storage facilities, laboratories, and underground storage tanks (removed). An above ground diesel storage tank and a swimming pool chemical storage building exist on Parcels 148 and 158 upstream of Parcel 159. Corridor 10 sewers may be impacted by metals, VOCs, SVOCs, and TPH.

Target Corridor 11: Building 17

This short corridor of a longer sewer line serves Building 17, which is used for storage of hazardous wastes, unused chemical products, and from 150 to 200 55-gallon drums of low-level radioactive waste. Metals, VOCs, SVOCs, TPH, and radioactive wastes may be present in Corridor 11.

Target Corridor 12: Parcel 135 (Storm Sewer)

This corridor carries surface runoff from the areas serviced by sanitary sewers in Corridors 4, 5, and 6. Therefore, wastes possible in these corridors may also be present in this storm sewer corridor including metals, VOCs, SVOCs, TPH, and radioactive wastes. The sampling location proposed on Parcel 135 is adjacent to a catch basin

where flow from three underground storm sewer lines is combined into one line prior to discharge to Rifle Range Creek.

Sewer Sediment Sampling Locations

Sanitary sewer sediment samples will be collected from three manholes at the NMCO facility. Two of these manholes are located in Target Corridor 9 adjacent to the hospital (Building 500), and the third is located at the manhole furthest downstream on Navy property in Target Corridor 2 (Blackwood Street West). The locations are shown on Figure 2-2 and correspond to manholes numbered MH04, MH53, and MH54. The locations are expected to represent current worst case conditions for sanitary sewer sediment quality at the facility. Because sewers are dynamic systems, the quality of existing sediment is not indicative of historical sediment quality or of the nature of historical sewer discharges. Environmental impacts from sewers will therefore be determined primarily from sewer corridor samples rather than sewer sediment samples.

The sediment samples will be analyzed for hazardous waste characteristics including ignitability, corrosivity, reactivity, and toxicity. Toxicity will be determined by Toxicity Characteristic Leaching Procedure (TCLP) testing of the samples, where appropriate. The results of these analyses will be useful in determining whether sediment removed from sewer lines or manholes during future maintenance activities may require special handling or disposal due to impacts from hazardous constituents. Should high levels of compounds of concern be detected, a corrective sediment removal action may be initiated to reduce risks associated with downstream transport of these sediments.

Representative sediment samples will be collected from the sanitary sewer manholes using clean stainless steel spoons, trowels, or ladles attached to aluminum poles. This arrangement will make it unnecessary for samplers to enter the confined space of the manholes. Sufficient sediment will be sampled from the indicated manholes to perform the listed analyses. Should a selected manhole be impossible to sample due to irregular manhole construction, high flow rates, or insufficient sediment, adjacent upstream manholes may be sampled instead. Sampling from downstream manholes is not advised.

Storm sewer sediment samples will not be collected in this investigation because these sewers do not currently receive wastes

from buildings at the NMCO facility. Future investigations of sediment quality in Rifle Range Creek may indicate the need to collect sediment samples from storm sewers at the site.

Draft
UNDERGROUND STORAGE TANK INVESTIGATION AND CORRECTIVE MEASURES STUDY

for

Former Underground Storage Tank Site 510

at

Naval Medical Center,
Oakland, California

Submitted to:
Department of the Navy
Engineering Field Activities, West
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SECTION 1

INTRODUCTION

This document constitutes the Underground Storage Tank (UST) Investigation and Corrective Measures Study (CMS) for UST Site 510 at the Naval Medical Center (NMC) in Oakland, California (Figures 1 and 2). This UST Investigation and CMS report has been prepared by ERM-West, Inc. (ERM), under Contract No. N62474-92-D-3608-0014 for submittal to the San Francisco Bay Regional Water Quality Control Board (RWQCB). This document has been prepared in accordance with applicable regulatory guidelines, specifically the *Underground Storage Tank Regulations (Title 23, California Code of Regulations), and the Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites (August 10, 1990).* Groundwater was not encountered during the field investigation, and is therefore not addressed in the report.

Report Organization

The purpose of this report is to summarize the site characterization and investigation activities undertaken to date and provide an evaluation of potential remedial alternatives. The recommended remedial alternative presented in this report is based on the results of the technology and alternatives screening process.

This UST Investigation and CMS Report is organized into six sections as follows:

- Section 1 describes the objectives and strategy of the UST Investigation and CMS process.
- Section 2 describes the location, climate, and geology at the NMC.
- Section 3 presents soil investigation activities to date and results.
- Section 4 proposes interim target cleanup goals based on present and potential future land and groundwater usage.
- Section 5 presents an evaluation of applicable remedial technologies and screens each technology against site-specific conditions.

- Section 6 presents remediation alternatives which include the remedial technologies that passed the screening process discussed in Section 5. Alternatives are further evaluated to determine the optimal remedial action for each UST site.

Appendices containing pertinent supporting documentation for this RI report follow Section 6.

UST Investigation Objectives and Strategy

The UST Investigation portion of this report includes a summary of previous investigation activities and findings at each UST site and discusses the recent sampling activities and results. This information is presented in Sections 2 and 3 of this report.

UST Investigation Objectives

The objectives of the RI at Site 510 were to:

- Determine the vertical and lateral extent of soil impacted by total petroleum hydrocarbons (TPH); and
- Determine whether the storm drain system plays a role in the migration of chemical constituents released for the site.

UST Investigation Strategy

Building on existing information, and in accordance with the contract scope of work, the UST Investigation was conducted to accomplish the objectives listed above. To accomplish these objectives, soil samples were collected from borings installed with a hollow-stem auger drill rig at Site 510.

CMS Objectives and Strategy

The Corrective Measures Study includes the development, evaluation, and screening of remedial alternatives based on site-specific conditions, regulatory criteria, and technological feasibility. The CMS is presented in Sections 4 through 6 of this report.

CMS Objectives

The primary objectives of the CMS are as follows:

- Determine interim target cleanup goals based on current and future beneficial uses, potential exposure pathways, and regulatory mandates;
- Evaluate technologies for remediating hydrocarbon-impacted soil;
- Develop and screen remediation alternatives for implementation at UST site 510; and
- Recommend an interim remediation measure.

CMS Strategy

The CMS was developed in four major components, as outlined below.

The first component included the development of interim target cleanup goals. This process involved researching the actual and probable uses of land and groundwater at NMC, evaluating potential exposure pathways, determining the cleanup goals or water quality goals associated with usage and exposure pathways, and proposing interim target cleanup goals based on this analysis.

The second component involved the evaluation and screening of technologies for remediating soil and groundwater. This detailed evaluation included a summary of each technology, an evaluation of the technology's compatibility with site-specific conditions, and a determination of whether or not the technology was appropriate for UST site 510.

The final component of the CMS included the development and screening of remediation alternatives. Alternatives were developed using the technologies that passed the initial screening process discussed above. Based on the evaluation criteria specified in the National Contingency Plan (NCP), selected alternatives were screened, and a preferred interim alternative was recommended.

NMC LOCATION AND GEOLOGY

NMC Location

Figure 1 shows the location of the NMC relative to the San Francisco Bay region, while Figure 2 depicts the facility and the location of Site 510. As shown on Figure 2, the NMC is located directly east of the MacArthur Freeway (Interstate 880) in the southeastern section of Oakland, California. The Medical Center is bordered by a golf course (Sequoyah Country Club) and residential area to the south, Interstate 880 to the west, mixed residential and undeveloped land to the north, and Skyline Boulevard to the east.

NMC Geography and Climate

The NMC is on the eastern coastal range adjacent to the San Francisco Bay. The Medical Center lies on a slope between 300 and 800 feet above sea level. The site slopes primarily to the west and lies on the east side of the seismically active Hayward fault zone according to a report titled *Oakland Naval Hospital, Oakland, California, Soil Sampling and Groundwater Monitoring Site Investigation, Tanks 510 A-D, Final Field Work Plan* (PRC, January 1993).

The San Francisco Bay Area climate consists of mild, wet winters and moderately warm, dry summers. During the spring and summer, temperatures range between 50 and 95 degrees Fahrenheit. Temperatures range between 35 and 70 degrees Fahrenheit during fall and winter, with infrequent drops in temperature below freezing (32 degrees).

Rainfall in the Oakland area is unpredictable. Average rainfall in non-drought years is between 10 and 20 inches annually. Prevailing winds in the area are west to east.

Geology

Building 510, the former naval exchange (NEX) gasoline service station area, is underlain by the Leona Ryolite rock unit, which generally consists of sheared or fractured light gray to green or light blue-gray ryolite that weathers to white or dark yellow-orange. Occasionally iron-stained, the ryolite may appear red-orange. Volcanic glass is found in small amounts within the rock unit. Pyrite may be found in abundance in certain areas of the rock unit.

The Leona Ryolite is mantled by a weathered zone that consists of loose ryolite fragments in a clay matrix. The weathered zone is approximately 20 to 40 feet thick based on information collected during the current investigation.

The Leona Ryolite and the surrounding units together are probably more than 10,000 feet thick in the Oakland area, and have been compressed into the northwest-trending folds that have been cut by numerous faults. The site lies directly northeast of the Hayward fault zone, which is an active northwest-southeast trending right-lateral fault. The fault zone may be more than three-fourths of a mile wide within the site area and may include the site itself (PRC, January 1993).

Hydrogeology

Groundwater may be present in the geologic units underlying the area within the pore spaces of the unconsolidated weathered zone material overlying the Leona Ryolite. Groundwater may also be present within the joints, faults, fractures, and other secondary openings of the ryolite bedrock.

Locally, the groundwater gradient probably slopes south-southeast. The aquifer is recharged by infiltration of precipitation. Rifle Range Stream, an intermittent stream (i.e. only flows during certain times of the year when precipitation is encountered) southeast of the NEX gasoline station, may be a discharge area for the aquifer when the water table intersects the base of the stream bottom. Topographic maps of the area indicate that no seeps or springs are located within one mile of the site. The depth to groundwater, confined or unconfined is unknown in the vicinity of the site. Irrigation wells at the facility indicate that groundwater may be as deep as 201 feet below ground surface (bgs) (PRC, January 1993).

Two agricultural wells formerly used for watering vegetation have been identified at the USDC facility. One of the wells, which is now inactive, is located to the south of Site 700 near Building 125. Based on the assumed direction of groundwater flow to the south, this well is located downgradient of Site 700. The second agricultural well is not operational, and is located near Building 15. This well is located approximately 1500 feet east of Site 700 and is most likely located upgradient. No information regarding well construction or depth to water in these wells is available.

Two agricultural wells formerly used for watering vegetation have been identified at the NSWC facility. One of the wells, which is now inactive, is located to the south of Site 701 near Building 125. Based on the assumed direction of groundwater flow to the south, this well is located downgradient of Site 701. The second agricultural well is not operational, and is located near Building 13. This well is located approximately 1500 feet east of Site 701 and is most likely located upgradient. No information regarding well construction or depth to water in these wells is available.

Two agricultural wells formerly used for watering vegetation have been identified at the NMC facility. One of the wells, which is now inactive, is located to the south of Site 510 near Building 125. Based on the assumed direction of groundwater flow to the south, this well is located downgradient of Site 510. The second agricultural well is not operational, and is located near Building 13. This well is located approximately 1500 feet east of Site 510 and is most likely located upgradient. No information regarding well construction or depth to water in these wells is available.

SOILS INVESTIGATION

This section describes soils investigation activities at the former UST Site 510 and presents the results of the investigation.

The site is located at the former NEX service station near Building 510, and is a lot consisting primarily of asphalt paving with limited areas of grass (Figure 3).

Summary of Previous Investigations

Four USTs were removed by PRC Environmental Management, Inc. (PRC), at the former NEX gasoline service station located at Building 510 in December 1991. Three of the former USTs (510A, 510B, and 510C) contained gasoline, while the fourth tank (510D) contained waste oil. Analytical results for soil samples collected during the removal of the tanks 510A, 510B, and 510C indicated the presence of soils impacted by TPH as gasoline (TPH-G) in the vicinity of the former USTs. Analytical results for samples collected from the bottom of the excavation at UST 510D did not indicate the presence of soil impacted by TPH. Detailed information on the removal of the USTs are contained in a report titled *Oakland Naval Hospital, Oakland, California, Underground Storage Tank Removal, Tanks 510A-D, Final Summary Report* (PRC, January 1993).

Following removal of the USTs, PRC conducted a site investigation (SI) in February 1994 and presented the results of the investigation in a report titled *Oakland Naval Hospital, Oakland, California, Site Investigation, Underground Storage Tanks 11A, 510A, 510B, 510C, and 510D* (PRC, June 30, 1994). Nine soil borings (SB-1 through SB-9) were installed by PRC in an attempt to determine the lateral and vertical extent of TPH detected in soil samples collected during the removal of the tanks. PRC's investigation identified TPH in the vicinity of the former USTs but did not define the lateral and vertical extent of TPH in soils.

According to a report titled *Oakland Naval Hospital, Oakland, California, Site Investigation, Underground Storage Tanks 111A, 510A, 510B, 510C, and 510D* (PRC, June 30, 1994), it is suspected that up to 7,000 gallons of unleaded gasoline may have leaked from UST 510A. UST

510A was emptied and removed from service in February 1989 when the leak was discovered.

ERM Investigation

In March and April 1995, ERM conducted the field work, as described in the RI Workplan for the NMC (ERM, October 1994, revised April 1995) and as discussed with the Department of Toxic Substances Control (DTSC) and the Central Valley Regional Water Quality Control Board (RWQCB). The objectives of the additional investigation were to define the lateral and vertical extent of TPH in the vicinity of former USTs 510A, 510B, and 510C, and to determine if TPH in soil might be impacting groundwater.

Twelve soil borings were installed at the site to determine the lateral and vertical extent of TPH detected in soils. The locations of the borings are shown on Figure 3. Soils encountered during the installation of the borings were comprised predominantly of weathered bedrock and clay with various mixtures of silt, sand, and gravel. A map illustrating the location of geologic cross-sections for the 510 Site is provided on Figure 4, while the geologic cross-sections are illustrated on Figures 5 and 6. The zone of fill displayed on these geologic cross-sections is approximated based on the depth of the excavation recorded during the removal of the USTs, and visual observations during drilling activities. It should be noted that drilling refusal was encountered at shallow depths at locations SB-16 (3 feet bgs) and SB-17 (10.5 feet bgs). Additionally, field screening with a photoionization detector (PID) that detects volatile organic compounds (VOCs) was performed on samples collected from soil boring SB-14 to determine if the storm drain trench is acting as a conduit for TPH previously detected in the soils near the former UST locations. Field screening was conducted by placing a portion of the sample collected in a self-sealing plastic bag and allowing the sample to remain in the bag for approximately 10 minutes at a temperature above 65 degrees Fahrenheit. Following the 10-minute period, a PID headspace reading was recorded from the air within the bag. The headspace reading (in units of parts per million) was then recorded on the boring log. Field screening with the PID at location SB-14 did not detect any volatile compounds; therefore, samples collected at this location were not submitted for laboratory analysis. Additionally, TPH was not detected in samples collected and analyzed from soil boring SB-13, indicating that the lateral extent of TPH does not extend to location SB-13. Soil boring logs are contained in Appendix A.

Soil samples were collected from the borings at 5-foot intervals using a California-modified sampler that allows collection of 24 vertical inches of sample in 4- to 6-inch brass sleeves. Samples collected from the borings were analyzed for TPH-G and benzene, toluene, ethylbenzene, and xylenes (BTEX) based on historical usage of the tanks. Although no USTs at Site 510 are believed to have contained diesel, some samples will be analyzed for TPH as diesel (TPH-D) to confirm our records.

Once the samples were collected, one of the brass sleeves containing soil was packaged for shipment to the laboratory for chemical analysis. A second tube adjacent to the tube submitted for chemical analysis was placed in a self-sealing plastic bag for a headspace analysis for VOCs using a (PID). Remaining soil was used for recording lithology. A detailed outline of the sampling and analysis methodologies is presented in the Remedial Investigation Workplan (ERM, April 1995).

Soil Investigation Results

Analytical results for soil samples are provided in Table 3-1, and are illustrated on Figures 7, 8, and 9. Analytical results for soil samples collected as part of the investigation conducted by ERM in March and April 1995 are presented in Appendix B. As shown on Figure 7, TPH-G was detected primarily in soil samples collected from borings SB-19 and SB-21. The highest concentration of gasoline at these locations was detected in the samples collected from a depth of 15 feet bgs which corresponds fairly well with the 15-foot excavation depth recorded during removal of the former USTs. Additionally, more competent fractured bedrock somewhat similar to that observed at the nearby rock quarry was encountered at approximately 20 feet bgs at these locations. The degree to which the samples collected at the interface of the more competent fractured bedrock are representative of soils conditions is questionable, due to the rock content of the sample and the analytical method used to analyze the samples.

TPH-D detected in soil samples is illustrated on Figure 8. As noted on Figure 8, TPH with a non-diesel chromatogram pattern was detected in soil boring SB-9 (near UST 510D) at a depth of 5 feet bgs during the investigation conducted by PRC. This soil was excavated during the removal of UST 510D.

Concentrations of aromatic hydrocarbons including BTEX are illustrated on Figure 9. As shown on Figure 9, the highest concentrations of BTEX were detected in samples collected from soil borings SB-7 and SB-21 at a depth of 15 feet bgs. For purposes of

comparison, BTEX concentrations were compared to Preliminary Remediation Goals (PRGs)[1] for soil established by the USEPA Region IX (Smucker, February 1, 1995). Benzene was detected at a concentration of 2.4 mg/kg, which is between the residential (1.4 mg/kg) and industrial (3.2 mg/kg) PRG in a sample collected from 15 feet bgs in soil boring SB-21. Benzene was also detected at a concentration of 23 mg/kg in a sample collected from boring SB-7 at a depth of 15 feet bgs. Toluene, ethylbenzene, and xylenes were not detected at concentrations above the residential PRGs for soils.

Total lead was analyzed for samples collected at 15 feet bgs from soil borings SB-19 and SB-21. Lead concentrations detected in these samples were very low and well below the "CAL-Modified PRG" for lead (130 mg/kg).

Table 3-1

Concentrations of Chemical Constituents in Soil Samples
Naval Medical Center
Oakland, California

PRG Residential Soil (mg/kg)		NS	NS	2.4	1900	2300	980	130
Method		5030	3550	8020	8020	8020	8020	7421
Location and Depth	Date	TPH-Gasoline	TPH-Diesel	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Lead
510-SB1-5.5'	2/14/94	<1.2	NA	<.006	<.006	<.006	<.006	NA
510-SB1-10'	2/14/94	<1.1	NA	0.029	0.079	0.009	0.057	NA
510-SB1-15.5'	2/14/94	120**	NA	<0.057	0.84	0.93	6.3	NA
510-SB1-19.5'	2/14/94	<1.1	NA	<.005	0.006	<0.005	0.045	NA
510-SB1-25'	2/14/94	19**	NA	<.006	0.092	0.11	0.67	NA
510-SB1-30'	2/14/94	11**	NA	0.024	0.14	0.064	0.41	NA
510-SB1-35'	2/14/94	19**	NA	0.019	0.19	0.12	0.60	NA
510-SB1-39.5'	2/14/94	30**	NA	<.021	0.47	0.27	1.4	NA
510-SB2-5'	2/14/94	<1.1	NA	<.005	<.005	<.005	<.005	NA
510-SB2-9.5'	2/14/94	<1.1	NA	<.005	<.005	<.005	<.005	NA
510-SB2-14.5'	2/14/94	<1.1	NA	<.005	<.006	<.005	<.005	NA
510-SB2-19.5'	2/14/94	3**	NA	<.005	<.005	<.005	0.006	NA
510-SB2-29.5'	2/14/94	1.4**	NA	<.005	<.005	<.005	<.005	NA
510-SB2-35'	2/14/94	<1.1	NA	<.005	<.005	<.005	<.005	NA
510-SB2-39.5'	2/14/94	1.3**	NA	<.005	<.005	<.005	<.005	NA
510-SB3-4.5'	2/14/94	<1.1	NA	0.022	0.11	0.018	0.091	NA
510-SB3-10'	2/14/94	<1.1	NA	0.007	0.031	0.018	0.097	NA
510-SB3-15'	2/14/94	<1.1	NA	<.006	<.006	<.006	<.006	NA
510-SB3-20'	2/14/94	<1.1	NA	<.005	<.005	<.005	<.005	NA
510-SB3-25'	2/14/94	22	NA	<.022	<.022	0.46	1.3	NA
510-SB4-5'	2/14/94	<1.1	NA	0.011	0.025	0.006	0.039	NA
510-SB4-15'	2/14/94	<1.1	NA	<.006	0.024	<.005	0.028	NA
510-SB4-20'	2/14/94	<1.1	NA	<.005	<.005	<.005	<.005	NA
510-SB4-23'	2/14/94	<1.1	NA	<.005	<.005	<.005	<.005	NA
510-SB5-6'	2/14/94	<1.1	NA	<.006	<.006	<.006	<.006	NA
510-SB5-10'	2/14/94	<1.1	NA	0.021	0.08	0.013	0.044	NA
510-SB5-20'	2/14/94	<1.1	NA	<.005	<.005	<.005	<.005	NA
510-SB5-23'	2/14/94	<1.1	NA	<.005	0.011	<.005	<.005	NA
510-SB6-5'	2/15/94	<1.2	NA	<.006	<.006	<.006	<.006	NA
510-SB6-10'	2/15/94	<1.2	NA	<.006	<.006	<.006	<.006	NA
510-SB6-15'	2/15/94	<1.1	NA	<.006	<.006	<.006	<.006	NA
510-SB6-20'	2/15/94	<1.1	NA	<.005	0.009	<.005	0.007	NA
510-SB6-25'	2/15/94	<1.1	NA	<.006	<.006	<.006	<.006	NA
510-SB6-30'	2/15/94	76	NA	0.054	1.7	1	5.8	NA
510-SB7-5'	2/15/94	<1.1	NA	<.006	<.006	<.006	<.006	NA
510-SB7-10'	2/15/94	<1.2	NA	<.006	0.007	<.006	<.006	NA
510-SB7-15'	2/15/94	4000	NA	23	300	67	390	NA
510-SB8-5'	2/15/94	<1.1	NA	<.006	0.007	<.006	<.006	NA
510-SB8-10'	2/15/94	<1.1	NA	<.006	0.016	<.006	0.007	NA
510-SB8-15'	2/15/94	<1.2	NA	<.006	<.006	<.006	<.006	NA
510-SB8-17'	2/15/94	<1.1	NA	<.005	<.005	<.005	<.005	NA
510-SB9-5'	2/15/94	1.8**	61*	<.005	<.005	<.005	<.005	NA
510-SB9-10'	2/15/94	<1.1	<1.1	<.005	<.005	<.005	<.005	NA

Table 3-1
Concentrations of Chemical Constituents in Soil Samples
Naval Medical Center
Oakland, California

PRG Residential Soil (mg/kg)		NS	NS	1.4	1400	2900	900	130
Method		8030	3550	8020	8020	8020	8020	7421
Location and Depth	Date	TPH-Gasoline	TPH-Diesel	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Lead
510-SB9-15'	2/15/94	<1.1	<1.1	<.006	<.006	<.006	<.006	NA
510-SB9-20'	2/15/94	<1.1	<1.1	<.005	<.005	<.005	<.005	NA
510-SB9-22'	2/15/94	<1.1	<1.1	<.005	<.005	<.005	<.005	NA
510-SB10-5'	3/6/95	NA	<1	<.005	<.005	<.005	<.005	NA
510-SB10-10'	3/6/95	NA	<1	<.005	<.005	<.005	<.005	NA
510-SB10-15'	3/6/1995,4/25/95	<1	<1	<.005	<.005	<.005	<.005	NA
510-SB10-20'	3/6/1995,4/25/95	<1	<1	<.005	<.005	<.005	<.005	NA
510-SB11-15'	3/6/1995,4/25/95	<1	<1	<.005	<.005	<.005	<.005	NA
510-SB11-20'	4/25/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB11-25'	4/25/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB12-20'	4/26/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB12-30'	4/26/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB12-34.5'	4/26/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB12-39.5'	4/26/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB12-44.5'	4/26/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB13-5'	3/7/95	NA	1.4*	<.005	<.005	<.005	<.005	NA
510-SB13-10'	3/7/95	NA	<1	<.005	<.005	<.005	<.005	NA
510-SB13-15'	3/7/1995,4/26/95	<1	<1	<.005	<.005	<.005	<.005	NA
510-SB13-20'	3/7/1995,4/26/95	<1	<1	<.005	<.005	<.005	<.005	NA
510-SB13-24.5'	4/26/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB15-15'	4/27/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB17-5'	3/8/95	NA	<1	<.005	<.005	<.005	<.005	NA
510-SB18-15'	4/25/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB18-20'	3/8/1995,4/25/95	<1	<1	<.005	<.005	<.005	<.005	NA
510-SB18-25'	4/25/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB18-30'	4/25/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB19-10'	4/27/95	<1	NA	<.005	<.005	<.005	<.005	NA
510-SB19-15'	4/27/95	41	NA	0.011	0.10	<.005	0.25	5.1
510-SB21-10'	4/26/95	<1	NA	<.005	0.0068	<.005	<.005	NA
510-SB21-15'	4/26/95	1200	NA	2.4	45	25	120	4.4
510-SB21-20'	4/27/95	24	NA	<.005	0.120	0.20	12	NA
TN-510A-S-17-NF	12/11/91	11	NA	0.042	0.110	0.075	0.15	NA
TN-510A-S-17-SF	12/11/91	<1	NA	0.021	<.005	0.008	0.046	NA
TN-510A-S-09-EW	12/11/91	<1	NA	<.005	0.011	0.008	0.078	NA
TN-510B-S-17-NF	12/11/91	<1	NA	0.013	0.042	0.014	0.078	<.50
TN-510B-S-17-SF	12/11/91	<1	NA	0.014	0.007	0.007	0.008	<.50
TN-510B-S-09-EW	12/11/91	<1	NA	<.005	0.012	<.005	0.026	<.50
TN-510C-S-17-NF	12/11/91	<1	NA	0.013	0.008	0.01	0.032	NA
TN-510C-S-17-SF	12/11/91	130	NA	<.050	1.2	1.4	7.5	NA
TN-510C-S-09-EW	12/11/91	<1	NA	<.005	<.005	<.005	<.005	NA

Table 3-1
Concentrations of Chemical Constituents in Soil Samples
Naval Medical Center
Oakland, California

PRG Residential Soil (mg/kg)		NS	NS	1.4	1900	2900	390	150
Method		5030	3550	8020	8020	8020	8020	7421
Location and Depth	Date	TPH-Gasoline	TPH-Diesel	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Lead
TN-510C-S-09-WW	12/11/91	<1	NA	<.005	<.005	<.005	<.005	NA
TP1-510-S-04	12/16/91	**69****	NA	<.005	<.005	<.005	**0.84**	<.50
TP2-510-S-04	12/16/91	**21****	NA	<.005	<.005	**0.006**	**0.26**	<.50
TP3-510-S-03	12/16/91	<1	NA	<.005	**0.015**	<.005	**0.024**	<.50
TP4-510-S-03	12/16/91	<1	NA	<.005	<.005	<.005	<.005	<.50
TP5-510-S-04	12/11/91	<1	NA	<.005	<.005	<.005	<.005	<.50
TP6-510-S-04	12/11/91	<1	NA	<.005	<.005	<.005	<.005	<.50
TP7-510-S-03	12/11/91	<1	NA	<.005	<.005	<.005	<.005	<.50

NOTES:
All concentrations reported in mg/kg
Concentrations reported with respect to practical quantitation limits (PQLs)
Bolded values indicate detected concentrations

KEY:
TPH= Total petroleum hydrocarbons
* = Sample chromatogram does not match diesel standard
**=Sample chromatogram does not match gasoline standard
NA = Not analyzed
NS = No standard established
PRG = Preliminary Remediation Goal (USEPA Region IX 2/1/95)

SECTION 4

TARGET CLEANUP GOALS

This section presents interim target cleanup goals for the hydrocarbon-affected soil at UST Site 510 at the NMC facility. PRC, under contract with the Navy, is currently in the process of preparing a Preliminary Endangerment Assessment (PEA) which will develop and propose numeric cleanup goals for soil and groundwater at UST Site 510. The interim cleanup goals presented in this section are narrative, and are intended to be used with the implementation of interim remedial measures until the final numeric cleanup goals are developed and accepted.

The basis for the proposed narrative interim cleanup goals are discussed in this section. First, current and future uses of land and groundwater at NMC and the surrounding areas are discussed to provide a basis for the analysis. Next, potential exposure pathways at the UST site are identified. Finally, this section evaluates interim target cleanup goals for soil based on the beneficial use and exposure pathway analysis.

Land and Groundwater Use

This subsection provides information on current and anticipated future land uses and on beneficial uses of groundwater at NMC. This information is used as a basis for establishing the interim target cleanup goals presented later in this section.

Land Use

UST site 510 is situated within the western part of the base. This portion of NMC has most recently been used by the Navy for patient care and medical instruction purposes. Although the redevelopment and future use of the NMC facility has not been confirmed, it would be best to assume that future land use could include commercial, residential, and recreational. Land usage surrounding NMC is primarily residential and undeveloped land.

Groundwater Use

Existing and potential beneficial uses of groundwater are evaluated in the following subsections. Included in this evaluation is a discussion of the beneficial uses of groundwater identified in the San Francisco Bay Basin, an identification of regional water supply resources in the vicinity of NMC, and a discussion of actual beneficial uses of groundwater at NMC.

Basin Plan Policy

The existing and potential beneficial uses of main groundwater basins in the San Francisco Bay region are outlined in the *San Francisco Bay Region Water Quality Control Plan*, January 17, 1995 update (Basin Plan). According to the Basin Plan, NMC and the immediate surrounding areas are not located within an identified groundwater basin, indicating that groundwater in the site vicinity has not been directly slated in the Basin Plan for any specific beneficial use. Four types of beneficial uses are included in the Basin Plan: municipal and domestic water supply, industrial process water supply, industrial service water supply, and agricultural water supply. Unless otherwise designated by the Regional Water Quality Control Board (RWQCB), all groundwaters are considered suitable or potentially suitable for municipal or domestic water supply. Exceptions to this policy are to be considered by the RWQCB on a case by case basis. Under this policy, groundwater in the vicinity of the facility could be considered potentially suitable for domestic or municipal water supply.

Regional Water Resources

The East Bay Municipal Utility District (EBMUD) provides water to NMC as well as to the greater East Bay area. EBMUD receives its water from the Pardee Reservoir on the Mokelumne River and does not use a groundwater source. NMC receives its water directly from the Upper San Leandro Reservoir, which is fed by local runoff and by a pipeline from the Mokelumne River system.[2]

Beneficial Uses of Groundwater in the Base Vicinity

As discussed earlier in this section, the general area encompassing the facility is not part of an identified groundwater basin, and the municipal water supplier for this area does not rely on a groundwater source, local or otherwise. However, private water supply wells are present in the general vicinity of the base.[3] Because there are water

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2 November 20, 1995, telephone conversation with EBMUD representative (510/287-1380)

3 Ibid

supply wells in the general area and because land usage in the site vicinity is primarily residential, the current beneficial uses of groundwater in the vicinity of NMC probably include domestic and irrigation supply. Future potential beneficial uses of groundwater in the site vicinity could be the same.

Beneficial Uses of Groundwater at NMC

Officer Eric Nezbit of NMC indicated that there is no current use of on-site groundwater at the facility.[4] NMC has always received its water from public sources. However, there are two water supply wells present on the property which were installed in the early 1940's to serve as backup water supply for the medical center. One well is associated with Building 125 and the other is located adjacent to Building 13. Both wells pump at depths below approximately 200 feet bgs. Although neither well was ever used for potable supply, the well associated with Building 125 was used until 1992 for landscape irrigation. The well associated with Building 13 was used less frequently for the same purpose but was capped in the 1970's because it produced less water than the Building 125 well. Samples have been collected annually while the wells were in use and analyzed for standard water quality parameters. No water quality problems were noted.

Although EBMUD currently provides a more reliable and economic fresh water source than is available through groundwater extraction, groundwater at the NMC site could be used in the future for domestic and other purposes.

Exposure Pathway Analysis

This subsection evaluates potential exposure pathways for the hydrocarbon-affected soil. Exposure pathways for groundwater were excluded from this analysis because there is currently no data indicating that the groundwater has been impacted. (Potential impacts to groundwater are to be evaluated during the PEA.) Exposure pathways are based on current and anticipated future land use at the facility. A summary of potential exposure pathways is presented in Table 4-1.

4 November 20, 1995, telephone conversation with Officer Nezbit for all information on the two NMC water supply wells.

Soil Exposure Pathways

There are four potential exposure pathways associated with the TPH-affected soil at the NMC facility: direct skin contact, incidental ingestion, inhalation, and migration to groundwater. Uptake by vegetation is not a pathway of concern because the constituents of concern do not bioaccumulate.[5]

The first three exposure pathways, direct skin contact, incidental ingestion, and inhalation are typically a concern if affected soils are present at or near the ground surface. The existing data indicates that TPH-affected shallow soils are present in localized areas that are paved with asphalt at the ground surface. Additionally, TPH concentrations detected at the shallow depths were relatively low. Therefore, under the current conditions, these three exposure pathways are not a concern.

The inhalation pathway is also a concern if the affected soils are situated beneath an enclosed structure where gases may rise and accumulate within the structure, thereby affecting the occupants. The auto center (Building 510) is the closest building to the former UST site. However, the data does not appear to indicate that the soil beneath Building 510 is impacted. The inhalation exposure pathway would be a potential concern if a structure was built over areas of impacted soil.

The U.S. Environmental Protection Agency's PRGs for soil account for the three exposure pathways discussed above.

The fourth pathway, migration to groundwater, is dependent upon several site-specific factors, including depth to groundwater, subsurface geology, soil permeability, ground surface cover, and annual precipitation. As indicated in Section 2, the depth to groundwater in the site vicinity is unknown but could be as deep as 201 feet bgs (PRC, January 1993). The recent investigation data indicates that the site is underlain by bedrock that is weathered at depths up to 40 feet bgs and could contain fractures and faults at greater depths. Since a groundwater investigation has not been performed at the site, data indicating whether or not the groundwater has been impacted is currently unavailable. The migration to groundwater pathway will be assessed in greater detail during the PEA to be performed by PRC. The effect of precipitation on downward contaminant migration is only a concern for the grassy area located above the former USTs.

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5 "Petroleum Contaminated Soils, Vol. I." Kostecki and Calabrese, Lewis Publishers, 1989.

Interim Target Cleanup Goals

The following discussion of proposed interim target cleanup goals for soil is based on land use and the exposure pathway analyses presented above.

Interim Soil Cleanup Goals

Since the site will likely continue to be used for residential purposes, PRGs for residential use (residential PRGs) are proposed for the soil cleanup goals for the shallow soils at UST site 510 (i.e., soils from ground surface to 5 feet bgs). Residential PRGs are very conservative risk-based numbers which provide protection of human health and the environment in unrestricted use and development settings. The reason that PRGs are only being proposed for the shallow soils is because the exposure routes used in calculating the PRG values apply mainly to surface soils.

PRGs combine USEPA toxicity values with health-protective exposure assumptions to estimate acceptable chemical constituent concentration levels in environmental media. USEPA Region IX PRGs are based on standard USEPA assumptions for direct exposures (i.e., incidental ingestion, inhalation, and dermal contact) presented in the September 1, 1995 edition of the PRGs. To determine PRGs, separate cancer and noncancer risk-based concentrations are calculated based on a lifetime cancer risk of 10^{-6} risk and a noncancer hazard quotient of one. The PRG concentrations for carcinogens are based on cancer effects, and noncarcinogen concentrations are based on noncancer effects.

Proposed interim cleanup goals for benzene, toluene, ethylbenzene, and total xylenes for the shallow soils at UST site 510 are presented below. Since these compounds are major components of gasoline, it is not necessary to propose a cleanup goal for gasoline.

Compound	Carcinogen?	Proposed Cleanup Goal
Benzene	Yes	1.4 mg/kg
Toluene	No	1,900 mg/kg
Ethylbenzene	No	690 mg/kg
Total Xylenes	No	990 mg/kg

TABLE 4-1

Potential Exposure Pathways

Potential Receptors	Pathway considered in selection of cleanup levels?	Reason
Human Receptors		
Direct contact with soil (dermal and incidental ingestion)	No	Only low concentrations present in localized areas at shallow depths. Ground surface paved over these affected areas.
Upward migration of VOCs and subsequent inhalation	Yes	Only concern if buildings are constructed above affected areas.
Food chain uptake	No	Chemicals of concern do not bioaccumulate.
Migration to groundwater - residential or agricultural use	Not at this time*	Groundwater possibly used for human consumption. Potential for impact to groundwater unknown at this time.
Migration to groundwater - subsequent discharge to surface water	Not at this time*	Nearest surface water is appx. 400 feet downgradient of source area. Potential for surface water impact is unknown at this time.
Stormwater runoff	No	Source is confined to the subsurface.
Environmental Receptors		
Direct contact (burrowing creatures)	No	Shallow soils not affected in areas accessible to burrowing creatures.
Migration to groundwater - subsequent discharge to surface water	Not at this time*	Nearest surface water is appx. 400 feet downgradient of source area. Potential for surface water impact is unknown at this time.
Stormwater runoff	No	Source is confined to the subsurface.

* The migration to groundwater pathway will be considered in the numeric cleanup goals to be developed by PRC during the preparation of the PEA.

EVALUATION OF REMEDIAL TECHNOLOGIES

This section presents an evaluation of remedial technologies for TPH-affected soil at Site 510 at the NMC facility in Oakland, California. The first subsection describes the criteria used to screen the technologies. The second subsection describes the remedial technologies screened for TPH-affected soil, and includes an evaluation of each technology based on the screening criteria. The *Treatment Technologies Applications Matrix for Base Closure Activities*[6] was referenced to identify appropriate treatment technologies for the specific conditions at this UST site. Because the presence of TPH-impacted groundwater has not been confirmed at this site, groundwater remediation technologies are not discussed in this section.

Screening Criteria

Technologies for the remediation of TPH-affected soil were screened and evaluated based on four criteria:

- Effectiveness;
- Implementability;
- Cost; and
- Timeliness of implementation.

The effectiveness, implementability, and cost criteria are components of the National Contingency Plan (NCP) and were used because these criteria provide a systematic method of evaluating technologies. Timeliness of implementation was included as an additional criterion to accommodate site-specific requirements. Each criterion is described below.

6 "Treatment Technologies Applications Matrix for Base Closure Activities," California Base Closure Environmental Committee, Technology Matching Process Action Team, Revision 1, November 1994.

- The effectiveness criterion evaluates the ability of the technology to address the specific chemical compounds present at each UST site. It measures the technology's reliability and effectiveness in treating or disposing of the hydrocarbons at each site. This criterion also evaluates the uncertainties associated with the long-term reliability of the technology.

- The implementability criterion evaluates the ability of the technology to be implemented based on technical and operating experience, physical site constraints, availability of services, and administrative limitations.

- The cost criterion evaluates the major capital cost items and operation and maintenance cost items associated with implementation of the technology.

- The timeliness criterion evaluates the ability of the technology to meet government- or regulatory agency-imposed deadlines. A remedial action may be required within a relatively short period of time; therefore, it must be possible to implement the selected technology within the required time frame.

Identification and Screening of Soil Remedial Technologies

This subsection presents a description and evaluation of potential remedial technologies for the remediation of TPH-affected soils at the NMC Site 510. Due to site-specific conditions, some of these technologies were found to be inappropriate. Technologies that were found to be inappropriate are discussed only briefly. The remaining technologies were evaluated according to the four screening criteria described above.

Excavation

Excavation consists of the removal of the TPH-affected soils from a site using conventional excavation equipment such as a backhoe. Clean soil would be imported to backfill the excavated area. Shoring or sloping would be required to prevent sidewall cave-in.

Excavation of hydrocarbon-affected soils is a quick and effective method for limiting migration of hydrocarbons. It is easily implemented and relatively inexpensive, as it requires the use of conventional construction equipment only. Excavation is often preferred over other alternatives because it permanently removes

affected soils from the site. However, since the highest concentrations of TPH at Site 510 are present at a depth of 15 feet, a significant amount of clean overburden soil and rock would have to be excavated and stockpiled at the site. For example, approximately 980 cubic yards of clean soil would have to be removed to access approximately 120 cubic yards of impacted soil located at and below 15 feet bgs. Excavation to a depth of 15 feet or more would render the costs associated with shoring or sloping quite expensive. The presence of fill material and weathered bedrock in the excavation area may further complicate the excavation and shoring processes. Nevertheless, excavation was retained for further consideration.

Because excavation alone is not an acceptable remedial technology, treatment and/or off-site disposal of the affected soils would also be required. Following is a discussion of alternatives for remediating the excavated hydrocarbon-affected soils.

On-Site Soil Aeration

Soil aeration is an effective and proven method of treating most TPH-affected soils. The technology is also easily implemented because it requires only conventional construction and agriculture equipment. Aeration is most effective at removing the more volatile hydrocarbons such as gasoline, but is not as affective at removing the heavier, long-chain hydrocarbons in the diesel range.

Excavated TPH-affected soils would be aerated on site to remove the volatile hydrocarbons from the soil. The excavated soils would be spread over an open area at a depth of six to eight inches and allowed to dry. Agricultural equipment would then be used to turn and mix the soils, allowing the hydrocarbons to volatilize. Soil samples would be collected to determine if the soil cleanup criteria had been met. When these criteria had been met, the treated soils could be backfilled into the excavation or spread at an appropriate location at the site.

Approval from the Bay Area Air Quality Management District (BAAQMD) would be required prior to implementation of on-site soil aeration. BAAQMD regulations tie the amount of hydrocarbon-impacted soil that can be aerated per day to the volatile hydrocarbon concentrations present in the soil stockpile. According to BAAQMD requirements, if the concentration of volatile hydrocarbons (TPH-gasoline) in the soil stockpile is less than 50 parts per million (ppm), volatiles can be aerated directly to the atmosphere without limitations on the volume of soil that can be aerated per day. If the concentration of volatile hydrocarbons in the soils is between 50 and 100 ppm, the amount of soil that can be aerated is limited to 600 cubic yards per day.

Soils containing greater than 100 ppm TPH-gasoline cannot be aerated directly into the atmosphere.

According to the existing data, the areas of affected soil at Site 510 are localized laterally and vertically, and contain TPH-gasoline concentrations far greater than those allowable for aeration by the BAAQMD. Therefore, this alternative was eliminated from further consideration.

Ex-Situ Vacuum Extraction

Ex-situ vacuum extraction is an effective method for treating TPH-affected soils. The technology is also easily implemented because it uses readily available equipment.

Excavated TPH-affected soils would be treated on site. This technology involves extracting and treating vapor from stockpiled soil. Soil treatment cells would be prepared using perforated PVC piping, plastic sheeting, and a blower to draw air through the soil. The extracted vapor would either be treated (via a thermal oxidizer or granular activated carbon unit) or released directly to the atmosphere (with an approved air permit), depending upon the concentration of volatile organics found in the soil. Vapor sampling would be required as part of the air permit and to monitor the treatment system effectiveness. Soil sampling would be required to determine if the soil cleanup criteria had been met. Once the criteria are met, the treated soils could be backfilled into the excavation or spread at an appropriate location at the site.

In contrast with on-site soil aeration, this technology allows on-site treatment of soils containing greater than 100 ppm TPH-gasoline. However, because of the limited volume impacted soil, the costs associated with setting up, maintaining, and sampling such a system would far outweigh the benefits. For these reasons, ex-situ soil vapor extraction was eliminated from further consideration.

Off-Site Soil Recycling

With this technology, excavated TPH-affected soils would be transported to an off-site recycling facility for treatment. The soils would be treated to remove the hydrocarbon constituents, which would allow either reuse or disposal of the clean soil. Two off-site recycling technology options were considered for the NMC site:

- Light-Weight Aggregate Production; and

- Asphalt Encapsulation.

These two technology options are described and evaluated below.

Light-Weight Aggregate Production. This technology involves soil treatment at the Port Costa Materials facility. The facility treats hydrocarbon-impacted soil by blending it with shale and heating it in a rotary kiln to 2,000 degrees Fahrenheit. This process transforms the material into a light-weight aggregate product. The small aggregate pellets have many recycling options, one of which is backfill in the original excavation hole.

This technology is a quick and effective treatment option for TPH-affected soils and provides for the beneficial reuse of the affected soils. This technology is cost-effective and could be easily implemented because treatment takes place off-site. Additionally, since this process essentially eliminates the TPH component of the soil, there is no long-term liability associated with the material after treatment. Excavated soils must be sampled and profiled according to specific requirements prior to acceptance at Port Costa. The light weight aggregated production process would be appropriate for treating weathered bedrock, such as the material present at UST site 510, provided the material is free of large rocks. Although soil profiling may require that the excavated soils remain on-site for two or more weeks, light-weight aggregate production was retained for further consideration as a treatment technology for soils and weathered bedrock at the NMC facility.

Asphalt Encapsulation. This technology utilizes an asphalt emulsion to encapsulate hydrocarbons in soil. This process, developed by Encapco, occurs on-site and involves mixing the excavated soils with an encapsulating emulsion that binds the contaminants and soils while creating a monolithic asphaltic material. The resulting material can then be used as road base or other purposes where asphalt is commonly used. The off-gases produced during this process are less than those produced with similar recycling options since the process does not involve adding heat to the mixture. This process has been successfully applied for the remediation of soils containing hydrocarbons and metals and has been approved by regulating agencies for site-specific applications.

Asphalt encapsulation could be implemented at the NMC site and the resulting material could be used at UST site 510 or elsewhere at the base. This on-site process is most economical when a large volume of soil is to be treated. Costs range from $35 per ton to $90 per ton. Because of mobilization and demobilization costs, this process is more expensive when only a small volume of soil is involved. Since, UST

site 510 is estimated to contain less than 200 cubic yards of impacted soil, this soil treatment alternative was eliminated from further consideration due to cost considerations.

Off-Site Landfill Disposal

With this technology, excavated TPH-affected soils would be transported off-site for disposal at an appropriate landfill. Forward Landfill of Stockton, California, a Class II landfill, accepts soils affected by both gasoline and diesel.

Landfill disposal is a quick, effective, and proven method for dealing with TPH-affected soils. This technology is also easily implemented because it requires only conventional construction equipment. However, TPH-affected soils must be tested and profiled according to individual landfill requirements prior to acceptance. Furthermore, because the soil is landfilled and not treated, the potential for long-term liability remains. Based on these considerations, disposal of affected soils in a landfill is considered to be a viable option, and will be retained for additional evaluation.

In-Situ Soil Venting/Vapor Extraction

This technology involves either passive or active removal of soil vapor from unsaturated soils, without excavation. Passive soil venting would consist of the installation of perforated pipes into the affected soils to allow the volatile hydrocarbon constituents to vent.

In vapor extraction (active venting), a vacuum is applied to the perforated pipes to remove hydrocarbon-laden vapor from the soil pores. The vapor is then either treated (via a thermal oxidizer or granular activated carbon unit) or released directly to the atmosphere (with an approved air permit).

Vapor extraction has been proven to be effective for treating volatile hydrocarbons at numerous sites and over a wide range of operating conditions. This soil treatment technology is implementable because it requires only the use of conventional drilling equipment and a vapor treatment unit. The high permeability of the weathered bedrock at this site make it conducive to vapor extraction. However, the possible presence of fractures and faults in the geologic unit located directly below the weathered bedrock may result in preferential channeling through the more permeable faults and fractures. In addition, the relatively low volume of soils believed to require treatment make this technology impractical from a cost standpoint. Regardless of these

factors, soil vapor extraction was retained further consideration at UST site 510.

In Situ Bioremediation

In situ bioremediation is a treatment technology that can be used for remediating soil affected by both volatile and less volatile hydrocarbons, without excavation. Two options are discussed below.

Enhanced Natural Biodegradation

This technology involves injecting oxygen and specific nutrients (i.e., nitrogen, phosphorous) into the affected soils to stimulate and increase the rate of natural biodegradation of diesel and gasoline compounds. The rate of biodegradation in the subsurface is usually limited by the transport of oxygen to the micro-organisms. The biodegradation process converts organic wastes into biomass, producing carbon dioxide, water, and inorganic salts as byproducts.

This technology would require bench and pilot scale testing to evaluate it's feasibility at the NMC site. In addition, there is some concern that if the addition of nitrogen and phosphorous nutrients to the subsurface is not properly controlled, these compounds may reach groundwater to form nitrates and phosphates. Finally, the limited volume of soils impacted make this technology impractical from a cost standpoint. For these reasons, enhanced natural biodegradation was eliminated from further consideration.

Microbial Biodegradation

Microbial biodegradation involves injecting micro-organisms and specific nutrients into the soil to biodegrade the hydrocarbon compounds. The microbes employed could be either cultured native micro-organisms, which are adapted to local conditions, or commercially available micro-organisms specifically tailored to treat hydrocarbons. However, the same concerns discussed above for enhanced biodegradation apply; therefore, this technology was eliminated from further consideration.

Containment

Containment involves installing engineering controls which limit or prevent contaminant migration. One method of containment could involve installing a cap over the site to prevent downward migration of contaminants which could occur from surface water infiltration. At

UST site 510, this could involve capping the grassy area that lies above the former USTs with asphalt.

This alternative is effective at sites where the groundwater does not come in contact with the affected soil, and where water infiltration (i.e., from irrigation or precipitation) is the only factor that could cause downward migration of contaminants. The installation of an asphalt cap would also be easily implemented and inexpensive in that conventional construction equipment and materials would be required. Therefore, this alternative was retained for further consideration.

No Action

In the no action alternative, no measures would be taken to contain or treat the hydrocarbons at the site. This passive response would employ natural biodegradation as the only treatment.

This technology is easily implementable, as no action is required. Even though hydrocarbons readily biodegrade, natural degradation requires a substantial amount of time. Because the extent of impacted soil is limited to a small area, this alternative was retained for further consideration.

EVALUATION OF REMEDIAL ALTERNATIVES

In this section, the groundwater remediation technologies that passed the preliminary screening process in Section 5 are evaluated for use at Site 510. The remedial alternatives presented in this section were developed using one or a combination of the technologies presented in Section 5. As part of the evaluation, each alternative is numerically scored for each site and the most-favored alternative for the site is identified.

The remedial alternatives incorporating various technologies selected for final evaluation are listed below.

Alternative 1: No action

Alternative 2: Containment

Alternative 3: Soil excavation and off-site disposal or recycling

Alternative 4: Soil vapor extraction

Evaluation Criteria

Nine criteria used to fully evaluate the final selected remedial alternatives are described below. These criteria are taken directly from the NCP at 40 CFR § 300.430(e)(9)(iii).

The detailed evaluation criteria are grouped into three categories: Threshold Criteria, Primary Balancing Criteria, and Modifying Criteria. In general, the recommended alternative must satisfy the Threshold Criteria, achieve a good balance among the Primary Balancing Criteria, and be unlikely to be influenced by the Modifying Criteria. A numerical scoring system was developed to rank each alternative with respect to each evaluation criterion for each site. The following discussions describe the evaluation criteria and present the Remedial Alternative Scoring System.

Threshold Criteria

Threshold criteria are those essential criteria that must be satisfied before an alternative can be selected as the recommended alternative. The two threshold criteria are:

Overall protection of human health and the environment

This criterion assesses whether each alternative provides adequate protection of human health and the environment. It evaluates how individual site risks posed through each exposure pathway are being eliminated, reduced, or controlled through treatment, engineering, or institutional controls. Consideration of whether an alternative poses any unacceptable short-term impacts is also made under this criterion. An alternative that is not sufficiently protective of human health and the environment is eliminated by this criterion.

Compliance with Target Cleanup Goals

This evaluation criterion is used to determine whether each alternative will meet the target cleanup goals. Each alternative is evaluated to determine compliance with chemical-specific and location-specific target cleanup goals.

Primary Balancing Criteria

Five Primary Balancing Criteria are specified by the NCP. The five criteria are:

Long-term effectiveness and permanence

The long-term effectiveness and permanence criterion measures the long-term reliability of the alternative, including any uncertainties that may be associated with the alternative. It also assesses the permanence of the proposed alternative. This criterion includes an evaluation of the magnitude of residual risk posed by the presence of untreated waste or treatment residuals, and an assessment of the reliability of the proposed equipment and remediation process. Finally, it evaluates the adequacy of institutional actions or containment measures and assesses the potential need to replace technical components of the alternative.

Short-term effectiveness

The short-term effectiveness criterion measures the short-term risks to the community that might occur during implementation of the remediation. It also evaluates the risk to workers conducting the remedial activities and the time required to implement the proposed

remediation. Finally, this criterion assesses the potential impact to the environment during remediation activities and the effectiveness of the proposed mitigation measures.

Implementability

The implementability criterion measures the ease or difficulty of conducting the proposed remediation. Included in this criterion are the technical feasibility of the project, the reliability of the technology, the ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of the remediation. It also measures the administrative feasibility of implementing the proposed alternative, including the time required to obtain proper permits and approvals. Additionally, this criterion assesses the availability of the required equipment, materials, and services, as well as site-specific constraints such as availability of treatment areas. This criterion favors proven technologies that are widely available and simple to construct and operate.

Reduction in toxicity, mobility, or volume of the contaminants through treatment

This criterion measures the degree to which the alternative will achieve a permanent reduction in toxicity, mobility, or volume of the compounds of concern. This criterion also assesses how treatment is used to address the principal threats posed by the site. It evaluates the degree to which the treatment is irreversible and the residual compounds that will remain following treatment. This criterion favors alternatives that utilize treatment to the maximum extent possible and generate little or no residual wastes.

Total cost

The cost criterion assesses the financial burden associated with implementing the alternative. Factors addressed include capital costs (both direct and indirect) and operation and maintenance (O&M) costs. Direct capital costs include construction costs or expenditures for labor, materials, equipment, and subcontractors associated with the remedial action. Indirect capital costs include costs associated with engineering, permitting, construction management, and other services necessary to carry out the remedial action. Operation and maintenance costs include labor and materials associated with the extended O&M of each remedial action. Due to the uncertainty associated with remedial actions, a 15 percent contingency has been applied to all direct and indirect costs. A maximum period of performance of 30 years is assumed for each alternative.

The Primary Balancing Criteria recognize that there are conflicting priorities inherent in any cleanup action. The greatest weight among the balancing criteria is given to long-term effectiveness and permanence; however, this emphasis must be weighed against the costs and short-term risks imposed by the alternative that may provide the greatest long-term effectiveness. In addition, the most permanent alternative may not be implementable due to regulatory or site-specific constraints. Similarly, an alternative that provides reduction in toxicity, mobility, or volume of the contaminants through treatment may be feasible; however, it also may pose unacceptable short-term risks, or excessively high costs given the incremental level of protection achieved by the alternative when compared to another acceptable alternative.

Modifying Criteria

Modifying criteria are typically applied during the Remedial Action Plan (RAP) process. The two modifying criteria are:

Local agency acceptance

This criterion evaluates the potential for acceptance of the alternative by the local government; in this case, the local governmental agency is the Regional Water Quality Control Board - San Francisco Bay Region.

Community acceptance

This criterion assesses the community's potential concerns and priorities with respect to the proposed alternative.

Evaluation of Selected Remedial Alternatives

The final remedial alternatives selected are evaluated with respect to the nine previously identified criteria and are summarized below. Costs associated with each alternative at each site are summarized in Table 6-1.

Alternative 1: No Action

Alternative 1 is the No Action Alternative. With this alternative, no action would be taken to control site-related risks. Alternative 1 employs natural degradation as the only treatment. This alternative is used as a baseline for comparison to other alternatives.

Alternative 1 provides no control of TPH- and BTEX-affected soil. Because no action is taken, this alternative may not meet the target cleanup goals. However, since the potential risk to groundwater that is associated with leaving the soil in place has not been determined, it is difficult to assess whether the no action alternative would pose a long term risk to groundwater.

The no action alternative poses no additional short-term risk because there are no on-site activities to expose site workers or the public to remediation-related hazards. In addition, there are no implementation concerns because no action would be performed. This alternative has no costs.

This alternative may be appropriate for UST site 510. Institutional controls, such as restricting excavation in and construction of buildings over the affected area. Since the alternative does not include treatment, no reduction in toxicity, mobility, or volume through treatment would occur. The acceptance of this alternative by the local government and the community will depend upon the approved final cleanup goals.

Alternative 2: Containment

Alternative 2 involves replacing the grassy area currently present over the former USTs and affected soils with asphalt.

An asphalt cap would be an effective method of controlling downward migration of the hydrocarbons remaining in the subsurface soils. Although there is currently no data indicating that the groundwater has been impacted, an asphalt cap would significantly reduce contaminant mobility and the possibility of future impact to groundwater. By restricting construction in the immediate vicinity of the impacted soil, the potential for exposing people to soil vapor due to upward volatilization would be mitigated.

The installation of an asphalt cap would be easy to implement, moderately expensive, and would comply with most the evaluation criteria. The costs associated with this alternative are detailed on Table 6-2 and summarized on Table 6-1.

Alternative 3: Soil Excavation and Off-Site Disposal or Recycling

With Alternative 3, affected soils and weathered bedrock material would be excavated and transported off-site for landfill disposal or recycling. Clean overburden soils would be stockpiled on site then

later returned to the excavation. The remainder of the excavation would be filled with certified clean backfill. The site would then be restored to its original condition.

Excavation would be an effective method of reducing the volume of contaminants in the soil over the short and long term. Removing the impacted soil would eliminate the potential threat to groundwater and would theoretically allow unrestricted development of the property. Organic vapor monitoring would protect workers and the public from short term exposure to VOCs. This alternative may be difficult to implement in that the presence of more competent bedrock could present difficult excavating conditions. The depth of the excavation (15 feet bgs or more) would require space-consuming sloping or costly shoring to prevent sidewall cave-in.

Alternative 3 would comply with all of the evaluation criteria. Costs associated with Alternative 3 are detailed in Table 6-3 and summarized in Table 6-1.

Alternative 4: Soil Vapor Extraction

Alternative 4 utilizes soil vapor extraction (SVE) to remediate the TPH-affected soil. Implementation of a SVE system would at UST site 510 would involve installing one or more vapor extraction wells in the area of highest hydrocarbon impact and pilot testing to determine optimal extraction rates. Required equipment would include a vapor extraction unit, an electrical panel, vapor-phase activated carbon filters, and an enclosure to protect the equipment. Operation and maintenance (O&M) requirements would include routine equipment inspections, monitoring and sampling of vapor emissions, complying with BAAQMD permit requirements, and facilitating carbon changeouts. Analyzing the vapors for BTEX would provide information on the SVE system effectiveness.

Alternative 4 would be an effective remediation method for reducing TPH and BTEX concentrations in the soil provided the extraction wells can be located to achieve effective vapor capture within the affected soil. The potential presence of faults and fractures in the bedrock may cause preferential flow pathways around and below the affected soil. Alternative 4 would be protective of human health and the environment because it would reduce the volume of contaminants in the soil. Short term exposure to the public would be eliminated using standard health and safety precautions. The installation of a SVE system at UST site may be relatively inexpensive; however, pilot test and O&M costs may render this alternative cost prohibitive.

Alternative 4 fulfills all the evaluation criteria for UST site 510. It would likely gain regulatory agency approval. However, the long term operation of an SVE system may not gain community acceptance since it would likely impede the progress of base redevelopment while potentially offering little benefit. Capital and annual costs associated with Alternative 4 detailed in Table 6-4 and summarized in Table 6-1.

Remedial Alternative Scoring

A scoring system was developed to rank the selected remedial alternatives. The system assigned one of the following initial scores to each alternative for each evaluation criteria:

- 3 (Very Good), if an alternative exceeded the objectives of a criterion or represented a significant net positive impact;
- 2 (Good), if an alternative met the criterion objectives or represented a slight positive impact;
- 1 (Neutral), if the positive impacts of an alternative were offset equally by negative impacts; or
- -1 (Poor), if an alternative failed to meet the criterion objectives or represented a net negative impact.

In addition, a weighting factor was applied to each relative rating score based on the criteria category to which it belonged. The weighting factors associated with each of the three criteria categories are:

- 2.0 for Threshold Criteria;
- 1.5 for Primary Balancing Criteria; and
- 1.0 for Modifying Criteria.

The initial score was multiplied by the weighting factor to determine the final score for each alternative for each evaluation criterion. Finally, the weighted scores for each alternative were summed to determine the final alternative score. The results of the comparative evaluation of alternatives and the numerical score achieved by each alternative provided the technical basis for choosing the recommended remedial alternative.

Recommended Remedial Alternative

The results of the criterion-specific numerical scoring for each remedial alternative for Site 510 are presented in Table 6-5. Results of the remedial alternative scoring and the recommended remedial alternative is discussed below.

The remedial alternative scoring indicates that Alternative 1, with a score of 28, would best fit the criteria for UST site 510. Alternative 2 ranked second because the costs associated with the installation of an asphalt cap outweigh the perceived benefit. Alternatives 3 and 4 ranked fourth and third because the small quantity of impacted soil remaining in the ground does not warrant the high costs and difficulties associated with implementation excavation or SVE.

The no action alternative, combined with institutional controls, such as restricting excavation in and construction of buildings over the affected area, is the recommended remedial alternative for Site 510. Implementation of Alternative 1 would require no immediate action and no cost. Closure of UST site 510 will be considered at a later date and will be based on the PEA and final cleanup goals.

Table 6-1

Summary of Costs for Remedial Alternatives
UST Site 510
Naval Medical Center
Oakland, California

REMEDIAL ALTERNATIVE	Capital Cost	Annual Cost
Alternative 1	$0	$0
Alternative 2	$25,350	$0
Alternative 3	$93,760	$0
Alternative 4	$62,310	$43,340

Remedial Alternatives:

1: No action.

2: Containment.

3: Soil excavation and off-site disposal or recycling.

4: Soil vapor extraction and treatment with activated carbon.

Table 6-2

Estimated Costs for Containment
UST Site 510
Naval Medical Center
Oakland, California

ESTIMATED CAPITAL COSTS	COST/UNIT	UNITS	COST
Remove and stockpile surface material including concrete curbs and grass (ERM estimate)	$5,000	1	$5,000
Transport and dispose stockpiled material at Class III landfill; 160 cubic yards at $24/cubic yard (ERM estimate)	$24	160	$3,840
Resurface site with asphalt, assume 60 square yards at $15/sq. yd. (ERM estimate)	$15	60	$900
Miscellaneous supplies (ERM estimate)	$1,000	1	$1,000
Reporting - document activities and results; site closure report			$5,000
ESTIMATED CAPITAL COSTS SUBTOTAL:			$15,740
Engineering, design, and labor (20% of above)			$3,150
Project Management (20% of above)*			$3,150
ESTIMATED OVERALL PROJECT SUBTOTAL:			$22,040
Contingency (15% of Subtotal)			$3,310
SITE 510 - ESTIMATED TOTAL CAPITAL COSTS:			$25,350

* Does not include regulatory meetings and other meetings.

Cost estimates based on November 1995 quotes and prices.

Table 6-3

Estimated Costs for Soil Excavation and Off-Site Disposal/Recycling
UST Site 510
Naval Medical Center
Oakland, California

ESTIMATED CAPITAL COSTS	COST/UNIT	UNITS	COST
Remove and dispose surface material including asphalt, concrete, and grass (ERM estimate)	$2,500	1	$2,500
Excavate and stockpile clean overburden soil at $5/cubic yard (ERM estimate)	$5	980	$4,900
Excavate, load, transport, and dispose or recycle hydrocarbon-affected soil at $104/cubic yard and an assumed soil density of 1.5 tons per cubic yard (ERM estimate, vendor quotes)	$104	120	$12,480
Excavation sidewall sample analysis at a cost of $250/sample for rapid turn-around	$250	10	$2,500
Soil profiling - cost includes analysis of 2 soil samples and form completion (laboratory quotes and ERM estimate)	$1,500	1	$1,500
Replace clean stockpiled soil into excavation and compact at $6/cubic yard (ERM estimate)	$6	980	$5,880
Backfill excavation with clean imported soil - includes $13.50/ton for supply, transportation, placement, and compaction of soil and compaction testing (vendor quote); 120 cubic yards required with an assumed soil density of 1.3 tons/cubic yard (156 tons)	$13.50	156	$2,110
Fencing to secure site - includes rental, delivery and setup of 480 linear feet of fencing at $690 per 120 linear feet (vendor quote)	$690	4	$2,760
Surveying excavation - includes field work and drawing preparation (vendor quote)	$1,540	1	$1,540
Resurface site with asphalt and returning site to pre-excavation conditions (ERM estimate)	$8,060	1	$8,060
Miscellaneous supplies (ERM estimate)	$2,000	1	$2,000
Reporting - document activities and results; site closure report			$12,000
ESTIMATED CAPITAL COSTS SUBTOTAL:			$58,230
Engineering, design, and labor (20% of above)			$11,650
Project Management (20% of above)*			$11,650
ESTIMATED OVERALL PROJECT SUBTOTAL:			$81,530
Contingency (15% of Subtotal)			$12,230
SITE 510- ESTIMATED TOTAL CAPITAL COSTS:			$93,760

* Does not include regulatory meetings and other meetings.

Cost estimates based on November 1995 quotes and prices.

Table 6-4

Estimated Costs for Soil Vapor Extraction
UST Site 510
Naval Medical Center
Oakland, California

CAPITAL COSTS	COST/UNIT	UNITS	COST
Two vapor extraction wells traffic boxes includes materials and installation (ERM estimate)	$1,300	2	$2,600
Vapor extraction system (purchase and installation) - includes vapor extraction unit and two 175-lb activated carbon filters	$11,500	1	$11,500
Below-grade lines - includes trenching, installation, materials, and trench backfilling at $30/linear foot	$30	65	$1,950
Electrical Set up	$2,500	1	$2,500
Disposal of drill cuttings from well installation	$150	1	$150
VES system startup - includes vapor monitoring, sampling, analysis of 20 vapor samples, and initial air permitting costs (ERM estimate)	$6,000	1	$6,000
Miscellaneous materials	$2,000	1	$2,000
Reporting - document installation and startup activities, site closure reporting			$12,000
		SUBTOTAL:	$38,700
Engineering, design, and labor (25% of above)			$7,740
Project management (20% of above)*			$7,740
		ESTIMATED CAPITAL COST:	$54,180
Contingency (15% of total)			$8,130
		TOTAL ESTIMATED CAPITAL COST:	$62,310

ANNUAL COSTS	COST/UNIT	UNITS/YEAR	COST
Electricity (ERM Estimate)	$3,000	1	$3,000
Air permit - annual permit fee (BAAQMD quote) and application renewal (ERM estimate)	$500	1	$500
Treatment system O&M - includes routine maintenance and monthly vapor sampling and analysis (ERM estimate)	$1,200	12	$14,400
Carbon filter changeout - assume 3 single filter changeouts required per year at $745 per changeout (vendor quote)	$750	3	$2,250
Quarterly reporting	$2,500	4	$10,000
		SUBTOTAL:	$30,150
Project Management (25% of above)			$7,540
		ESTIMATED ANNUAL COSTS:	$37,690
Contingency (15% of total)			$5,650
		TOTAL ESTIMATED ANNUAL COSTS:	$43,340

NOTES

* Does not include regulatory meetings and other meetings.

Costs based on November 1995 quotes and prices.

Table 6-5

Selected Remedial Alternative Evaluation

UST Site 510

Naval Medical Center

Oakland, California

EVALUATION CRITERIA	PRELIMINARY SCORE				WEIGHTED SCORE			
	1	2	3	4	1	2	3	4
Threshold Criteria								
Overall Protection of Human Health and the Environment	2	2	2	3	4	4	4	6
Compliance with Remedial Action Goals	1	1	3	2	2	2	6	4
Primary Balancing Criteria								
Long-term Effectiveness	2	3	3	3	3	4.5	4.5	4.5
Short-term Effectiveness	3	3	1	3	4.5	4.5	1.5	4.5
Implementability	3	2	1	1	4.5	3	1.5	1.5
Reduction in Toxicity, Volume, or Mobility of Chemicals	1	2	3	2	1.5	3	4.5	3
Total Cost	3	1	-1	-1	4.5	1.5	-1.5	-1.5
Modifying Criteria								
Local Agency Acceptance	2	2	2	2	2	2	2	2
Community Acceptance	2	2	1	1	2	2	1	1
TOTAL WEIGHTED SCORE FOR REMEDIAL ALTERNATIVE:					28	26.5	23.5	25

Notes

ALTERNATIVE RELATIVE RATING SYSTEM

3: Very Good (Exceeds Criterion Objective, Positive Impact on Criterion)
2: Good (Meets Criterion Objective or Slight Positive Impact)
1: Neutral (No Effect Either Way, Negative Impacts Counter Positive Impacts)
-1: Poor (Does not Fulfill Criterion, Negative Impact)

CRITERIA WEIGHT FACTOR

2.0: Threshold Criteria
1.5: Primary Balancing Criteria
1.0: Modifying Criteria

SELECTED REMEDIAL ALTERNATIVES

1. No action.
2. Containment.
3. Soil excavation and off-site disposal or recycling.
4. Soil vapor extraction and treatment with activated carbon.

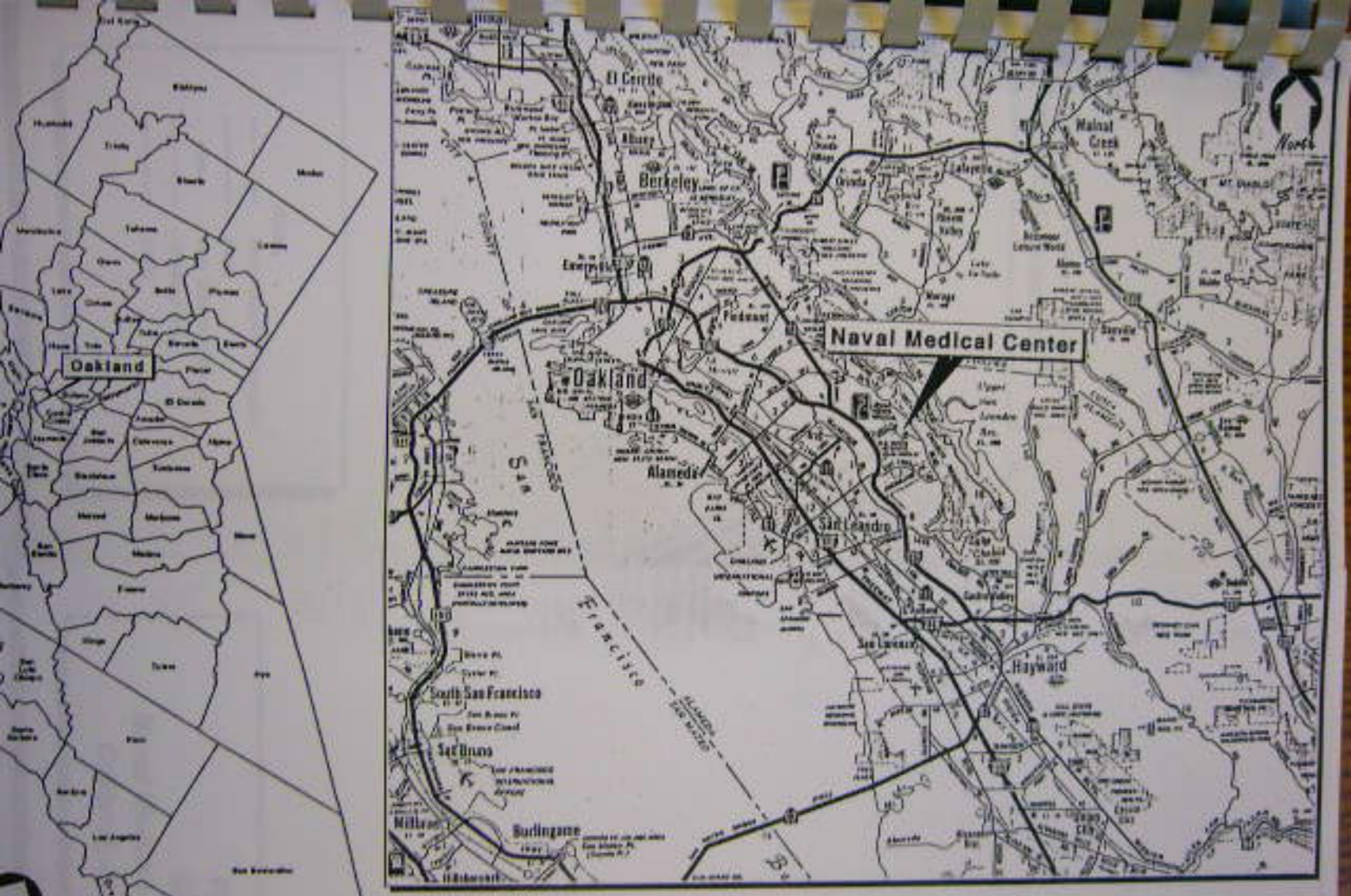


Figure 1
Site Location Map
Naval Medical Center


Former UST Location 510
North
LEGEND
NAVY PROPERTY BOUNDARY
FENCE
MAIN STATION ENTRANCE
RETAINING WALL
CREEK
550
0
1250
2500

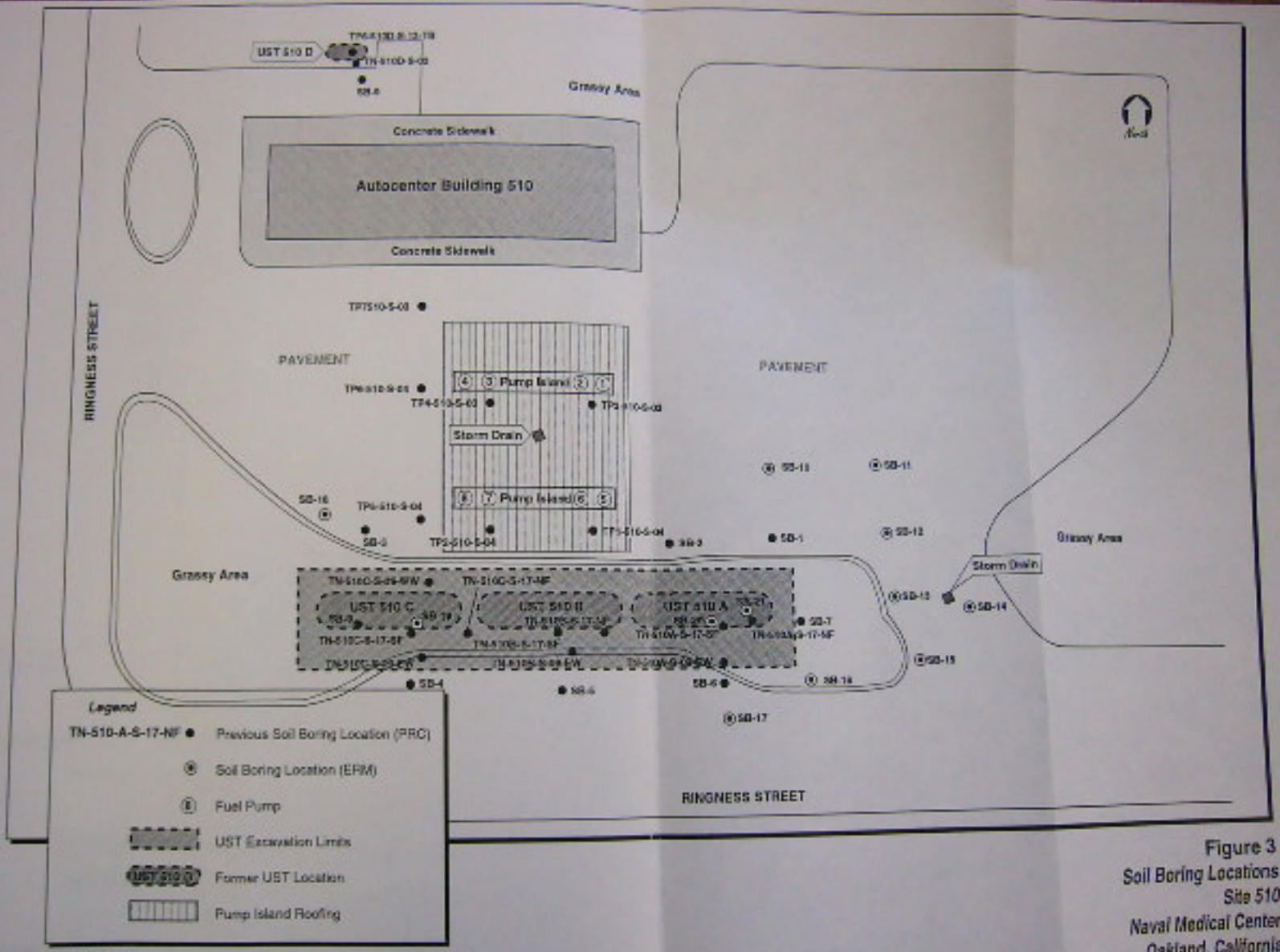
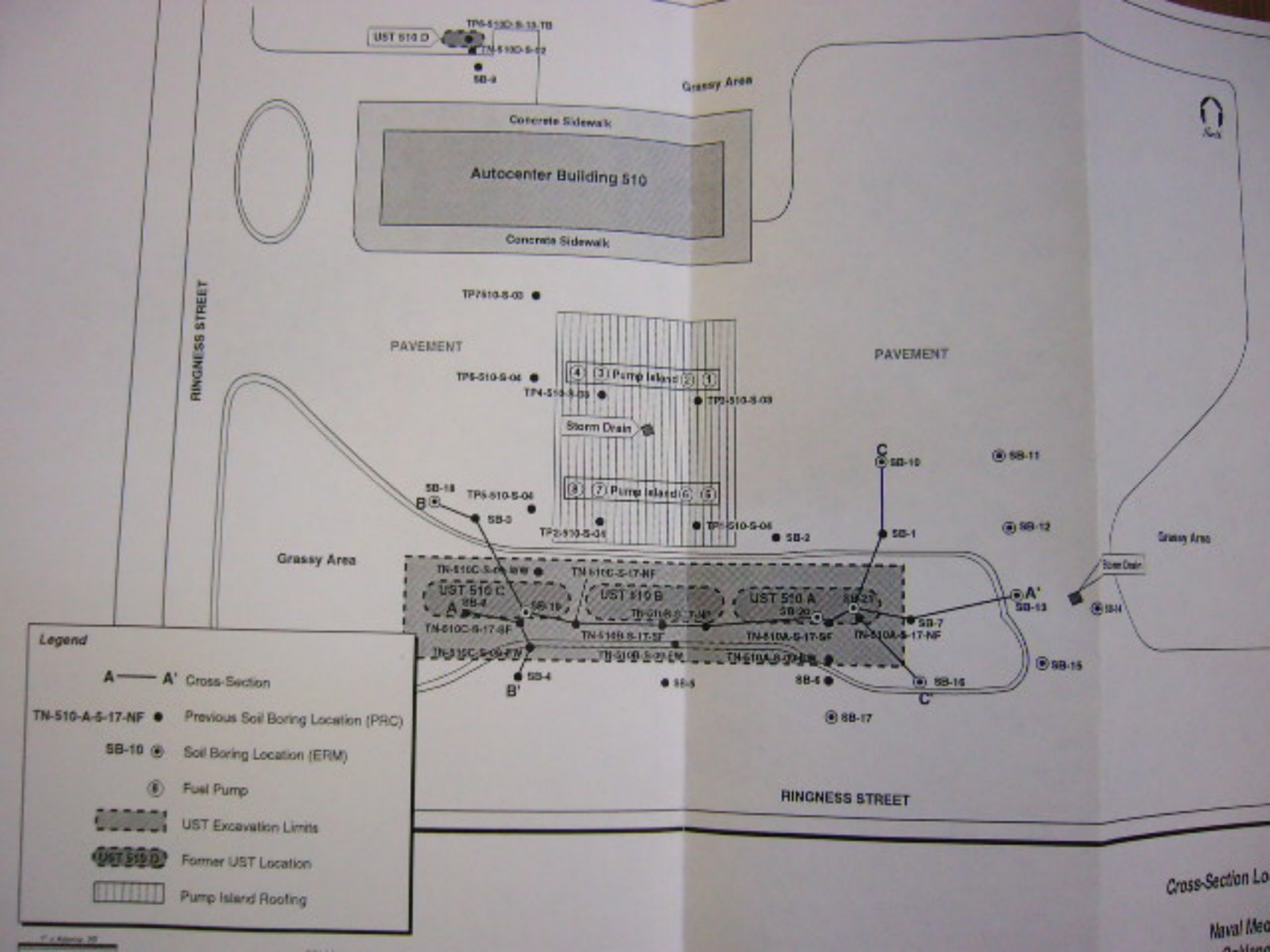


Figure 3
Soil Boring Locations
Site 510
Naval Medical Center
Oakland, California

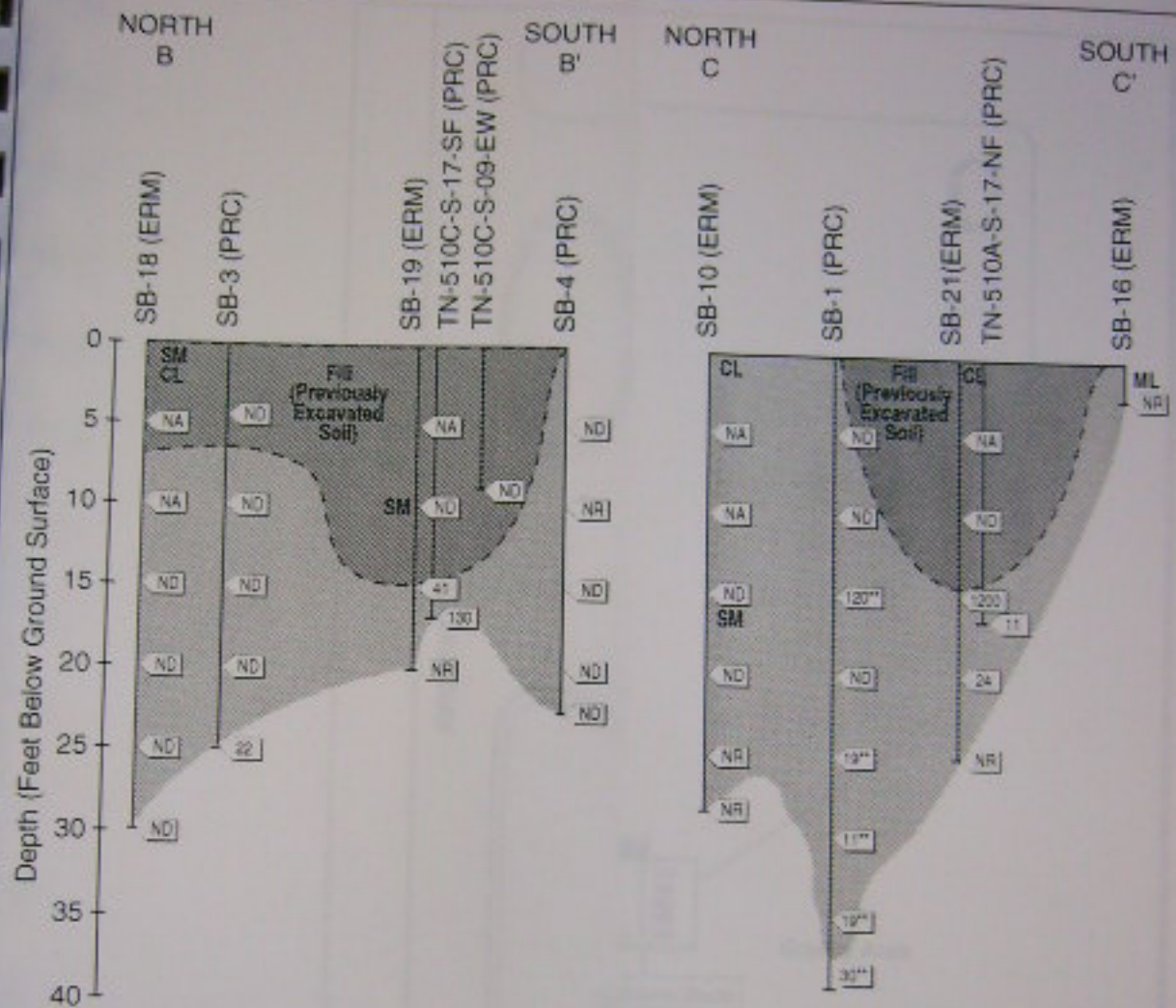


UST 510 D
Grassy Area
Concrete Sidewalk
Autocenter Building 510
Concrete Sidewalk
RINGNESS STREET
PAVEMENT
PAVEMENT
Pump Island
Storm Drain
Pump Island
Grassy Area
Grassy Area
Storm Drain
UST 510 C
UST 510 B
UST 510 A
RINGNESS STREET
Legend
A —— A' Cross-Section
TN-510-A-5-17-NF Previous Soil Boring Location (PRC)
SB-10 Soil Boring Location (ERM)
Fuel Pump
UST Excavation Limits
Former UST Location
Pump Island Roofing

Legend

- Fill (Weathered Bedrock, Silt, Sand & Clay)
- Weathered Bedrock
- NA — Not Analyzed
- ND — Not Detected
- NR — No Sample Recovery
- 4,000 — Soil Boring or Trench with Sample Interval and TPH Gasoline Concentration (mg/kg)
- SM, CL — USCS Soil Classification

Fig



Legend

- Fill (Weathered Bedrock, Silt, Sand & Clay)
- Weathered Bedrock
- NA — Not Analyzed
- ND — Not Detected
- NR — No Sample Recovery
- ** — Sample Chromatogam does not match Gasoline Standard
- 30** — Soil Boring or Trench with Sample Interval and TPH Gasoline Concentration (mg/kg)
- SM, CL — USCS Soil Classification

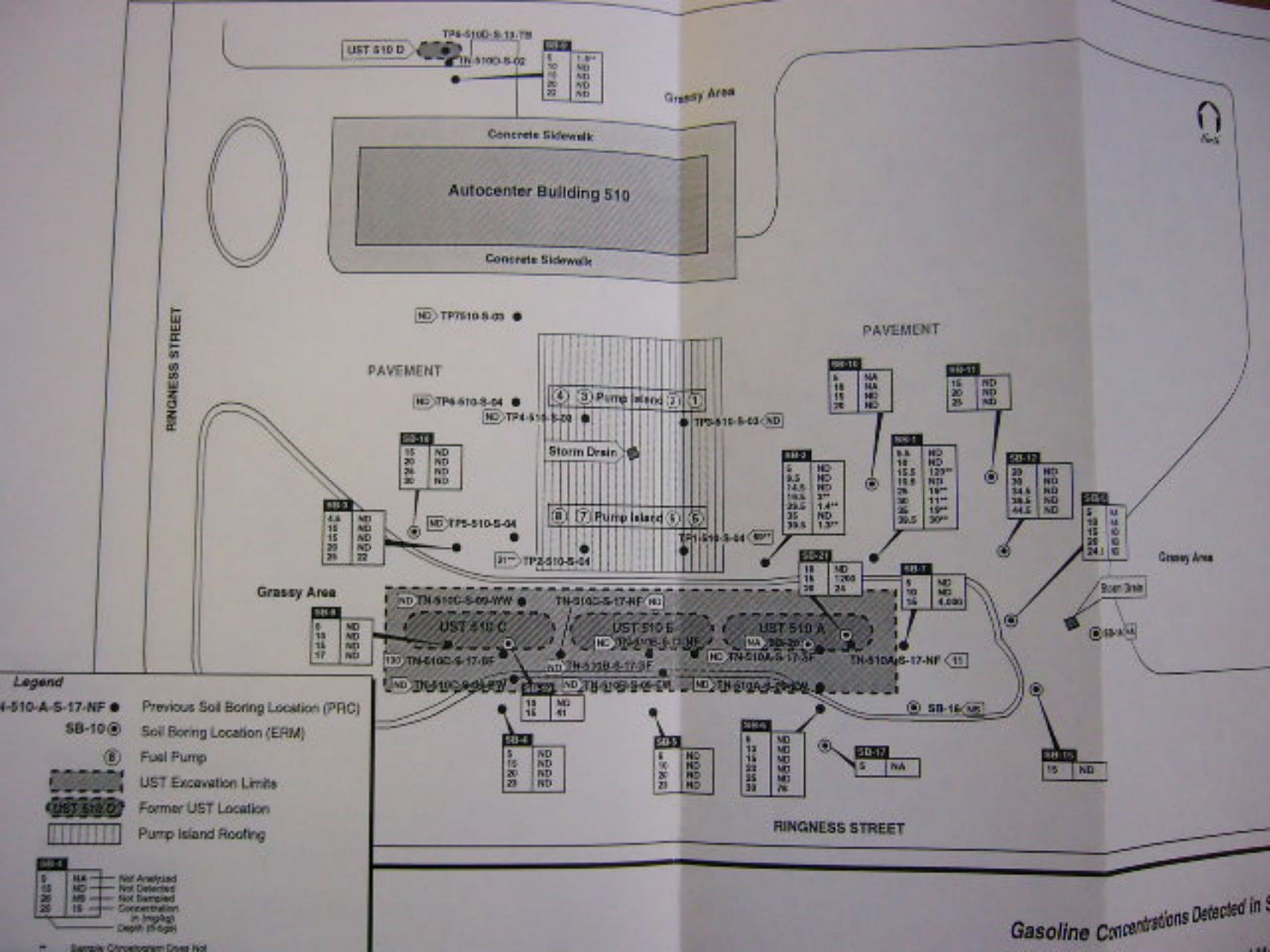
0 20

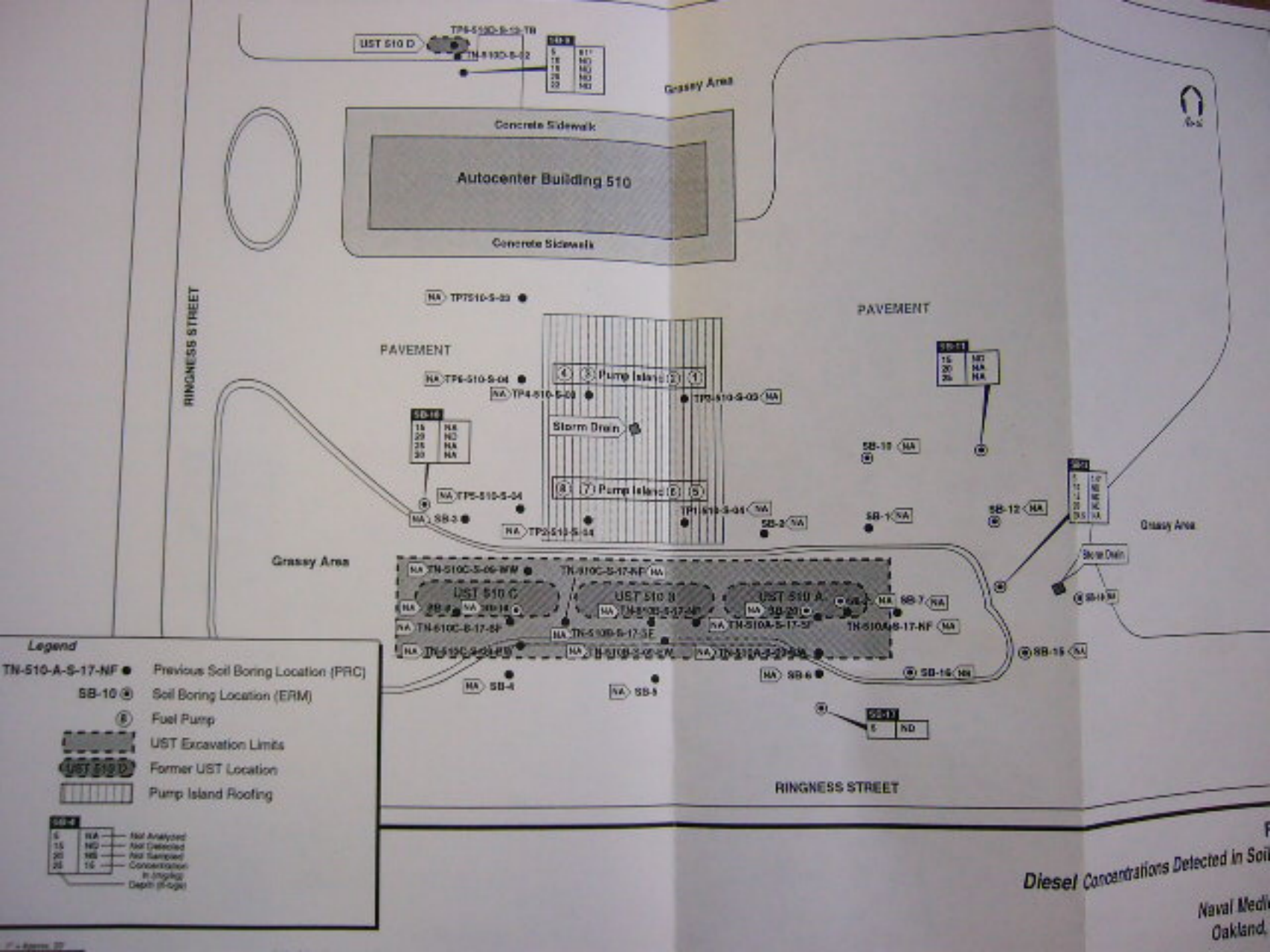
Figure

Cross Sections B-B' & C-

Site 5

Naval Medical Cent


UST 510 D
Grassy Area
Concrete Sidewalk
Autocenter Building 510
Concrete Sidewalk
RINGNESS STREET
PAVEMENT
PAVEMENT
Storm Drain
Pump Island
Pump Island
Grassy Area
Grassy Area
UST 510 C
UST 510 B
UST 510 A
RINGNESS STREET
Legend
Previous Soil Boring Location (PRC)
Soil Boring Location (ERM)
Fuel Pump
UST Excavation Limits
Former UST Location
Pump Island Roofing
Not Analyzed
Not Detected
Not Sampled
Concentration in (mg/kg)
Depth (ft-bgs)
Gasoline Concentrations Detected in


Autocenter Building 510
Concrete Sidewalk
Concrete Sidewalk
Grassy Area
Grassy Area
Grassy Area
RINGNESS STREET
RINGNESS STREET
PAVEMENT
PAVEMENT
Pump Island
Pump Island
Storm Drain
Storm Drain
UST 510 C
UST 510 B
UST 510 A
UST 510 D
Legend
Previous Soil Boring Location (PRC)
Soil Boring Location (ERM)
Fuel Pump
UST Excavation Limits
Former UST Location
Pump Island Roofing
Diesel Concentrations Detected in Soil

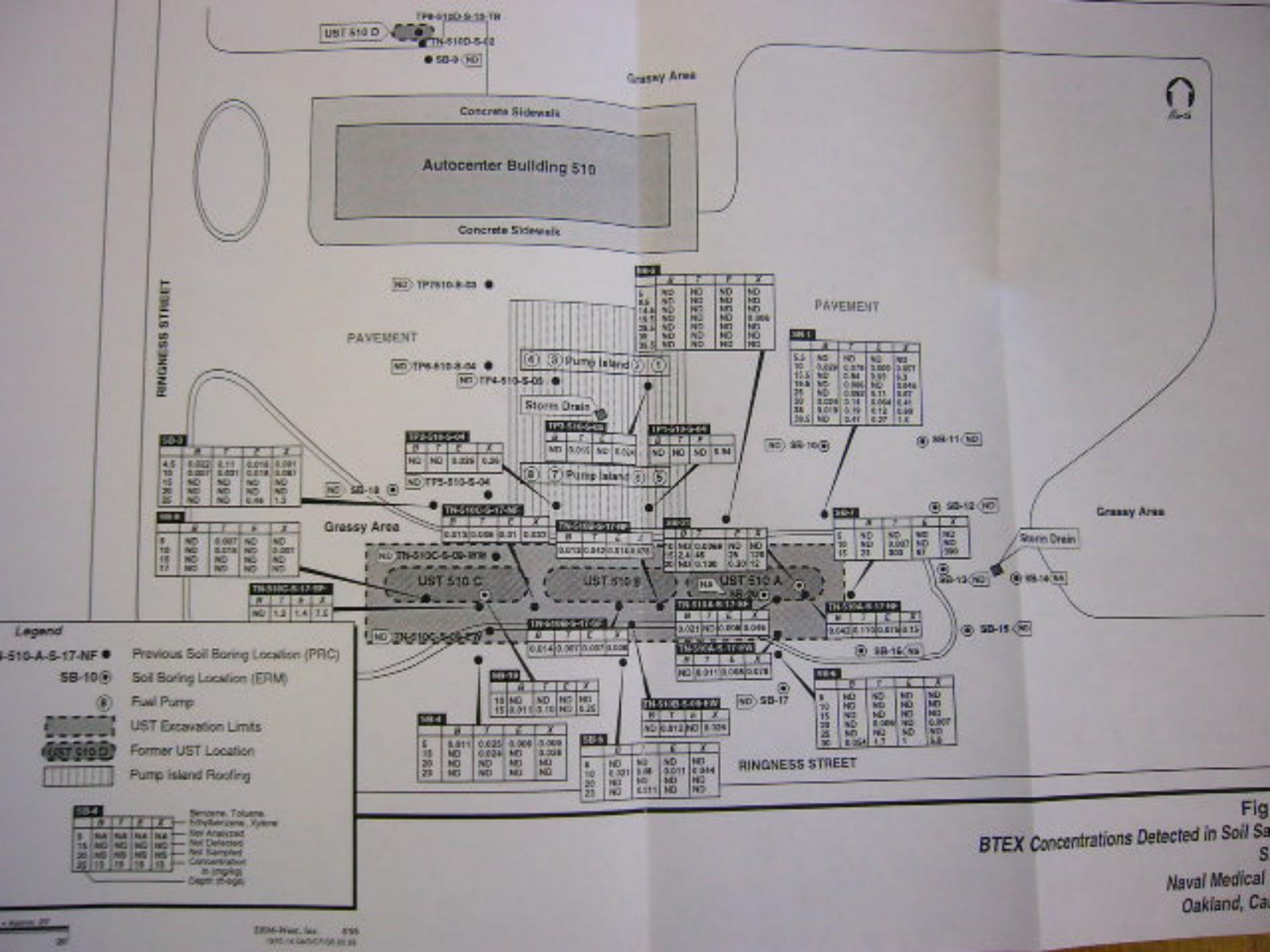


Fig
BTEX Concentrations Detected in Soil Sa
S
Naval Medical
Oakland, Ca

Environmental Resources Management

Site 510 — Drilling Lo

Project: Naval Medical Center — Owner: U.S. Navy

Location: Oakland, California — Project Number: 1970.14.03

Boring Number: SB-10 — Total Depth of Auger: 27.00' — Auger Diameter: 6.00"

Surface Elevation: NA — Water Level: Initial: NA — 24-hrs.: NA

Total Depth of Soil Sampler: 28.50' — Total Depth of Ground Water Sampler: NA

Ground Water Sample Interval(s): NA

Drilling Company: Wayne Drilling — Drilling Method: Hollow-stem Auger

Driller: Gary McCoig — Log By: Steven Berka — Date Drilled: 4/25/95

Sketch Map: SB-2, SB-10, SB-1, Grass area, Ringgold Street

Notes: CME-75 Drill Rig

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample/Blow Interval/Recovery	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
					Haul Augered to 4'
1	weathered Bedrock				0-2" asphalt paving
2					white to tan, weathered bedrock, loose, dry
3					
4					as above, some silt and clay
5				8,20,48	
6			1.6		as above
7	weathered Rock			14:20	
8					
9					
10	CL			13,15,20	
11			4.0		orange to brown, silty CLAY, with weathered bedrock,
12				14:30	gray clay lenses, dry to moist
13					
14					
15				17,25,35	
16	SM		40		orange to brown, gravelly, silty SAND, fine to medium
17				14:40	grain, loose, trace clay, dry to moist, slight odor
18					(Petroleum-like)
19					
20				30,50/1"	
21	weathered bedrock		39		as above, gray bedrock at 20.5'
22				14:50	
23					Drilling becomes difficult at 22'
24					
25				50/1"	as above (from cuttings) no sample collected, very
26			NA	no recovery	difficult drilling at 25'
				15:00	

Site 510

Environmental Resources Management

Project Naval Medical Center Owner U.S. Navy

Location Oakland, California Project Number 1970.14.03

Boring Number SB-10 Total Depth of Auger 27.00' Auger Diameter 6.00"

Surface Elevation NA Water Level: Initial NA 24-hrs. NA

Total Depth of Soil Sampler 28.50' Total Depth of Ground Water Sampler NA

Ground Water Sample Interval(s) NA

Drilling Company Wayne Drilling Drilling Method Hollow-Stem Auger

Driller Gary Meloig Log By Steven Becker Date Drilled 4/25/95

Sketch Map

See Pa

Notes

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample / Blow Interval / Counts	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Mat
28	weathered Bedrock		NA	50/1" No Recovery	as above, refusal
29					
30					

Location Oakland, California | Project Number 1970.14.03

Boring Number SB-11 | Total Depth of Auger 25.00' | Auger Diameter 6.00"

Surface Elevation NM | Water Level: Initial N/A | 24-hrs. N/A

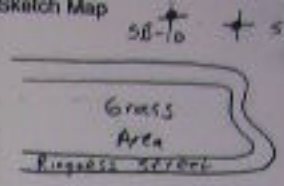
Total Depth of Soil Sampler 26.00' | Total Depth of Ground Water Sampler N/A

Ground Water Sample Interval(s) N/A

Drilling Company Uriah Drilling | Drilling Method Hollow-Stem Auger

Driller Gary McCorg | Log By Steven Recker | Date Drilled 1/25/95

Sketch Map



Notes CME-75 Drill Rig

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample / Blow Interval / Core Length	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
					Hand Augered to 4'
1					0-2" asphalt paving
2	OL				Orange to brown SILT, some clay, low plasticity, moist
3					
4					
5				M,3,(3)	
6	Weathered Bedrock		3.2	15:50	as above, some weathered bedrock
7					
8					
9					
10				7,18,28	
11	ML		3.2	16:00	orange to brown, sandy, gravelly SILT, weathered bedrock, dry to moist
12					
13					
14					
15	Weathered Bedrock		3.0	10,29,50/5"	as above, increased amount of weathered
16				16:10	some clay
17					
18					
19					
20			4.0	3,15,23	Drilling becomes difficult at 20'
21	Weathered Bedrock			16:20	weathered bedrock, orange to brown to whi
22					
23					
24					
25			3.5	20,50/4"	as above, very difficult drilling
26				16:35	Terminate boring due to difficult drilling

Environmental Resources Management

Site 510 — Drilling

Project: Naval Medical Center — Owner: U.S. Navy

Location: Oakland California — Project Number: 1970.14.03

Boring Number: SB-12 — Total Depth of Auger: 46.00' — Auger Diameter: 6.00"

Surface Elevation: NA — Water Level: Initial: NA — 24-hrs.: NM

Total Depth of Soil Sampler: 46.00' — Total Depth of Ground Water Sampler: NM

Ground Water Sample Interval(s): NM

Drilling Company: Wayne Drilling — Drilling Method: Hollow-stem Auger

Driller: Gary McCaig — Log By: Steven Becker — Date Drilled: 1/26/95

Sketch Map: SB-11, SB-12, Grass Area, Ringgold Street

Notes: CME-75 Drill Rig

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample / Core Interval / Count	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
					Hand Augered to 5'
1	AL				0-2" asphalt paving
2					Sandy Gravelly SILT, orange to brown, loose, dry to mo
3					
4				8, 11, 15	
5	weathered bedrock		5.1	08:30	orange to brown, weathered bedrock, silt and sand, c moist
6					
7					
8					
9				5, 17, 24	
10	AL weathered bedrock		5.2	08:40	orange to brown, sandy, clayey SILT, low plasticity, moist, weathered bedrock
11					
12					
13					
14	weathered bedrock		5.1	50/5" No Sample 2" recov	orange to brown to gray, weathered bedrock, dry, sample collected
15					
16					
17					
18					
19			4.6	30, 50/2" 09:10	as above
20	as above				Brown to green weathered bedrock, drilling rate
21					Drilling becomes very difficult at 21'
22					
23					
24			NA	50/5" No Recov	No recovery, no sample collected
25	as above				as above (from cuttings) some brown color
26					drilling becomes easier at 26'

Environmental Resources Management

Site 510 — Drill

Project Naval Medical Center — Owner U.S. Navy

Location Oakland, California — Project Number 1970.14.03

Boring Number SB-12 — Total Depth of Auger 46.00' — Auger Diameter 6.00"

Surface Elevation NA — Water Level: Initial NA — 24-hrs. NA

Total Depth of Soil Sampler 46.00' — Total Depth of Ground Water Sampler NA

Ground Water Sample Interval(s) NA

Drilling Company Wayne Drilling — Drilling Method Hollow-Stem Auger

Driller Gary McCoig — Log By Steven Parker — Date Drilled 4/26/95

Sketch Map: See Page 1

Notes

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample / Visual Interval / Count	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
28	weathered Bedrock				
29			wet enough sample	50/6"	Tan weathered bedrock, not enough sample for headspace analysis, dry
30					
31				09/45	
32					
33					
34	as above			36, 50/6"	
35			5.8		Green weathered bedrock, possible fractures
36					
37					
38					
39				28, 50/3"	
40			8.8		as above
41					
42					
43					
44				26, 50/3"	
45			9.9		as above
46	as above				Terminate boring at 46' due to very difficul
47					
48					
49					
50					

Environmental Resources Management

Site 510 — Drilling Lo

Project: Naval Medical Center — Owner: U.S. Navy

Location: Oakland, California — Project Number: 1990.14.03

Boring Number: SB-13 — Total Depth of Auger: 24.00' — Auger Diameter: 6.00"

Surface Elevation: NA — Water Level: Initial: NA — 24-hrs.: NA

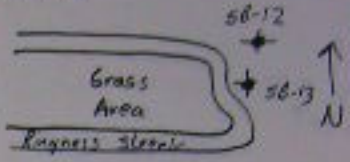
Total Depth of Soil Sampler: 24.00' — Total Depth of Ground Water Sampler: NA

Ground Water Sample Interval(s): NA

Drilling Company: Wayne Drilling — Drilling Method:

Driller: Gary McLaug — Log By: Steven Becker — Date Drilled: 4/26/95

Sketch Map



Notes: CME-75 Drill Rig

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample / Blow Interval / Count	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
					Hand Augered to 3'
1					0-2" asphalt paving
2	SM				Brown, sandy SILT, loose, weathered bedrock, dry to moi
3					
4	Weathered Bedrock			12,45,45	
5			0.0	14:35	White to green, weathered bedrock, fractured
6					
7					
8					
9					
10			0.0	24,50/6"	as above, dry
11				14:50	
12	as above				
13					
14					
15			0.0	18,50/4"	as above, drilling becomes difficult
16				15:00	
17					
18					
19					
20	as above		0.0	13,50/3"	Gray to brown, weathered bedrock, drilling becomes very difficult
21				15:15	
22					
23			0.0	24,50/5"	Refusal at 24'
24					
25					
26					

Environmental Resources Management

Site 510 **Drilling Log**

Project Naval Medical Center Owner U.S. Navy

Location Oakland California Project Number 1970.14.03

Boring Number SB-14 Total Depth of Auger 29.00' Auger Diameter 6.00"

Surface Elevation NA Water Level: Initial NA 24-hrs. NA

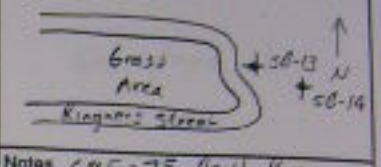
Total Depth of Soil Sampler 29.50' Total Depth of Ground Water Sampler NA

Ground Water Sample Interval(s) NA

Drilling Company Wayne Drilling Drilling Method Hollow-Stem Auger

Driller Gary McCoy Log By Steven Becker Date Drilled 4/26/95

Sketch Map



Notes CME-75 Drill Rig

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample/Sleeve Interval/Count	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
					Hand Augered to 5'
1					0-2" asphalt paving
2	SM				orange brown, gravelly, silty SAND, dry
3					
4				12, 5/6"	
5	weathered Bedrock		1.7	13:00	orange to brown to green silty sandy weathered bedrock, dry to damp
6					
7					
8					
9				22, 5/4"	
10	weathered Bedrock		0.9	13:05	white to tan weathered bedrock, possible fracture
11					
12					
13					
14				29, 5/1"	
15			0.0	13:25	gray weathered bedrock, possible fractures
16					
17					
18	weathered Bedrock			20, 5/6"	
19			0.4	13:35	Tan to brown, weathered bedrock, some sand and silt, dry
20					
21					
22					
23				23, 5/2"	
24			0.0	13:45	Gray to black weathered bedrock, as above
25					
26					

Environmental Resources Management

Site 510 **Drilling Log**

Project Naval Medical Center Owner U.S. Navy

Location Oakland California Project Number 1970.14.03

Boring Number SB-14 Total Depth of Auger 29.00' Auger Diameter 6.00"

Surface Elevation NA Water Level: Initial NA 24-hrs. NA

Total Depth of Soil Sampler 29.50' Total Depth of Ground Water Sampler NA

Ground Water Sample Interval(s) NA

Drilling Company Wayne Drilling Drilling Method Hollow-Stem Auger

Driller Gary McCaig Log By Steven Becker Date Drilled 4/26/95

Sketch Map

See page 1

Notes

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample / Blow Interval / Count	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
28					as above
29				50/4"	No sample collected.
30				1" recovery	Boring terminated at 29' due to very difficult drilling
31					
32					
33					
34					
35					

Environmental Resources Management

Site 510 — **Drilling Log**

Project: Naval Medical Center — Owner: U.S. Navy

Location: Oakland, California — Project Number: 1970.14.03

Boring Number: SB-15 — Total Depth of Auger: 25.00' — Auger Diameter: 6.00"

Surface Elevation: NA — Water Level: Initial: N/A — 24-hrs.: N/A

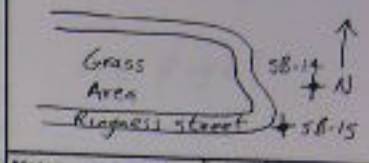
Total Depth of Soil Sampler: 25.50' — Total Depth of Ground Water Sampler: N/A

Ground Water Sample Interval(s): N/A

Drilling Company: Wayne Drilling — Drilling Method: Hollow-Stem Auger

Driller: Gary McCoig — Log By: Steven Becker — Date Drilled: 4/27/95

Sketch Map



Notes: CME-75 Drill Rig

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample Number/Interval/Count	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
					Hand Augered to 2' (rock)
1	SM				0-2" asphalt paving
2					Brown, gravelly, sandy SILT, loose to semicohesive, moist
3					
4					
5				8,10,26	
6	weathered bedrock		0.0	14:35	Brown, weathered bedrock, silty, moist
7					
8					
9					
10			0.0	18,30,50/5"	as above, increased silt content
11				14:50	
12					
13	weathered bedrock				
14					
15			NA	50/6"	as above, not enough sample for headspace analysis
16				15:00	drilling becomes difficult at 15'
17					
18					
19					
20			0.0	50/4"	Tan, weathered bedrock as above, no sample collected
21				15:30	
22				4" Recovery	
23	as above				drilling becomes very difficult at 23'
24					
25			0.0	50/4"	As above, no sample collected
26				15:43	

Environmental Resources Management

Site 510 — Drilling Lo

Project Navy Medical Center — Owner U.S. Navy

Location Oakland, California — Project Number 1970.14.03

Boring Number SB-18 — Total Depth of Auger 30.00' — Auger Diameter 6.00"

Surface Elevation NA — Water Level: Initial NA — 24-hrs. NA

Total Depth of Soil Sampler 30.80' — Total Depth of Ground Water Sampler NA

Ground Water Sample Interval(s) NA

Drilling Company Weaver Drilling — Drilling Method Hollow-Stem Auger

Driller Gary McCoig — Log By Steven Becker — Date Drilled 4/25/95

Sketch Map: see page 1

Notes: CME-75 Drill Rig

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample Interval (Blow Count)	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
28					as above, very difficult drilling at 28'
29	weathered bedrock				
30				25 5 0/4"	Terminate boring at 30' due to difficult drilling
31			293		as above, 0.25" red to brown clay lenses, with moderate odor (Petroleum-like)
32				13:00	
33					
34					
35					

Environmental Resources Management

Site 510 **Drilling Log**

Project Naval Medical Center Owner U.S. Navy

Location Oakland, California Project Number 1970.14.03

Boring Number SB-19 Total Depth of Auger 20.00' Auger Diameter 6.00"

Surface Elevation NA Water Level: Initial NA 24-hrs. NA

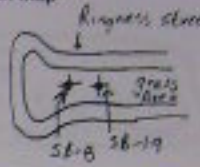
Total Depth of Soil Sampler 20.50' Total Depth of Ground Water Sampler NA

Ground Water Sample Interval(s) NA

Drilling Company Wayne Drilling Drilling Method Hollow-Stem Auger

Driller Gary McCoig Log By Steve Parker Date Drilled 4/27/95

Sketch Map



Notes CME-75 Drill Rig

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample (Blow Interval/Recovery)	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
					Hand Augered to 5'
1					Brown to gray, gravelly, sandy SILT, moist
2	SM				
3					
4					
5				1,2,2	
6			2.4	10:40	as above, brown color
7					
8					
9					
10				2,2,1	
11			2.9	10:50	as above, increased sand and silt content
12					
13					
14					
15	weathered bedrock		287	13,50/3"	Green to gray weathered bedrock, fractured, moderate odor (Petroleum-like)
16					
17					
18					
19					
20	as above		336	50/6"	Not enough sample for analysis, moderate odor (Petroleum-like) Terminate boring at 20.5' due to difficult d
21				2" recovery	
22					
23					
24					
25					
26					

Environmental Resources Management

Site 510 Drillin

Project Naval Medical Center Owner U.S. Navy

Location Oakland, California Project Number 1470.14.03

Boring Number SB-20 Total Depth of Auger 14.00' Auger Diameter 6.00"

Surface Elevation NA Water Level: Initial NA 24-hrs. NA

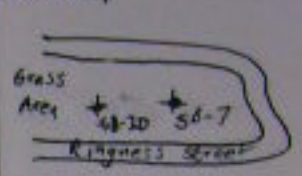
Total Depth of Soil Sampler 14.00' Total Depth of Ground Water Sampler NA

Ground Water Sample Interval(s) NA

Drilling Company Wayne Drilling Drilling Method Hollow-Stem Auger

Driller Gary Mcloig Log By Steven Becker Date Drilled 4/27/95

Sketch Map



Notes CME-75 Drill Rig

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample / Blow Interval / Count	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
					Hand Augered to 3'
1	CL				Brown, Silty CLAY, with gravel, moist
2					
3					
4					
5				1,1,1	
6			5.4		As above
7				10.20	
8					
9					
10				1,2,1	
11			3.7		As above, some gray color
12				10:25	
13					Drilling becomes very difficult at 13.5'
14				50/0"	Refusal at 14'
15					
16					
17					
18					
19					
20					

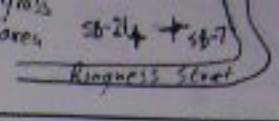
Ground Elevation NA Water Level: Initial NA 24-hrs. NA

Total Depth of Soil Sampler 25.00' Total Depth of Ground Water Sampler NA

Ground Water Sample Interval(s) NA

Drilling Company Wayne Drilling Drilling Method Hollow-stem Auger

Driller Gary McLaig Log By Steven Recker Date Drilled 4/26/95 - 4/27/95



Notes CME-75 Drill Ri

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample/Blow Interval/Counts	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
					Hand Augered to 3'
1	CL				Brown, clayey SILT, medium plasticity, moist
2					
3					
4					
5	weathered Bedrock		5.9	19, 34, 36	Brown, weathered bedrock, fractured, dry
6				16:35	
7					
8					
9					
10			173	9, 25, 39	Gray to black weathered bedrock, as above, moderate (Petroleum-like)
11	as above			16:51	
12					
13					
14					
15			366	6, 31, 50/4"	As above, some brown color, moderate odor (Petrole
16	as above			17:06	
17					
18				4/26/95 4/27/95	
19					
20			NA	50/6"	As above, not enough sample for headspace and
21	as above			09:05	Drilling becomes very difficult at 21'
22					
23					
24			NA	50/0"	No recovery, terminate boring
25					
26					

Environmental Resources Management

Site 510 **Drilling**

Project Naval Medical Center Owner U.S. Navy

Location Oakland, California Project Number 1970.14.03

Boring Number SB-16 Total Depth of Auger 2.5' Auger Diameter 6.00"

Surface Elevation NA Water Level: Initial NA 24-hrs. NA

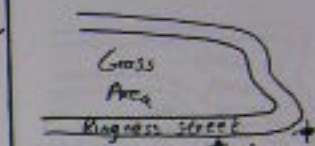
Total Depth of Soil Sampler 3.0' Total Depth of Ground Water Sampler NA

Ground Water Sample Interval(s) NA

Drilling Company Wayne Drilling Drilling Method Hollow-Stem Auger

Driller Gary McCaig Log By Steven Becker Date Drilled 4/27/95

Sketch Map



Notes CME-75 Drill Rig

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample / Blow Interval / Count
1	ML			
2				5/5"
3			0.0	
4				14:10
5				

Soil Description and Observations
(Color, Texture, Structures, Odor, Foreign Matter)

Hand Augered to 2'

0-2" asphalt paving

Brown, gravelly, sandy SILT, loose, dry

Refusal at 3'

Environmental Resources Management

Site 510 **Drilling**

Project Naval Medical Center Owner U.S. Navy

Location Oakland, California Project Number 1970.14.03

Boring Number SB-17 Total Depth of Auger 10.00' Auger Diameter 6.00"

Surface Elevation NA Water Level: Initial NA 24-hrs. NA

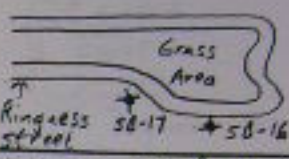
Total Depth of Soil Sampler 10.50' Total Depth of Ground Water Sampler NA

Ground Water Sample Interval(s) NA

Drilling Company Wayne Drilling Drilling Method Hollow-Stem Auger

Driller Gary McCoig Log By Steven Recker Date Drilled 4/27/95

Sketch Map



Notes CME-75 Drill Rig

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample / Blow Interval / Comments
1	ML			
2				
3				
4				
5				K, 50/5"
6	CL		0.0	13.15
7				
8				
9				
10			0.0	50/6"
11				13:30
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Soil Description and Observations
(Color, Texture, Structures, Odor, Foreign Matter)

Hand Augered to 2' (Rock)

0-2" Asphalt paving

Brown, gravelly, clayey, sandy SILT, loose, moist

Brown, silty CLAY, sticky, medium plasticity, moist

Drilling becomes difficult at 8'

Brown, weathered bedrock, moist
Boring terminated at 10.5' due to difficult drilling

Environmental Resources Management

Site 510 **Drilling Lo**

Project Naval Medical Center Owner U.S. Navy

Location Oakland California Project Number 1970.19.03

Boring Number SB-18 Total Depth of Auger 30.00' Auger Diameter 6.00"

Surface Elevation NA Water Level: Initial NA 24-hrs. NA

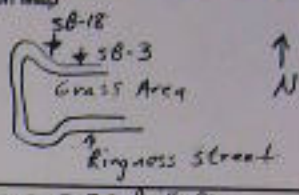
Total Depth of Soil Sampler 30.80' Total Depth of Ground Water Sampler NA

Ground Water Sample Interval(s) NA

Drilling Company Wayne Drilling Drilling Method Hollow-stem Auger

Driller Gary McCoig Log By Steven Becker Date Drilled 4/25/95

Sketch Map



Notes CME-75 Drill Rig

Depth (Feet)	Graphic Log and USCS Designation	FID (ppm)	PID (ppm)	Sample Interval / Blow Counts	Soil Description and Observations (Color, Texture, Structures, Odor, Foreign Matter)
1	SM				0-2" asphalt paving
2					Orange to brown, gravelly, silty, clayey SAND, moist
3					
4	CL				Orange to brown, gravelly, sandy, silty CLAY, some weathered bedrock, moist
5			4.0	34.50/2"	as above
6	weathered bedrock			11:45	weathered bedrock at 5', gray with clasts
7					difficult drilling at 7'
8					
9					
10			6.8	23.50/2"	as above, some sandy, gravelly silt, some brown color, moist
11				12:05	
12					
13					
14					
15			6.4	44.50/4"	as above, increased amount of sand and silt, trace clay,
16				12:15	
17					
18					
19					
20	weathered bedrock		6.1	50/5"	white to green weathered bedrock
21				12:30	
22					
23					
24					
25			5.6	27.50/3"	brown to white to green weathered bedrock, some silt and
26	as above			12:45	

ERM-West, Inc.

CHAIN OF CUSTODY RECORD

NO: 101

455 Capitol Mall, Suite 800 • Sacramento, CA • 95814 • (916) 444-9378 • Fax (916) 444-5313

Page 1 of 5

PROJECT #	PROJECT NAME
1970.14.03	Naval Medical Center Oakland, California

SAMPLER: (PRINT NAME)	(SIGNATURE)
Steven R. Becker	

RECEIVING LABORATORY: Sequoia Analytical

SAMPLE I.D.	DATE	TIME	COMP	GRAB	SAMPLING METHOD	PRESERVATIVE	ICE (Y/N)	SAMPLING VOLUME	# OF CONTAINERS	MATRIX: SOIL	MATRIX: WATER	MATRIX: GAS	*TPH (Gasoline - GC/FID) Method 8015 Mod.	*BTEX Method 8020	*TPH (Diesel - GC/FID) Method 8015 Mod.	Total Lead AA
SB-18-5'	4/25/95	11:45		X	split spoon	—	Y	1-6" tube	1	X			HOLD (Do not analyze)			
SB-18-10'	4/25/95	12:05		X	split spoon	—	Y	1-6" tube	1	X			HOLD (Do not analyze)			
SB-18-15'	4/25/95	12:15		X	split spoon	—	Y	1-6" tube	1	X			X	X		
SB-18-20'	4/25/95	12:30		X	split spoon	—	Y	1-6" tube	1	X			X	X		
SB-18-25'	4/25/95	12:45		X	split spoon	—	Y	1-6" tube	1	X			X	X		
SB-18-30'	4/25/95	13:00		X	split spoon	—	Y	1-6" tube	1	X			X	X		
SB-10-5'	4/25/95	14:20		X	split spoon	—	Y	1-6" tube	1	X			Hold (Do not analyze)			
SB-10-10'	4/25/95	14:30		X	split spoon	—	Y	1-6" tube	1	X			Hold (Do not analyze)			
SB-10-15'	4/25/95	14:40		X	split spoon	—	Y	1-6" tube	1	X			X	X		
SB-10-20'	4/25/95	14:50		X	split spoon	—	Y	1-6" tube	1	X			X	X		

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	4/27/95	15:11	[signature]	4/27	1511
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME

FIELD REMARKS

* Required ~~laboratory~~ practical quantitation reporting limits:

TPH (gasoline) = 1 mg/kg
TPH (diesel) = 1 mg/kg
BTEX = 0.005 mg/kg

REMARKS ON SAMPLE RECEIPT

☐ BOTTLE INTACT ☐ CUSTODY SEALS ☐ CHILLED

ERM REMARKS

Standard turnaround time

SEND REPORT TO: William Strong

Job # 1970.14.03-511

Capitol Mall, Suite 800 • Sacramento, CA • 95814 • (916) 444-9378 • Fax (916) 444-5313

NO. 101

PROJECT #	PROJECT NAME
70.14.03	Navy Medical Center Oakland, California

SAMPLER: (PRINT NAME)	(SIGNATURE)
Steven R. Becker	[signature]

RECEIVING LABORATORY

Sequoia Analytical

SAMPLE I.D.	DATE	TIME	COMP	GRAB	SAMPLING METHOD	PRESERVATIVE	ICE (Y/N)	SAMPLING VOLUME	# OF CONTAINERS	MATRIX: SOIL	MATRIX: WATER	MATRIX: GAS	REQUESTED PARAMETERS: *TPH (Gasoline - GC/FID) Method 8015 mod.	*BTEX Method 8020	*TPH (Diesel - GC/FID) Method 8015 mod.	Total Lead AA
SB-11-5'	4/25/95	15:50		X	split spoon	—	Y	1-6" tube	1	X			Hold (Do not analyze)			
SB-11-10'	4/25/95	16:00		X	split spoon	—	Y	1-6" tube	1	X			Hold (Do not analyze)			
SB-11-15'	4/25/95	16:10		X	split spoon	—	Y	1-6" tube	1	X			X	X		
SB-11-20'	4/25/95	16:20		X	split spoon	—	Y	1-6" tube	1	X			X	X		
SB-11-25'	4/25/95	16:35		X	split spoon	—	Y	1-6" tube	1	X			X	X		
SB-12-5'	4/26/95	08:30		X	split spoon	—	Y	1-6" tube	1	X			Hold (Do not analyze)			
SB-12-10	4/26/95	08:40		X	split spoon	—	Y	1-6" tube	1	X			Hold (Do not analyze)			
SB-12-20'	4/26/95	09:10		X	split spoon	—	Y	1-6" tube	1	X			X	X		
SB-12-30'	4/26/95	09:45		X	split spoon	—	Y	1-6" tube	1	X			X	X		
SB-12-34.5'	4/26/95	10:00		X	split spoon	—	Y	1-6" tube	1	X			X	X		

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	4/27/95	15:11	[signature]	4-27	15:11
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	4-27				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME

FIELD REMARKS

* Required practical quantitation limits:
TPH (Gasoline) = 1mg/Kg
TPH (Diesel) = 1mg/Kg
BTEX = 0.005mg/Kg

REMARKS ON SAMPLE RECEIPT

☐ BOTTLE INTACT ☐ CUSTODY SEALS ☐ CHILLED
☐ SEE REMARKS

ERM REMARKS

Standard Turnaround Time

SEND REPORT TO:

William Spoy PO# 1970.14.03-51

ERM-West, Inc.

455 Capitol Mall, Suite 800 • Sacramento, CA • 95814 • (916) 444-9378 • Fax (916) 444-5313

CHAIN-OF-CUSTODY RECORD NO: 1015

Page 3 of 5

PROJECT #	PROJECT NAME
1970.1403	Naval Medical Center Oakland, California

SAMPLER: (PRINT NAME)	(SIGNATURE)
Steven R. Berke	

RECEIVING LABORATORY: Sequoia Analytical

SAMPLE I.D.	DATE	TIME	COMP	GRAB	SAMPLING METHOD	PRESERVATIVE	ICE (Y/N)	SAMPLING VOLUME	# OF CONTAINERS	MATRIX: SOIL	MATRIX: WATER	MATRIX: GAS	REQUESTED PARAMETERS: *TPH (Gasoline - GC/FID) Method 8015 mod	REQUESTED PARAMETERS: *BTEX Method 8020	REQUESTED PARAMETERS: Total Lead AA
SB-12-39.5'	4/26/95	10:20		X	Split spoon	—	Y	1-6" brass	1	X			X	X	
SB-12-44.5'	4/26/95	10:35		X	Split spoon	—	Y	1-6" brass	1	X			X	X	
SB-14-5'	4/26/95	13:00		X	Split spoon	—	Y	1-6" brass	1	X			Hold (Do not analyze)		
SB-14-9.5'	4/26/95	13:05		X	Split spoon	—	Y	1-6" brass	1	X			Hold (Do not analyze)		
SB-14-14.5'	4/26/95	13:25		X	Split spoon	—	Y	1-6" brass	1	X			Hold (Do not analyze)		
SB-14-19.5'	4/26/95	13:35		X	Split spoon	—	Y	1-6" brass	1	X			Hold (Do not analyze)		
SB-14-24.5'	4/26/95	13:45		X	Split spoon	—	Y	1-6" brass	1	X			Hold (Do not analyze)		
SB-13-5'	4/26/95	14:35		X	Split spoon	—	Y	1-6" brass	1	X			Hold (Do not analyze)		
SB-13-10'	4/26/95	14:50		X	Split spoon	—	Y	1-6" brass	1	X			Hold (Do not analyze)		
SB-13-15'	4/26/95	15:05		X	Split spoon	—	Y	1-6" brass	1	X			X	X	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
	4/27/95	15:11		4-27	1511
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME

FIELD REMARKS

* Required practical quantitation limits:
TPH (gasoline) = 1 mg/kg
BTEX = 0.005 mg/kg

REMARKS ON SAMPLE RECEIPT

☐ BOTTLE INTACT ☐ CUSTODY SEALS ☐ CHILLED

ERM REMARKS

SEND REPORT TO: William Spence

PO# 1970.14.03-511

55 Capitol Mall, Suite 800 • Sacramento, CA • 95814 • (916) 444-9378 • Fax (916) 444-5313

NO: 10

Page 4 of 3

PROJECT #	PROJECT NAME
1970.14.03	Navy Medical Center Oakland, California

SAMPLER: (PRINT NAME)	(SIGNATURE)
Steven R. Becker	

RECEIVING LABORATORY: Sequoia Analytical

SAMPLE I.D.	DATE	TIME	COMP	GRAB	SAMPLING METHOD	PRESERVATIVE	ICE (Y/N)	SAMPLING VOLUME	# OF CONTAINERS	MATRIX: SOIL	MATRIX: WATER	MATRIX: GAS	REQUESTED PARAMETERS
SB-13-20'	4/26/95	15:15		X	split spoon	—	Y	1-6" tube	1		X		* TPH Gasoline (GC/FID) Method 8015 mod. • BTEX Method 8020 total Lead AA
SB-13-25'	4/26/95	15:30		X	split spoon	—	Y	1-6" tube	1		X		
SB-21-5'	4/26/95	16:35		X	split spoon	—	Y	1-6" tube	1				Hold (Do not analyze)
SB-21-10'	4/26/95	16:51		X	split spoon	—	Y	1-6" tube	1		X		
SB-21-15'	4/26/95	17:00		X	split spoon	—	Y	1-6" tube	1		X		
SB-21-20'	4/27/95	9:05		X	split spoon	—	Y	1-6" tube	1		X		
SB-20-5'	4/27/95	10:00		X					1				Hold (Do not analyze)
SB-20-10'	4/27/95	10:05		X					1				Hold (Do not analyze)
SB-19-5'	4/27/95	10:40		X					1				Hold (Do not analyze)
SB-19-10'	4/27/95	10:50		X					1				Hold (Do not analyze)

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
	4/27/95	15:11		4-27	1511
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME

FIELD REMARKS

* Required practical quantitation limits:
TPH (gasoline) = 1 mg/kg
BTEX = 0.005 mg/kg

REMARKS ON SAMPLE RECEIPT

☐ BOTTLE INTACT ☐ CUSTODY SEALS ☐ CHILLED

ERM REMARKS

Standard Turnaround Time

SEND REPORT TO: PO#
William Spong 1970.14.03 511

ERM-West, Inc.

CHAIN OF CUSTODY RECORD

NO: 1013

455 Capitol Mall, Suite 800 • Sacramento, CA • 95814 • (916) 444-9378 • Fax (916) 444-5313

PROJECT #	PROJECT NAME
1970.14.03	Navy Medical Center Oakland, California

SAMPLER: (PRINT NAME)	(SIGNATURE)
Steven R. Becker	

RECEIVING LABORATORY: Sequoia Analytical

SAMPLE I.D.	DATE	TIME	COMP	GRAB	SAMPLING METHOD	PRESERVATIVE	ICE (Y/N)	SAMPLING VOLUME	# OF CONTAINERS	MATRIX: SOIL	MATRIX: WATER	MATRIX: GAS	REQUESTED PARAMETERS: * TPH (Gasoline 6C/F20) Method 8015 Mod	REQUESTED PARAMETERS: BTEX Method 8020	REQUESTED PARAMETERS: Total Lead AA
SB-19-15'	4/27/95	10:55		X	split spoon	—	Y	1-6"tube	1	X			X	X	X
~~SB-16~~															
SB-17-5'	4/27/95	13:15		X					1	X			Hold (Do not analyze)		
SB-17-10'	4/27/95	13:30		X					1	X			Hold (Do not analyze)		
SB-16-3'	4/27/95	14:10		X					1	X			Hold (Do not analyze)		
SB-15-5'	4/27/95	14:35		X					1	X			Hold (Do not analyze)		
SB-15-10'	4/27/95	14:50		X					1	X			Hold (Do not analyze)		
SB-15-15'	4/27/95	15:01		X					1	X			X	X	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
	4/27/95	15:11		4-27	1511
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
	4-27				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME

FIELD REMARKS

* Required Practical quantitation limits:
TPH (Gasoline) = 1 mg/kg
BTEX = 0.005 mg/kg

REMARKS ON SAMPLE RECEIPT

SPECIAL MARKS

SEND REPORT TO:

CHAIN OF CUSTODY FORM

Curtis & Tompkins, Ltd.
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900 Phone
(510) 486-0532 Fax

Sampler: John Prall

Report to: Bill Spang

Project No: 1970.14.03

Company: ERM-West, Inc

Project Name: NMC-510

Telephone: (916) 444-9378

Turnaround Time: Standard

Fax:

Laboratory Number	Sample ID.	Sampling Date	Sampling Time	Matrix: Soil	Matrix: Water	Matrix: Wastes	# of Containers	Preservative: HCL	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	Field Notes	TPH as diesel (8015-M-GC/FID)	BTEX (8020)**	Analyses
✓	SB-18-5'	3/8/95	1035	✓			1				✓				Hold
✓	SB-18-15'	"	1055	✓			1				✓				
✓	SB-18-20'	"	1107	✓			1				✓		X	X	
✓	SB-18-25'	"	1120	✓			1				✓	Minor Sample Amount			Hold
✓	SB-17-5'	"	0914	✓			1				✓		X	X	
✓	PHB-1-5'	"	1446	✓			1				✓				Hold
✓	PHB-1-10'	"	1459	-			1				✓		X	X	
✓	PHB-1-15'	"	1501	-			1				✓				Hold
✓	PHB-1-20	"	1510	-			1				✓				
✓	PHB-1-25	"	1525	-			1				✓				
✓	PHB-1-30	"	1534	-			1				✓				
✓	PHB-2-5	3/9/95	955	✓			1				✓		X	X	
✓	PHB-2-10	"	1003	✓			1				✓				

NOTES:
* Preparation by Method 3550, MDL 10 ms/kg
** Preparation by Method 5030, MDL 5 ms/kg

RELINQUISHED BY: John Prall DATE/TIME 3/9/95 1045

RECEIVED BY: Kevin Hoch DATE/TIME 3/9/95 1445 DATE/TIME

CHAIN OF CUSTODY FORM

Curtis & Tompkins, Ltd.
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900 Phone
(510) 486-0532 Fax

Sampler: John Prall

Report to: Bill Spang

Project No: 1970.14.03

Company: ERM-West, Inc.

Project Name: NMC-510

Telephone: (916) 944-9378

Turnaround Time: Standard

Fax:

Analyses

Laboratory Number	Sample ID.	Sampling Date	Sampling Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	Preservative:	Field Notes	TPH as diesel (8015-M) (EC/FID)	BTEX (8026) **	
✓	SB-14-5'	3/7/95	0857	✓			1				✓		2.3			Hold
✓	SB-14-10'	"	0910	✓			1				✓		2.0			
✓	SB-14-15'	"	0918	✓			1				✓		3.1			
✓	SB-14-20'	"	0930	✓			1				✓		2.0			Hold
✓	SB-14-25'	"	0940	✓			1				✓		2.7			
✓	SB-15-5'	"	1059	✓			1				✓		3.1			
✓	SB-15-10'	"	1108	✓			1				✓		2.4			
✓	SB-15-20'	"	1129	✓			1				✓		~~1.0~~ 2.4			
✓	SB-13-5'	"	1338	✓			1				✓		53	X	X	
✓	SB-13-10'	"	1400	✓			1				✓		47	X	X	
✓	SB-13-15'	"	1409	✓			1				✓		36	X	X	
✓	SB-13-20'	"	1417	✓			1				✓		31	X	X	
✓	SB-16-5'	"	1556	✓			1				✓		4.1			Hold

NOTES:
* Prepared by EPA Method 3550 10 mg/kg MDL
** Prepared by EPA Method 5030 5 mg/kg

RELINQUISHED BY:

DATE/TIME

RECEIVED BY:

DATE/TI

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

ERM-West
455 Capitol Mall, 8th Flr
Sacramento, CA 95814
Attention: Bill Spong

Client Project ID: 1978.14.03/Naval Med Center, Oakland, CA
Sample Matrix: Soil
Analysis Method: EPA 5030/8015/8020
First Sample #: 504-1356

Sampled: Apr 25, 1995
Received: Apr 27, 1995
Reported: May 9, 1995

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 504-1356 SB-18-15'	Sample I.D. 504-1357 SB-18-20'	Sample I.D. 504-1358 SB-18-25'	Sample I.D. 504-1359 SB-18-30'	Sample I.D. 504-1362 SB-10-15'	Sample I.D. 504-1363 SB-10-20'
Purgeable Hydrocarbons	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	--	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	5/4/95	5/4/95	5/4/95	5/4/95	5/4/95	5/4/95
Instrument Identification:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-1
Surrogate Recovery, %: (QC Limits = 70-130%)	91	80	82	83	89	84

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected at or above the reporting limit.

SEQUOIA ANALYTICAL, ELAP #1624

Linda C. Schneider

Linda C. Schneider

5041356.ERS <1

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

ERM-West
455 Capitol Mall, 8th Flr
Sacramento, CA 95814
Attention: Bill Spong

Client Project ID: 1970.14.03/Naval Med Center, Oakland, CA
Sample Matrix: Soil
Analysis Method: EPA 5030/8015/8020
First Sample #: 504-1366

Sampled: 4/25,26/95
Received: Apr 27, 1995
Reported: May 9, 1995

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 504-1366 SB-11-15'	Sample I.D. 504-1367 SB-11-20'	Sample I.D. 504-1368 SB-11-25'	Sample I.D. 504-1371 SB-12-20'	Sample I.D. 504-1372 SB-12-30'	Sample I.D. 504-1373 SB-12-34.5'
Purgeable Hydrocarbons	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	--	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	5/4/95	5/4/95	5/4/95	5/4/95	5/4/95	5/4/95
Instrument Identification:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-1
Surrogate Recovery, %: (QC Limits = 70-130%)	89	87	81	84	82	79

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected at or above the reporting limit.

SEQUOIA ANALYTICAL, ELAP #1624

Linda C. Schneider

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

ERM-West
455 Capitol Mall, 8th Flr
Sacramento, CA 95814
Attention: Bill Spong

Client Project ID: 1970.14.03/Naval Med Center, Oakland, CA
Sample Matrix: Soil
Analysis Method: EPA 5030/8015/8020
First Sample #: 504-1374

Sampled: Apr 26, 1995
Received: Apr 27, 1995
Reported: May 9, 1995

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 504-1374 SB-12-39.5	Sample I.D. 504-1375 SB-12-44.5'	Sample I.D. 504-1383 SB-13-15'	Sample I.D. 504-1384 SB-13-20'	Sample I.D. 504-1385 SB-13-24.5	Sample I.D. 504-1387 SB-21-10'
Purgeable Hydrocarbons	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	0.0068
Ethyl Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	--	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	5/4/95	5/4/95	5/4/95	5/4/95	5/5/95	5/4/95
Instrument Identification:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-1
Surrogate Recovery, %: (QC Limits = 70-130%)	77	79	82	79	89	97

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected at or above the reporting limit.

SEQUOIA ANALYTICAL, ELAP #1624

Linda C. Ahrenden

5041387.ERS

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

ERM-West
455 Capitol Mall, 8th Flr
Sacramento, CA 95814
Attention: Bill Spong

Client Project ID: 1970.14.03/Naval Med Center, Oakland, CA
Sample Matrix: Soil
Analysis Method: EPA 5030/8015/8020
First Sample #: 504-1388

Sampled: 4/26,27/95
Received: Apr 27, 1995
Reported: May 9, 1995

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 504-1388 SB-21-15'	Sample I.D. 504-1389 SB-21-20'	Sample I.D. 504-1393 SB19-10'	Sample I.D. 504-1394 SB-19-15'	Sample I.D. 504-1400 SB-15-15'	Sample I.D. BLK050495 Method Blank
Purgeable Hydrocarbons	1.0	1,200	24	N.D.	41	N.D.	N.D.
Benzene	0.0050	2.4	N.D.	N.D.	0.011	N.D.	N.D.
Toluene	0.0050	45	0.12	N.D.	0.10	N.D.	N.D.
Ethyl Benzene	0.0050	25	0.20	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.0050	120	12	N.D.	0.25	N.D.	N.D.
Chromatogram Pattern:		Gasoline C6-C12	Gasoline C6-C12	--	Gasoline C6-C12	--	--

Quality Control Data

Report Limit Multiplication Factor:	50	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	5/5/95	5/5/95	5/5/95	5/4/95	5/4/95	5/4/95
Instrument Identification:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-1
Surrogate Recovery, %: (QC Limits = 70-130%)	93	81	79	110	85	90

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected at or above the reporting limit.

SEQUOIA ANALYTICAL, ELAP #1624

Linda C. Schneider
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

ERM-West
455 Capitol Mall, 8th Flr
Sacramento, CA 95814
Attention: Bill Spong

Client Project ID: 1970.14.03/Naval Med Center, Oakland, CA
Sample Matrix: Soil
Analysis Method: EPA 5030/8015/8020
First Sample #: BLK050595

Sampled: N/A
Received: Apr 27, 1995
Reported: May 9, 1995

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. BLK050595 Method Blank
Purgeable Hydrocarbons	1.0	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Total Xylenes	0.0050	N.D.
Chromatogram Pattern:		--

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Analyzed:	5/5/95
Instrument Identification:	GCHP-1
Surrogate Recovery, %: (QC Limits = 70-130%)	90

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected at or above the reporting limit.

SEQUOIA ANALYTICAL, ELAP #1624

Linda C. Schneider
Project Manager

5041358.ERS

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

ERM-West
455 Capitol Mall, 8th Flr
Sacramento, CA 95814
Attention: Bill Spong

Client Project ID: 1970.14.03/Naval Med Center, Oakland, CA
Sample Descript: Soil
Analysis for: Lead
First Sample #: 504-1388

Sampled: 4/26,27/95
Received: Apr 27, 1995
Extracted: May 2, 1995
Analyzed: May 3, 1995
Reported: May 9, 1995

LABORATORY ANALYSIS FOR: Lead

Sample Number	Sample Description	Reporting Limit mg/kg	Sample Result mg/kg
504-1388	SB-21-15'	1.5	4.4
504-1394	SB-19-15'	1.5	5.1
BLK050295	Method Blank	1.5	N.D.

Analytes reported as N.D. were not detected at or above the reporting limit.

SEQUOIA ANALYTICAL, ELAP #1624

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

ERM-West
455 Capitol Mall, 8th Flr
Sacramento, CA 95814
Attention: Bill Spong

Client Project ID: 1970.14.03/Naval Med Center, Oakland, CA
Matrix: Soil

QC Sample Group 5041354-1400

Reported: May 9, 19

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Lead
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 7421
Analyst:	C. Chapman	C. Chapman	C. Chapman	C. Chapman	K. Barta
Concentration Spiked:	0.20 mg/kg	0.20 mg/kg	0.20 mg/kg	0.60 mg/kg	0.25 mg/kg
LCS Batch#:	LCS050495	LCS050495	LCS050495	LCS050495	LCS050295
Date Prepared:	5/4/95	5/4/95	5/4/95	5/4/95	5/2/95
Date Analyzed:	5/4/95	5/4/95	5/4/95	5/4/95	5/3/95
Instrument I.D.#:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	SH-1000
LCS % Recovery:	90	90	95	92	92
Control Limits:	75-125	75-125	75-125	75-125	80-120
MS/MSD Batch #:	5041371	5041371	5041371	5041371	5041394
Date Prepared:	5/4/95	5/4/95	5/4/95	5/4/95	5/2/95
Date Analyzed:	5/4/95	5/4/95	5/4/95	5/4/95	5/3/95
Instrument I.D.#:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	SH-1000
Matrix Spike % Recovery:	85	85	90	88	*
Matrix Spike Duplicate % Recovery:	90	90	90	93	*
Relative % Difference:	5.7	5.7	0.0	5.5	*

SEQUOIA ANALYTICAL

Linda C. Schneider

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the sam
preparation and analytical methods employed for the samples. The LCS % recovery data is us
validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advis
and are not used to accept or reject batch results. *Matrix interference.

5041356.E

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0

ERM-West
455 Capitol Mall, 8th Flr
Sacramento, CA 95814
Attention: Bill Spong

Client Project ID: 1970.14.03/Naval Med Center, Oakland, CA
Matrix: Soil

QC Sample Group 5041354-1400

Reported: May 9,

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	C. Chapman	C. Chapman	C. Chapman	C. Chapman
Concentration Spiked:	0.20 mg/kg	0.20 mg/kg	0.20 mg/kg	0.60 mg/kg
LCS Batch#:	LCS050595	LCS050595	LCS050595	LCS050595
Date Prepared:	5/5/95	5/5/95	5/5/95	5/5/95
Date Analyzed:	5/5/95	5/5/95	5/5/95	5/5/95
Instrument I.D.#:	GCHP-1	GCHP-1	GCHP-1	GCHP-1
LCS % Recovery:	90	85	90	90
Control Limits:	75-125	75-125	75-125	75-125
MS/MSD Batch #:	5050052	5050052	5050052	5050052
Date Prepared:	5/5/95	5/5/95	5/5/95	5/5/95
Date Analyzed:	5/5/95	5/5/95	5/5/95	5/5/95
Instrument I.D.#:	GCHP-1	GCHP-1	GCHP-1	GCHP-1
Matrix Spike % Recovery:	85	90	85	88
Matrix Spike Duplicate % Recovery:	80	85	85	85
Relative % Difference:	6.1	5.7	0.0	3.5

SEQUOIA ANALYTICAL

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the sa
preparation and analytical methods employed for the samples. The LCS % recovery data is u
validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are adv
and are not used to accept or reject batch results. *Matrix interference.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 120195
CLIENT: EMW-WEST
PROJECT ID: 1970.14.05
LOCATION: MMC-BLDG 510

DATE SAMPLED: 03/08,09/9
DATE RECEIVED: 03/09/95
DATE EXTRACTED: 03/14/95
DATE ANALYZED: 03/15/95
DATE REPORTED: 03/20/95
BATCH NO: 19441

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT (mg/Kg)
120195-003	SB-18-20'	ND	ND	1.0
120195-005	SB-17-5'	ND	ND	1.0
120195-007	PMW-1-10'	ND	ND	1.0
120195-013	PMW-2-10'	ND	ND	1.0
120195-015	TSB-1-5'	ND	3.7*	1.0
120195-016	TSB-1-10'	ND	ND	1.0
120195-019	TSB-2-10'	ND	ND	1.0
METHOD BLANK	N/A	ND	ND	1.0

ND = Not detected at or above reporting limit; reporting limit applies to all analytes.

* Sample chromatogram does not resemble hydrocarbon standard.

QA/QC SUMMARY: MS/MSD of 120194-022

RPD, %	17
RECOVERY, %	105

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 120194
CLIENT: ERM-WEST
PROJECT ID: 1970.14.03
LOCATION: NMC-BLDG 510

DATE SAMPLED: 03/06,07/95
DATE RECEIVED: 03/08/95
DATE EXTRACTED: 03/14/95
DATE ANALYZED: 03/15,16/95
DATE REPORTED: 03/20/95
BATCH NO:19441

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

AB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT (mg/Kg)
0194-001	SB-10-5'	ND	ND	1.0
0194-002	SB-10-10'	ND	ND	1.0
0194-003	SB-10-15'	ND	ND	1.0
0194-004	SB-10-20'	ND	ND	1.0
0194-007	SB-11-15'	ND	ND	1.0
0194-020	SB-13-5'	ND	1.4*	1.0
0194-021	SB-13-10'	ND	ND	1.0
0194-022	SB-13-15'	ND	ND	1.0
0194-023	SB-13-20'	ND	ND	1.0
THOD BLANK	N/A	ND	ND	1.0

= Not detected at or above reporting limit; reporting limit
lies to all analytes.

ample chromatogram does not resemble diesel standard.

C SUMMARY:MS/MSD

17
105

%
VERY, %

200 0 200 400

SCALE: 1"= 200'

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND

SAN BRUNO **ENGINEERING FIELD ACTIVITY - WEST** CALIFORNIA

NAVAL MEDICAL CENTER OAKLAND, CALIFORNIA

FIGURE 1:
SITE PLAN AND SAMPLING LOCATIONS

SIZE	CODE IDENT NO.	NAVFAC. DRAWING NO.	
C	00001		
		CONST. CONTR. NO.	
SCALE AS NOTED		SPEC.	SHEET 1 OF 1

LEGEND

PARCEL BOUNDARIES

NAVY PROPERTY BOUNDARY

COVERED OR INTERMITTENT CREEK

CREEK

MAIN STATION ENTRANCE

SEW 25 SEWER RELATED SOIL SAMPLE

SP 36 CREEK SEDIMENT SAMPLE

SP 159-1 SOIL SAMPLE

SP 51 SURFACE WATER SAMPLE

200 0 200 400

SCALE: 1"= 200'


SEW 24
SP 49
SP 36
SP 110–1
SP 110–8
SP 110–7
SP 110–2
SEW 23
SP 110–3
SP 110–6
SP 110–4
SEW 22
SP 37
SP 38
SEW 21
SEW 16
SEW 19
SEW 14
SEW 17
SEW 27
SEW 26
O'REILLY ST
GENERATOR

SP 36
SP 110-2
SP 110-7
SEW 23
SP 110-3
SP 110-6
SP 110-5
SP 110-4
SEW 22
SP 37
SP 38
SEW 21
SEW 20
SEW 16
SEW 19
SEW 15
SEW 18
SEW 25
SEW 7
SEW 10
SP 39
SEW 6
SP 40
SP 50
SEW 11
SEW 9
SEW 5
SEW 27
SEW 28
SEW 26
GENERATOR
109
129
137
136
144
125
152
143
142
149


106
KELLER AVE.
105
109
104
107
103
123
124
122
102
SEW 17
SEW 16
SEW 19
SEW 15
SEW 18
SEW 7
SEW 10
SEW 13
SEW 32
SEW 12
SEW 5
SEW 11
SEW 9
SP 52
SP 39
SP 50
SP 41
131
125
136
121
163
128
127
133
134
108
142
143
EVANS ST.
WILKINSON ST.
GREATHOUSE
LONG
CROWLEY ST.

SEW 16
SEW 19
SEW 14
SEW 15
SEW 18
SEW 25
SEW 27
SEW 26
SEW 7
SP 52
SP 39
SEW 10
SEW 13
SEW 32
SEW 6
SP 40
SP 50
SEW 12
SEW 11
SEW 9
SEW 5
SP 41
SP 42
SEW 4
SEW 1
SEW 8
SP 157-2
SP 157-1
SP 153-1
SP 43
SEW 3
SEW 2
SP 44
SP 45
SP 159-1
SP 46
SP 159-2
SEW 30
SP 47
SP 159-6


SEW 12
SEW 11
SEW 9
SEW 5
SEW 4
SP 41
SP 42
SEW 1
SEW 8
SEW 3
SEW 2
SP 157-2
SP 157-1
SP 43
SP 44
SP 45
SP 159-1
SP 46
SP 159-2
SEW 30
SP 47
SP 159-6
SP 159-5
SEW 29
SP 159-3
SP 159-4
SP 48
SP 51
SEW 31
SP 153-1
BBF
144
POOL
BARCELONA ST.
PROAKOWSKI
RD.
SEQUOYAH
RD.
127
133
108
132
141
142
143
154
155
152
151
153
146
148
156
160
158
111
159
161
162
113

DEPARTMENT OF CONTROL
REGION 2
AUG 14 1998
STATE OF CALIFORNIA, EPA
RECEIVED

FIELD REPORT
for
Removal and Disposal of Medical Debris from Private Property Adjacent to Former Naval Medical Center, Oakland

Oakland, California

Prepared for:

Engineering Field Activity, West
Naval Facilities Engineering Command
San Bruno, CA 94066

Prepared by:

SSPORTS Environmental Detachment
Vallejo, California 94592-0135

Draft

July 31, 1998

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1.0 INTRODUCTION

1.1 On February 25, 1998, U.S. Navy and City of Oakland personnel discovered a City of Oakland sanitary sewage spill caused by a blocked, City owned, sewage line on private property adjacent to the former Naval Medical Center, Oakland (NMCO). While investigating the sewage line blockage, medical debris was noticed to have been uncovered as a result of soil erosion caused by the recent heavy rains. Further investigation discovered buried medical debris on this privately owned property. The site of the medical debris was about 100 yards away from the sewage ponding area caused by the sewage line blockage. The City of Oakland completed cleanup of the sewage spill and the SSPORTS Environmental detachment removed the loose medical debris in the area. This Field Report describes the removal of the remainder of the debris that was buried on the site. This area was previously owned by the Navy and sold in 1978 to a private citizen, but the Navy retained a small easement for maintenance and operations.

1.2 Work resulting from this occurrence was conducted under the observation of the Alameda County Health Department, the Engineering Field Activity (EFA) West Resident Officer in Charge of Construction (ROICC), personnel from the EFA West Caretaker Site Office (CSO) in the East Bay, and by the BRAC Environmental Coordinator (BEC) and Base Closure Manager (BCM) for the NMCO.

2.0 OBJECTIVES

2.1 The objective of this Field Report is to summarize actions during the removal of the medical debris from the above described location and to present findings and conclusions from this removal operation.

3.0 SITE DESCRIPTION

3.1 The Naval Medical Center at Oakland (NMCO) is a former Naval hospital in the Oak Knoll area of Oakland, California. The site where the medical debris was located was just to the south of the present boundary of the complex near the former boiler room at Building 22. The site was along both sides of a small gully between two hills (see Figure 1). The gully ran parallel to a former road that extended southwest to northeast through the area but, by the time of this project, was completely destroyed due to neglect and erosion. The gully itself experienced considerable erosion due to heavy rainfall in the winter of 1997-98. After digging an exploratory trench in the gully, it was determined that the gully marked the northern boundary of the medical debris. Further exploratory digging determined that the medical debris extended approximately eighty feet alongside the gully. Width of the site varied from five feet at the southwestern end of the site to ten feet across in the midsection of the site. Depth of the site also varied considerably, from three feet deep in some spots up to nearly six feet in depth.

4.0 HISTORICAL BACKGROUND

4.1 NMCO was a major West Coast military hospital complex from the time of its development in the early 1940's. The Medical Center is on the wooded site of a former golf and country club.

4.2 At the time of excavation, it was uncertain when medical debris was placed at the work site. Records and maps did not show a medical debris site at this location and there was no corporate memory of medical debris placed in the area. Records did show that the area was used as a construction debris site primarily for construction materials such as lumber and concrete. Some of the medical materials removed from the site had dates which indicated they were manufactured in 1960 and had an expiration date of 1963. The road through the property was not built until the 1970's. The property where the medical debris was found and where the sewage spill occurred was sold by the Navy to a private citizen in 1978, but the Navy retained an easement on the property for maintenance and operations purposes. An initial removal, performed in February, of medical debris visible in the side of the gully discovered glass bottles (some with pill contents), scrub brushes, splint materials, unarmed suture kits and other miscellaneous debris. No needles, blades, syringes or other sharp objects were found at that time.

5.0 SCOPE OF WORK

5.1 SSPORTS Environmental Detachment was tasked by EFA West with the following objectives: (1) Determine the location of all medical debris on the eroded site. (2) Excavate the site and remove all medical debris for disposal. (3) Refill the excavation and all other eroded areas along the gully with clean soil.

5.2 Preparations

5.2.1 SSPORTS Environmental Detachment prepared a Work Plan to complete these goals. The Work Plan included a Health and Safety Plan to ensure worker health and safety during work operations. In addition to work instructions and health and safety instructions, the Work Plan included the following directives:

5.2.1.1 Take air monitoring samples at two hour intervals or when conditions dictated that air monitoring was advisable, such as when a new area of debris was uncovered or when an unusual odor was detected. Air monitoring was performed for Volatile Organic Compounds (VOCs), mercury vapor, carbon monoxide, hydrogen sulfide, and oxygen deficiency.

5.2.1.2 Prior to start of work, perform radiological surveys to ensure that there was no radioactivity in the area above background. Surveys were performed whenever a new debris stream was uncovered or whenever conditions at the site changed sufficiently to warrant further surveys.

5.2.1.3 Level D PPE protection was required throughout the excavation operation for personnel involved in collecting the debris.

5.2.1.4 If contaminated soil was detected (eg., soil is discolored, or air monitoring samples indicate the presence of VOC's), soil samples would be taken to determine the extent of the contamination. Sufficient soil samples would be taken to characterize all of the excavated soil.

6.0 FIELD METHODOLOGY AND RESULTS

6.1 Description of Work

Work began on April 27, 1998 by digging a trench, beginning in the area where the medical debris was visible, in the rain eroded gully to determine the eastern and western extents of the debris at the site (see Figure 1). Excavation in the gully determined that the trench marked the northern boundary of the debris. No debris was found on the northern side of the trench indicating that no more debris would be found in that direction. The trench was excavated approximately 60 feet up the gully until no more debris was found. The trench was extended an additional five feet to ensure that no more debris was present further up the gully. This established the eastern boundary of the medical debris. In order to establish a western boundary, a smaller second trench was dug in the lower portion of the gully (see Figure 1). This smaller trench extended for about ten feet. Thus, these two trench excavations determined that the debris pile extended for approximately 80 feet. Debris in the two trenches ranged from approximately one to five feet in depth below surface level (see Figure 2). The next step undertaken was to return to the top portion of the gully and determine the southern boundary of the debris pile. Once this southern boundary was established, SSPORTS moved back down the ravine, digging up the debris pile as worked progressed. At the top of the gully, the debris pile was only six feet wide. As excavation continued down the gully, it widened to a maximum of ten feet in the middle portion of the gully, then diminished to only about five feet wide at the bottom of the gully. Excavation depth varied from two to six feet below surface level but was typically around three feet with the debris pile about two feet below surface level (see Figure 2). Most of the debris pile was constituted by one layer which was about six to twelve inches thick, but in the middle portion of the pile, up to three layers of debris were detected which, combined, were at times up to three feet thick. At the bottom of the excavation, an additional five feet of soil which was free of debris was removed to ensure that no more debris was buried further down the gully. The total area excavated was approximately 800 square feet and the total volume of soil and medical debris removed in the excavation was approximately 3,000 cubic feet.

6.2 Work Schedule

Work began on 27 April 1998 and excavation was concluded 3 June 1998. Work was conducted only during normal working days when weather permitted. The excavation took fifteen working days with an additional eleven days being lost to unseasonably heavy rains during the period. Two additional work days were shortened due to rain. Filling in the ravine, repairing erosion

damage in the area, and performing miscellaneous repairs to the fence at the site took an additional five working days. All work in the area was completed on 11 June 1998.

6.3 Medical Debris

Debris was primarily located in a wood layer that ran through the soil the length of the excavation. In some of the denser areas of the debris pile, two or three layers of wood could be detected. The debris was likely placed in the pit in either wooden crates or pallets. Numerous types of medical debris were uncovered during this project. These included: Pill bottles; small vials of novocain, streptomycin and tetanus toxoid; leather pouches for holding vials; large vials of an unidentified clear liquid; bottles of liquids that included oil of wintergreen and oil of violet; unarmed suture kits for both internal and external tissue; bottles and boxes of hand cleaning solution; assorted packages of loose false teeth; tubes of antifungal agent; metal tools used in dental operations such as water tubes, jaw extenders, wire for braces, and small hammers; packages of unused needles for syringes (syringes not present); metal components called ejectors; red and white bars of wax; half-inch thick pieces of glass; bedpans; laboratory equipment including test tubes and beaker holders; small discs that looked as if they might be used for fine filing; and leg splints. For pictures of many of these items, see Appendix C. Only one needle was removed from the excavation that had a syringe attached. None of the materials removed from the excavation showed any evidence of having been previously used. Dates for most these items were uncertain. The labels for almost all of the pill bottles had decayed off of the bottles and the labels on the suture kits did not contain date information. The vials of streptomycin had a manufacture date of 1958 and an expiration date of 1963. The vials of tetanus toxoid had a manufacture date of 1958 and an expiration date of 1960. The leather pouches were dated 1945, but were likely placed in the debris pile on a later date given the condition of the pouches and the fact that they were probably to have been used to hold the streptomycin and tetanus toxoid vials. In all, 429 drums of material were removed from the site constituting 48,741.6 pounds of medical debris and soil. These drums were all manifested to Integrated Environmental Services, Inc. of Oakland, California for incineration.

6.4 Air and Radiation Monitoring

During the course of work operations at the site, instruments were used to perform a series of air and radiation monitorings to ensure worker health and safety and to determine if material removed from the excavation might be a hazardous waste. Radiation monitoring was performed to search for possible X-ray sources and radiation sources used in radiation therapies. To measure the radioactivity, a Ludlum Model 19 survey unit was used which measures radioactivity in the microRad per hour range. Air monitoring was performed primarily to search for VOCs and mercury in the debris. Three instruments were used for this purpose: The Jerome 431X Mercury Vapor Analyzer was used to detect mercury. The Exotox 50 Portable Gas Monitor was used to detect carbon monoxide, hydrogen sulfide and explosive atmosphere as well as determine the oxygen content of the work atmosphere. The MiniRAE Photo Ionization Detector was used to detect the presence of VOCs.

Each instrument listed above was checked against a known source of radioactivity or gas concentration prior to its use at the start of each work day and again after the work day was completed to ensure its proper operation. The results of these source checks are shown in Appendix D. For the Ludlum Model 19 survey unit, a "background" level was determined prior to each usage by taking a radiation reading at waist level away from the work area. Background levels for the three air monitoring devices were already predetermined. Some "drift" did occur during operation so that readings from these instruments did not always indicate background during air monitoring. Particularly, the Jerome 431X Mercury Vapor Analyzer would show a reading that would be slightly above the background of 0 milligrams per cubic meter for mercury. All readings were within parameters given in the technical manuals for these instruments.

Sixty-five monitoring sequences were performed. Of these sequences, 16 did not contain radiation surveys since they were performed during situations when an unusual odor was detected and there was no reason to suspect possible radioactivity. Two of these sequences were radiation surveys only since they were on unusual metal items removed from the excavation and no airborne monitoring was necessary. Three sequences did not include mercury vapor monitoring due to instrument failure. No mercury vapor was suspected during these sequences. Three other sequences did not include mercury vapor monitoring because the sequence was performed to investigate an odor not related to mercury. See Table below for summary.

AIR/RADIATION MONITORING DURING WORK OPERATIONS

Total Monitoring Sequences	O2, CO, H2S, LEL	Organic Vapors	Mercury Vapors	Radiation
65	63	63	57	49

During the 65 monitoring sequences, no detectable levels of either radioactivity, mercury or VOCs were detected. The actual monitoring data sheets are presented in Appendix E.

6.5 Photographs

Photographs of the removal work are presented in Appendix C.

7.0 CONCLUSIONS

A total of 429 drums of medical debris constituting 48,741.6 pounds of material (soil and medical debris) were removed from the excavation. This material was manifested to Integrated Environmental Services, Inc. for incineration. The area of excavation was about 800 square feet and the volume of the excavation was approximately 3000 cubic feet. The area of excavation included five to seven feet of additional diggings on either end of the debris pile and one to two feet of additional diggings on either side of the debris pile where no debris was detected. This assures a suitable "safety factor" that the entire debris pile has been located and excavated. As a

result, the senior registered environmental health specialist for Alameda County considered the clean-up of this site to be completed. Additionally, there was no evidence of contamination of the soil due to VOCs, mercury, or radioactive material.

8.0 LIMITATIONS

There were no limitations that specifically prevented the completion of the removal of the medical debris or reduced the efficiency of the removal. Some limitations prevented its removal in a more timely manner. For instance, the location of the debris in the ravine adjacent to two hills inhibited movement of the backhoe and required filling in the initial trench to facilitate movement of equipment. Erosion damage further down the ravine also limited movement of the equipment. This damage has now been filled in and repaired. Weather was also a limitation as the consistency of the soil made work operations treacherous when it was wet. Eleven work days were lost due to the unseasonable rains that were experienced during this period.

9.0 REFERENCES

9.1 Work Plan for Removal and Disposal of Medical Debris from Private Property Adjacent to Former Naval Medical Center, Oakland; Prepared by SSPORTS Environmental Detachment, 6 April 1998.

9.2 Environmental Baseline Survey/Community Environmental Response Facilitation Act Report for Naval Medical Center, Oakland, Final. Prepared by ERM-West, Inc., 1 December 1994.

9.3 SSPORTS DET INST 4110.2, Hazardous Material Control and Management

9.4 OPNAVINST 5100.23D, Navy Occupational Safety and Health Program

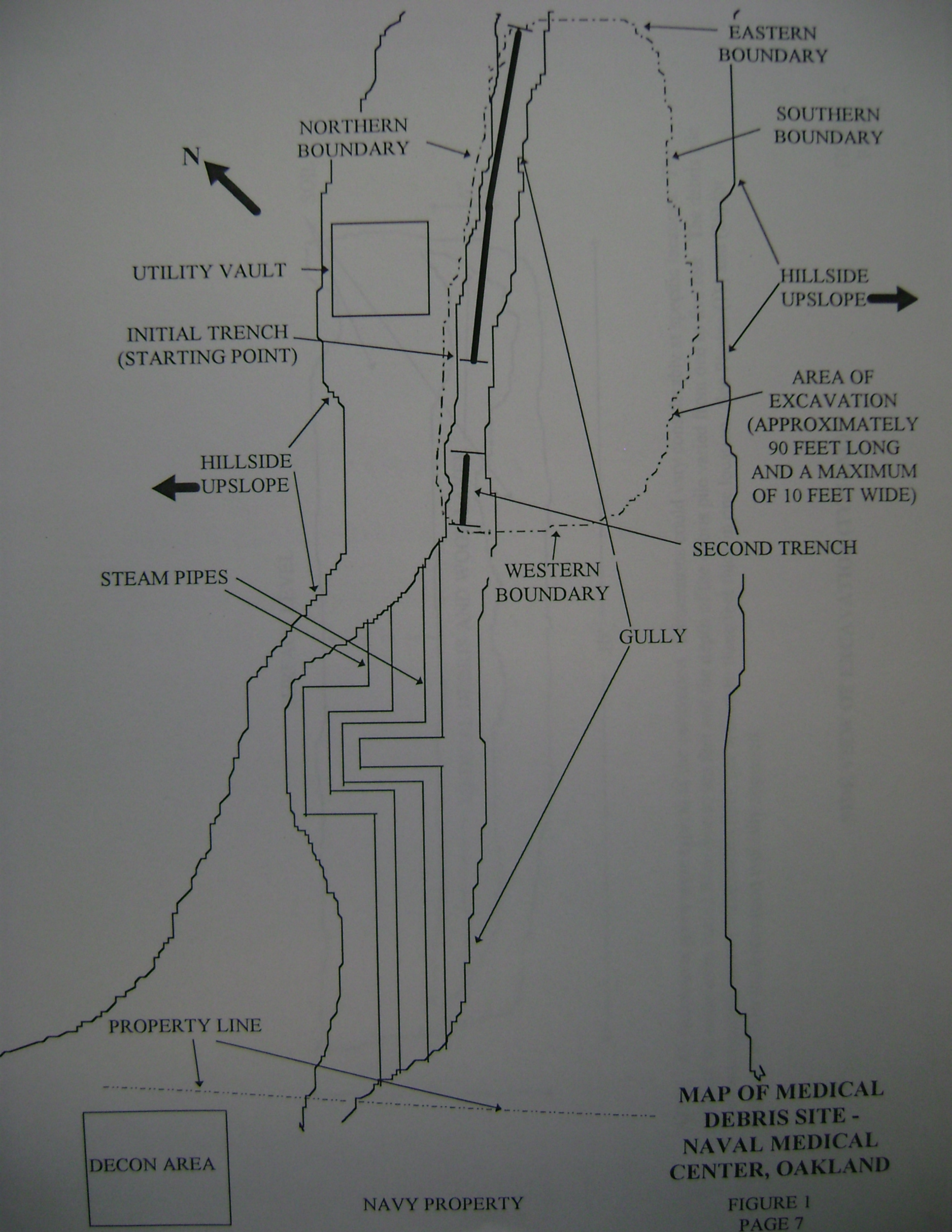
9.5 California Code of Regulations, Title 22

9.6 29 CFR 1910.120. Hazardous Waste Operations and Emergency Response (HAZWOPER)

9.7 29 CFR 1926, Subpart P, Excavations

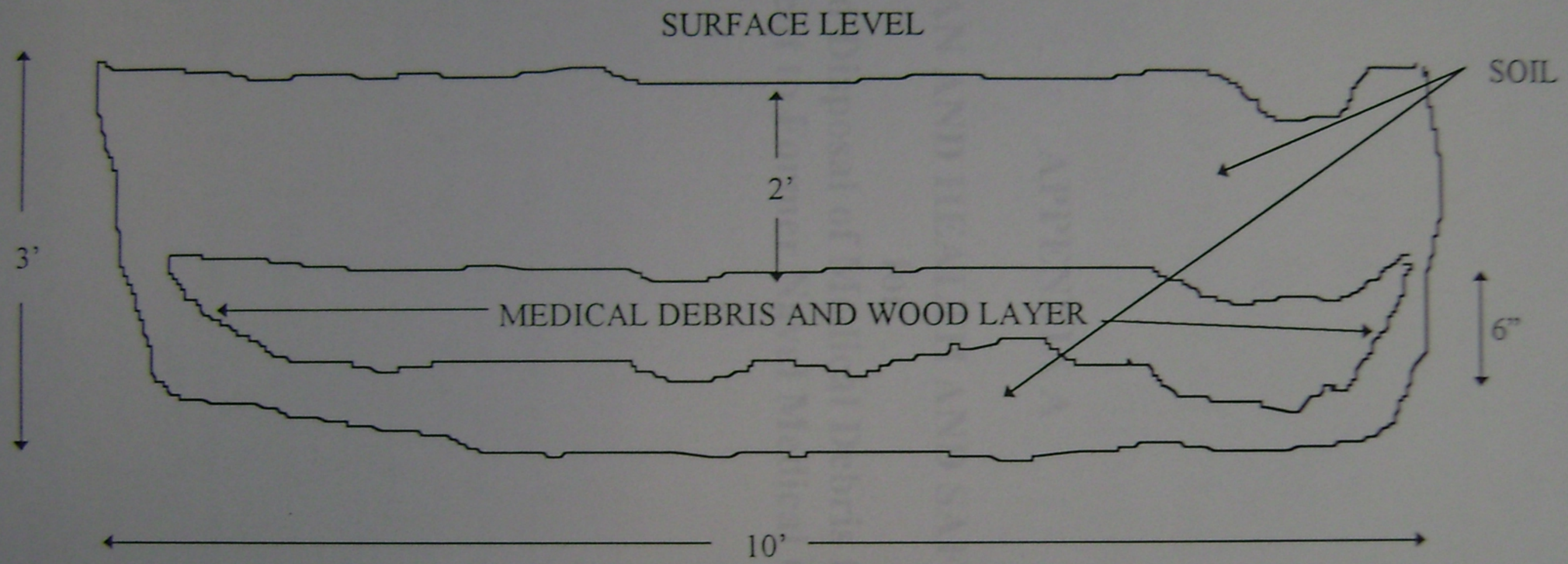
9.8 NUREG 1575 EPA 402-R-97-016, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), December 1997

9.9 Medical Waste Management Act, Division 104, Part 14, of the Health and Safety Code, February 1991



MAP OF MEDICAL DEBRIS SITE - NAVAL MEDICAL CENTER, OAKLAND

FIGURE 1
PAGE 7



NOTE: All dimensions given were typical of the excavation. Dimensions could vary considerably at specific locations. The width of the excavation varied from five to ten feet and the depth of the debris pile varied from one to five feet. The debris pile itself was typically six to twelve inches thick but was up to three feet thick in one location. See Photos (18) and (26) for examples of how the excavation typically appeared.

SIDE VIEW OF EXCAVATION (TYPICAL)

Department of Toxic Substances Control

Edwin F. Lowry, Director
700 Heinz Avenue, Suite 200
Berkeley, California 94710-2721

Winston H. Hickox
Agency Secretary
California Environmental
Protection Agency

Gray Davis
Governor

FILE COPY

April 12, 2000

Commanding Officer
Engineering Field Activity, West
Naval Facilities Engineering Command
Attn: Mr. David Haase, Code 61.5
900 Commodore Drive, Building B-206(U)
San Bruno, CA 94066-5006

REMEDIAL ACTIONS, NAVAL MEDICAL CENTER OAKLAND (NMCO)

Dear Mr. Haase:

We have recently become aware that the Naval Medical Center Oakland is no longer scheduled for conveyance to the City of Oakland, and is in fact being considered for sale by the Navy on the open market. The Department of Toxic Substances Control (DTSC) has reviewed this situation, and concluded that remedial actions are necessary to meet the requirements of the National Contingency Plan (NCP) as contained in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and incorporated in the Chapter 6.8 of the California Health and Safety Code (H&SC). This determination is based on the presence of lead in soil in concentrations that pose a threat to public health and the environment.

DTSC previously prepared an internal draft Remedial Action Plan for no further action at NMCO. This was based primarily on our understanding that the buildings at NMCO would be demolished by the City of Oakland prior to redevelopment. Our experience at this and other sites suggests that lead concentrations detected in soil following such demolition activities typically does not pose an unacceptable risk to public health or the environment when put to unrestricted use.

Since the Navy is now contemplating selling the property to an as-yet unknown buyer, to put to any use that buyer wishes, we can no longer proceed in confidence with a decision for no further action. We are therefore and by this letter notifying you that we intend to prepare a Remedial Action Plan that will reflect restrictions on use of the property until such time as either the Navy or some successor owner fully investigates and remediates lead in soil pursuant to the NCP at the facility, or demonstrates that remediation of lead is not necessary. We will further require that any transfer of the property by the Navy or successor owners include notice of this determination.

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
1230 COLUMBIA STREET, SUITE 1100
SAN DIEGO, CA 92101-8571

11011
Ser BPMOW.ahb/1206
9 Sep 2005

Daniel E. Murphy
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2721

SUBJECT: CLEANUP STATUS, FORMER NAVAL MEDICAL CENTER OAKLAND, CALIFORNIA

Dear Mr. Murphy:

This is in response to your August 29, 2005 letter characterizing the cleanup status at the former Naval Medical Center, Oakland (NMCO). You identify lead in soil adjacent to structures painted with lead based paint as a hazardous substance release under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The Navy remains committed to working with regulatory agencies to reduce and prevent human exposure to lead-based paint hazards at all transferring bases. We maintain our position that sufficient measures have been taken to address DTSC's concern in accordance with the applicable requirements defined by the Federal Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X of P.L. 102-550).

As noted in your letter, DTSC and the Navy have successfully addressed this issue at other bases with notification language in the Finding of Suitability to Transfer (FOST) and environmental covenants in the quitclaim deed. The FOST and Deeds for NMCO property contain such language as well. As required by Title X, the Navy referenced the lead-based paint results in the FOST for NMCO to inform the property recipient of the presence of lead-based paint and/or lead-based paint hazards in the target housing structures. Furthermore, the FOST, quitclaim deeds and Invitation for Bid contain a lead-based paint disclosure statement and a covenant that the property recipient will demolish all the target housing structures, conduct soil sampling and, if necessary, remediation after demolition. The property recipient is also responsible for managing all lead-based paint and potential lead based paint hazards, including soil lead hazards, in compliance with Title X and all applicable Federal, State and local laws and regulations.

We believe that this approach will continue to be successful in future transfers. Thank you for giving the Navy an opportunity to address DTSC's concern. If you have any further questions regarding this matter, please contact Ms. Ann Klimek at (619) 532-0987.

Sincerely,

DOUGLAS GILKEY
Base Closure Manager
By direction of the Director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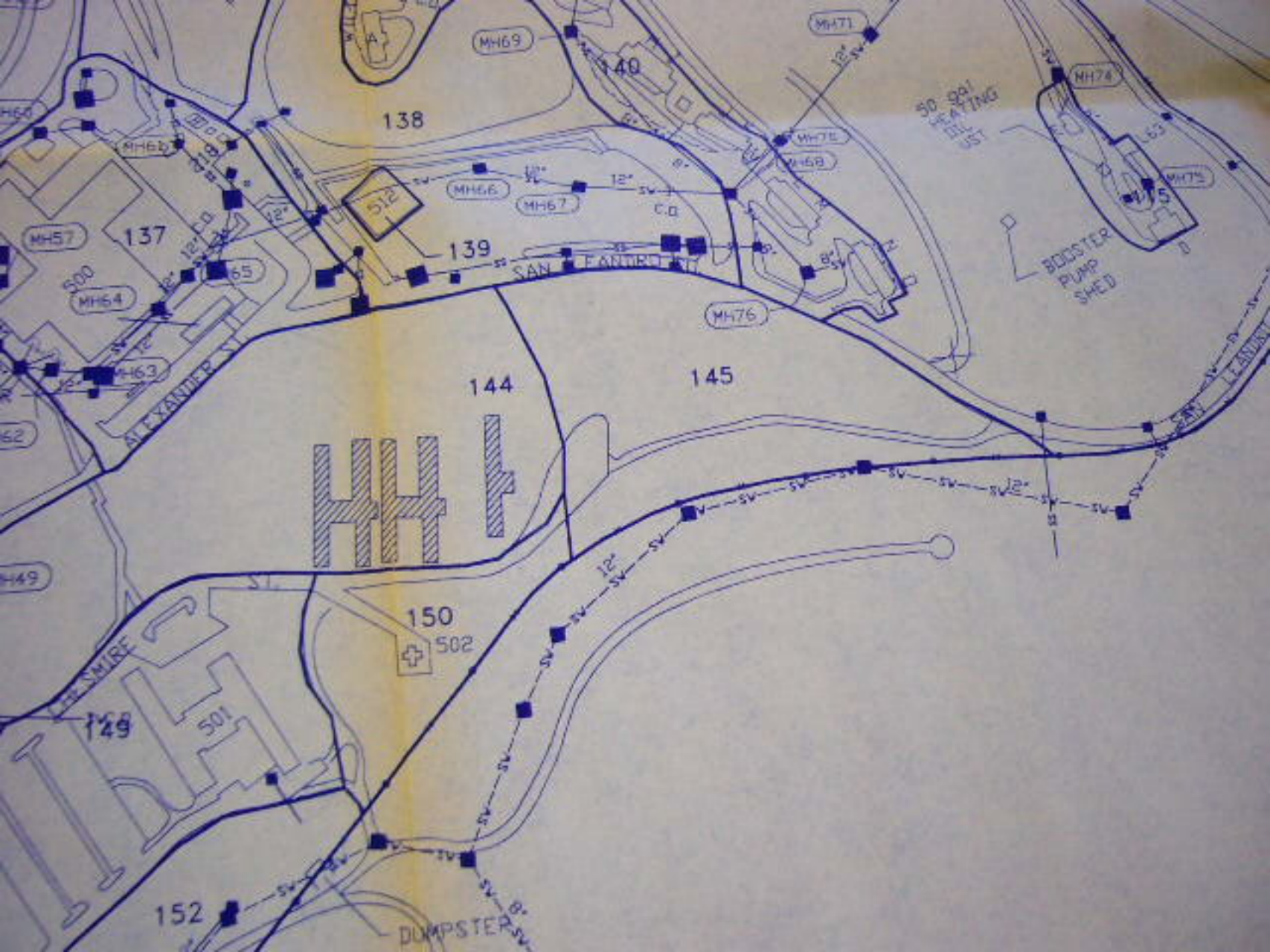

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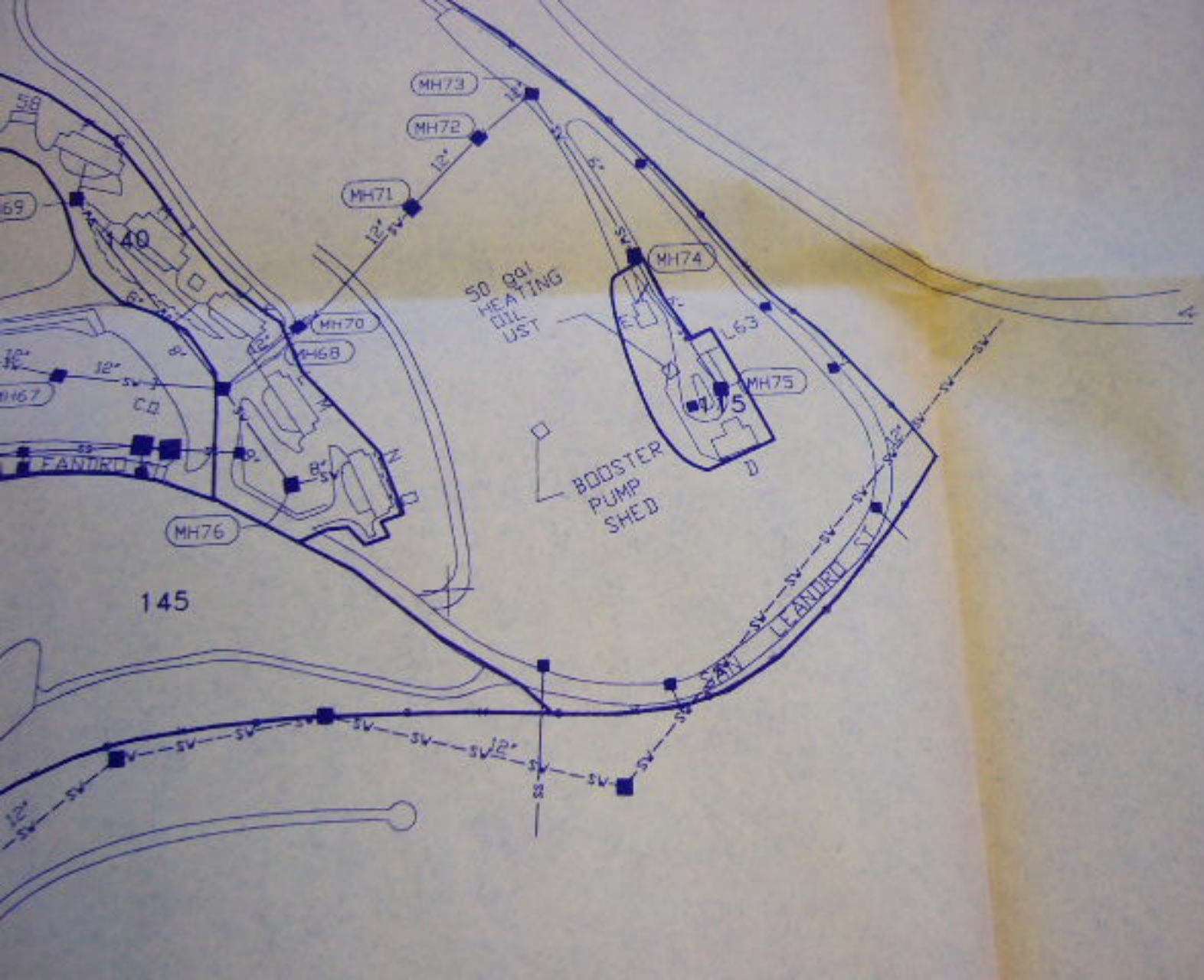
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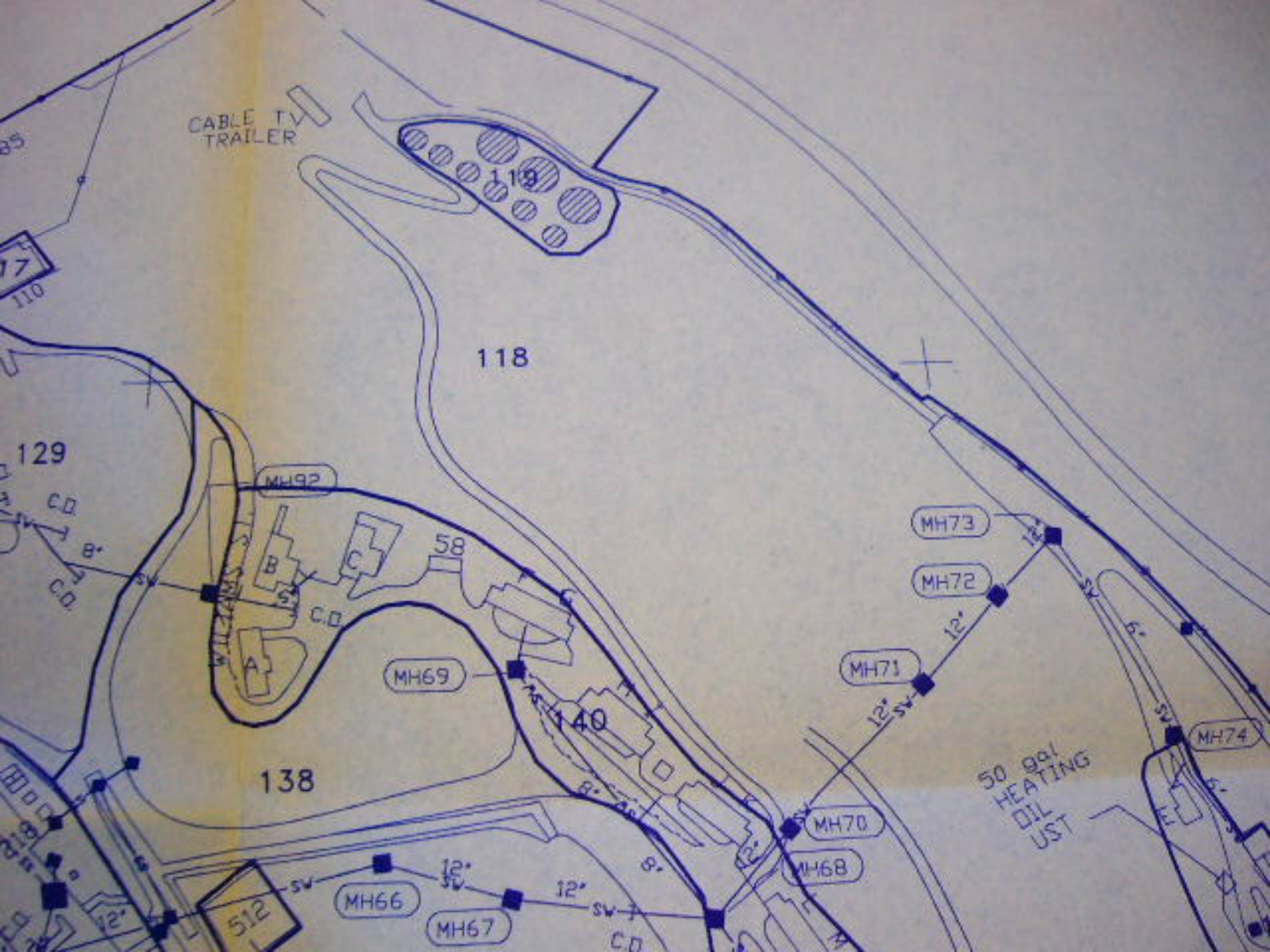
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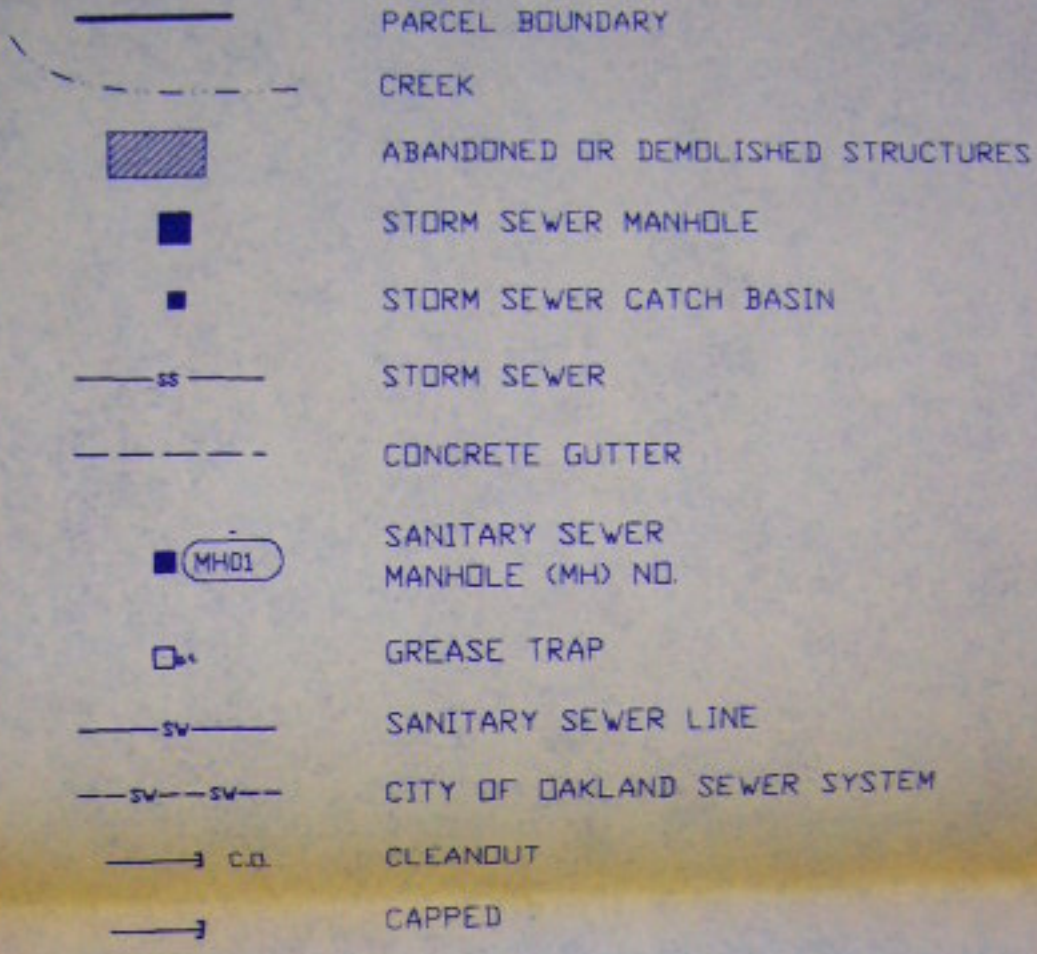
LEGEND


PARCEL BOUNDARY
CREEK
ABANDONED OR DEMOLISHED STRUCTURES
STORM SEWER MANHOLE
STORM SEWER CATCH BASIN
SS
STORM SEWER
CONCRETE GUTTER
MH01
SANITARY SEWER
MANHOLE (MH) NO.
GREASE TRAP
SV
SANITARY SEWER LINE
SV
SV
CITY OF OAKLAND SEWER SYSTEM
C.O.
CLEANOUT
CAPPED

Cal/EPA

San Francisco Bay Regional Water Quality Control Board

2101 Webster Street
Suite 500
Oakland, CA 94612
(510) 286-1255
FAX (510) 286-1380

June 20, 1997 File 2199. (vc)

Pete Wilson
Governor

Baha Zarah
Engineering Field Activities, West
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, CA 94066-2402

Subject: Remedial Action Completion Certificate for Underground Storage Tank Sites 510A, 510B, and 510C at Naval Medical Center, Oakland, California

Dear Mr. Zarah:

This letter confirms the completion of site investigation and remedial action for the underground storage tank formerly located at the location described above. Enclosed is the Case Closure Summary for the referenced site for your records.

Based upon the available information, including the current land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank release is required.

This notice is issued pursuant to a regulation contained in Title 23, California Code of Regulations, Division 3, Chapter 16, Section 2721(e). If a change in land use is proposed, the owner must promptly notify this agency.

Please contact Vincent Christian at (510) 286-4222 if you have any questions regarding this matter.

Sincerely,

Loretta K. Barsamian
Executive Officer

Richard K. McMurtry
Division Chief, Waste Containment and Groundwater Protection Division

Attachment: Case Closure Summary

cc : Mary Rose Cassa, DTSC
Phillip Ramsey, USEPA

SITE CLOSURE SUMMARY

I. AGENCY INFORMATION

Date: May 21, 1997

Agency Name: S.F.B.R.W.Q.C.B.	Address: 2101 Webster Street
City/State/Zip: Oakland, CA 94612	Phone: (510) 286-0301
Responsible Staff Person: Vincent Christian	Title: Associate Water Resource Control Engineer

II. SITE INFORMATION

Site Facility Name: Naval Medical Center, Oakland		
Site Facility Address: Building 510, Mountain Avenue, Oakland		
RB/SMS Case No.: 2199.	Local or LOP Case No.:	Priority:
URF Filing Date:	SWEEPS No.:	
Responsible Parties (include addresses and phone numbers)		
Baha Zarah (415) 244-2519		
Department of the Navy Engineering Field Activities, West Naval Facilities Engineering Command 900 Commodore Drive San Bruno, CA 94066-5006		

Tank No.	Size in Gallons	Contents	Closed In Place/Removed?	Date
510A	10,000	Gasoline	Removed	December 1991
510B	10,000	Gasoline	Removed	December 1991
510B	10,000	Gasoline	Removed	December 1991

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: unknown		
Site characterization complete? Yes	Date Approved By Oversight Agency: 5/21/97	
Monitoring wells installed? No	Number: 0	Proper screened interval? NA
Highest GW Depth Below Ground Surface: Unknown, but probably about 200 ft.	Lowest Depth: Unknown	Flow Direction: unknown, but probably west
Most Sensitive Current Use: None		
Most Sensitive Potential Use and Probability of Use : MUN,IND,PRO,AGR		

Are drinking water wells affected? No	Aquifer Name: None
Is surface water affected? No	Nearest/Affected SW Name: NA
Off-Site Beneficial Use Impacts (Addresses/Locations): None	
Report(s) on file? Yes	Where is report(s) filed? Regional Board (2)

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	3 - 10,000 gallon tanks	Oscar E. Erickson Inc., 225 Park Blvd, Richmond, CA	8/96
Piping	Approx. 50 ft.	Same as above	8/96
Free Product	None		
Soil	NA	Left in place. Treatment will occur from natural biodegredation only	
Groundwater	NA	Groundwater was not encountered during the excavation. No groundwater samples were taken	
Barrels	NA	(NA = Not Applicable)	

MAXIMUM DOCUMENTED POLLUTANT CONCENTRATIONSCBEFORE AND AFTER CLEANUP

POLLUTANT	SOIL (PPM)		WATER (PPB)		POLLUTANT	SOIL (PPM)		WATER (PPB)	
	BEFORE	AFTER	BEFORE	AFTER		BEFORE	AFTER	BEFORE	AFTER
TPH (GAS)	4000	NA	NA	NA	XYLENE	390	NA	NA	NA
TPH (DIESEL)	NA	NA	NA	NA	ETHYLBENZENE	67	NA	NA	NA
BENZENE	23	NA	NA	NA	MOTOR OIL	NA	NA	NA	NA
TOLUENE	300	NA	NA	NA	LEAD	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	CHROMIUM	NA	NA	NA	NA

COMMENTS (DEPTH OF REMEDIATION, ETC.):
NO REMEDIATION WAS PERFORMED AT THIS SITE. A FOLLOW-UP INVESTIGATION WAS PERFORMED IN FEBRUARY 1994. THE RESULTS OF THIS INVESTIGATION INDICATES THAT BTEX CONCENTRATIONS DECREASED FROM THE ORIGINAL SAMPLING DURING REMOVAL IN DECEMBER 1991. A TIER 2 RBCA ANALYSIS INDICATES THAT RISK TO HUMAN HEALTH IS MINIMAL. WHILE THIS SITE SITS ON A FRACTURED BEDROCK FORMATION, THE LIKELIHOOD OF THIS SITE CAUSING SIGNIFICANT IMPACTS TO BENEFICIAL USES OF GROUNDWATER IS SMALL BECAUSE OF THE DEPTH TO GROUNDWATER AND THE ABSENCE OF GROUNDWATER USE IN THE IMMEDIATE AREA. THIS SITE MEETS THE CRITERIA FOR LOW RISK SOIL-ONLY CASE.

NA MEANS NOT ANALYZED.

ND MEANS NOT DETECTED.

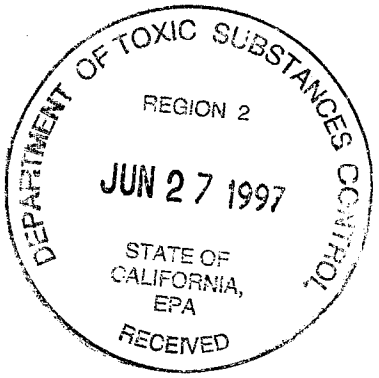
IV. CLOSURE

DOES COMPLETED CORRECTIVE ACTION PROTECT EXISTING BENEFICIAL USES PER THE REGIONAL BOARD BASIN PLAN? YES		
DOES COMPLETED CORRECTIVE ACTION PROTECT POTENTIAL BENEFICIAL USES PER THE REGIONAL BOARD BASIN PLAN? YES		
DOES CORRECTIVE ACTION PROTECT PUBLIC HEALTH FOR CURRENT LAND USE? YES		
SITE MANAGEMENT REQUIREMENTS: NONE		
MONITORING WELLS DECOMMISSIONED: NO	NUMBER DECOMMISSIONED: 0	NUMBER RETAINED: 0
LIST ENFORCEMENT ACTIONS TAKEN: NONE		
LIST ENFORCEMENT ACTIONS RESCINDED: NONE		

V. TECHNICAL REPORTS, CORRESPONDENCE ETC., THAT THIS CLOSURE RECOMMENDATION WAS BASED UPON

TITLE:	DATE:
SITE INVESTIGATION FOR UNDERGROUND STORAGE TANKS 11A, 510A, 510B, 510C, 510D, FINAL SUMMARY REPORT	NOVEMBER 16, 1994
DRAFT TECHNICAL MEMORANDUM, FORMER UNDERGROUND STORAGE TANK SITE 510, NAVAL MEDICAL CENTER, OAKLAND, CA RECOMMENDATION FOR NO FURTHER ACTION	JULY 15, 1996

THIS DOCUMENT AND THE RELATED **CASE CLOSURE LETTER,** SHALL BE RETAINED BY THE LEAD AGENCY AS PART OF THE OFFICIAL SITE FILE.



Cal/EPA

San Francisco Bay Regional Water Quality Control Board

2101 Webster Street
Suite 500
Oakland, CA 94612
(510) 286-1255
FAX (510) 286-1380

July 10, 1997 Pete Wilson
File 2199. (vc) *Governor*

Baha Zarah
Engineering Field Activities, West
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, CA 94066-2402

Subject: Remedial Action Completion Certificate for Underground Storage Tank Sites 141A, 141B, 500, 505, and 512 at Naval Medical Center, Oakland, California

Dear Mr. Zarah:

This letter confirms the completion of site investigation and remedial action for the underground storage tank formerly located at the location described above. Enclosed is the Case Closure Summary for the referenced site for your records.

Based upon the available information, including the current land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank release is required.

This notice is issued pursuant to a regulation contained in Title 23, California Code of Regulations, Division 3, Chapter 16, Section 2721(e). If a change in land use is proposed, the owner must promptly notify this agency.

Please contact Vincent Christian at (510) 286-4222 if you have any questions regarding this matter.

Sincerely,

Loretta K. Barsamian
Executive Officer

Richard K. McMurtry
Division Chief, Waste Containment and Groundwater Protection Division

Attachment: Case Closure Summaries

cc : Mary Rose Cassa, DTSC
Phillip Ramsey, USEPA

Cal/EPA

San Francisco Bay Regional Water Quality Control Board

2101 Webster Street
Suite 500
Oakland, CA 94612
(510) 286-1255
FAX (510) 286-1380

August 27, 1997 Pete Wilson
File 2199. (vc) *Governor*

Baha Zarah
Engineering Field Activities, West
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, CA 94066-2402

Subject: Remedial Action Completion Certificate for Underground Storage Tank Sites L63D, L63E, 214A, 214B, 214C, 214D, 22-1, and 22-2 at Naval Medical Center, Oakland, California

Dear Mr. Zarah:

This letter confirms the completion of site investigation and remedial action for the underground storage tank formerly located at the location described above. Enclosed is the Case Closure Summary for the referenced site for your records.

Based upon the available information, including the current land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank release is required.

This notice is issued pursuant to a regulation contained in Title 23, California Code of Regulations, Division 3, Chapter 16, Section 2721(e). If a change in land use is proposed, the owner must promptly notify this agency.

Please contact Vincent Christian at (510) 286-4222 if you have any questions regarding this matter.

Sincerely,

Loretta K. Barsamian
Executive Officer

Richard K. McMurtry
Division Chief, Waste Containment and Groundwater Protection Division

Attachment: Case Closure Summaries

cc : Mary Rose Cassa, DTSC
Phillip Ramsey, USEPA

SITE CLOSURE SUMMARY

I. AGENCY INFORMATION

Date: August 27, 1997

Agency Name: S.F.B.R.W.Q.C.B.	Address: 2101 Webster Street
City/State/Zip: Oakland, CA 94612	Phone: (510) 286-0301
Responsible Staff Person: Vincent Christian	Title: Associate Water Resource Control Engineer

II. SITE INFORMATION

Site Facility Name: Naval Medical Center, Oakland		
Site Facility Address: Building 22, Mountain Avenue, Oakland		
RB/SMS Case No.: 2199.	Local or LOP Case No.:	Priority:
URF Filing Date:	SWEEPS No.:	
Responsible Parties (include addresses and phone numbers)		
Baha Zarah (415) 244-2519		
Department of the Navy Engineering Field Activities, West Naval Facilities Engineering Command 900 Commodore Drive San Bruno, CA 94066-5006		

Tank No.	Size in Gallons	Contents	Closed In Place/Removed?	Date
22-1	Unknown	Diesel	Removed	May 1986
22-2	Unknown	Diesel	Removed	May 1986
-				

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: unknown		
Site characterization complete? Yes	Date Approved By Oversight Agency: 8/27/97	
Monitoring wells installed? No	Number: 0	Proper screened interval? NA
Highest GW Depth Below Ground Surface: Approximately 26 ft.	Lowest Depth: Unknown	Flow Direction: unknown, but probably west
Most Sensitive Current Use: None		
Most Sensitive Potential Use and Probability of Use : MUN,IND,PRO,AGR		

Are drinking water wells affected? No	Aquifer Name: None
Is surface water affected? No	Nearest/Affected SW Name: NA
Off-Site Beneficial Use Impacts (Addresses/Locations): None	
Report(s) on file? Yes	Where is report(s) filed? Regional Board (2)

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	Size of tank not included in the records	Oscar E. Erickson Inc., 225 Park Blvd, Richmond, CA	5/86
Piping	None		
Free Product	None		
Soil	NA	Left in place. Treatment will occur from natural biodegredation only	
Groundwater	NA		
Barrels	NA	(NA = Not Applicable)	

MAXIMUM DOCUMENTED POLLUTANT CONCENTRATIONSCBEFORE AND AFTER CLEANUP

POLLUTANT	SOIL (PPM)		WATER (PPB)		POLLUTANT	SOIL (PPM)		WATER (PPB)	
	BEFORE	AFTER	BEFORE	AFTER		BEFORE	AFTER	BEFORE	AFTER
TPH (GAS)	ND	NA	ND	NA	XYLENE	ND	NA	ND	NA
TPH (DIESEL AND JET FUEL)	1.2	NA	100	NA	ETHYLBENZENE	ND	NA	ND	NA
TPH (MOTOR OIL)	NA	NA	NA	NA	CADMIUM	NA	NA	NA	NA
BENZENE	ND	NA	ND	NA	LEAD	NA	NA	NA	NA
TOLUENE	ND	NA	ND	NA	CHROMIUM	NA	NA	NA	NA

COMMENTS (DEPTH OF REMEDIATION, ETC.):

NO REMEDIATION WAS PERFORMED AT THIS SITE. THIS SITE IS UNLIKELY TO CAUSE ANY SIGNIFICANT IMPACTS TO HUMAN HEALTH DUE TO THE LOW LEVEL AND TYPE OF POLLUTANTS DETECTED IN THE SOIL. IT IS ALSO UNLIKELY TO CAUSE ANY SIGNIFICANTS IMPACTS TO THE ENVIRONMENT BECAUSE IT IS UNLIKELY THAT POLLUTANTS IN THE SOIL OR GROUNDWATER COULD MIGRATE TO SURFACE WATERS. GROUNDWATER IS NOT BEING USED IN THE IMMEDIATE AREA. THIS SITE MEETS THE CRITERIA FOR A LOW RISK GROUNDWATER CASE.

NA MEANS NOT ANALYZED.

ND MEANS NOT DETECTED.

IV. CLOSURE

DOES COMPLETED CORRECTIVE ACTION PROTECT EXISTING BENEFICIAL USES PER THE REGIONAL BOARD BASIN PLAN? YES		
DOES COMPLETED CORRECTIVE ACTION PROTECT POTENTIAL BENEFICIAL USES PER THE REGIONAL BOARD BASIN PLAN? YES		
DOES CORRECTIVE ACTION PROTECT PUBLIC HEALTH FOR CURRENT LAND USE? YES		
SITE MANAGEMENT REQUIREMENTS: NONE		
MONITORING WELLS DECOMMISSIONED: NO	NUMBER DECOMMISSIONED: 0	NUMBER RETAINED: 0
LIST ENFORCEMENT ACTIONS TAKEN: NONE		
LIST ENFORCEMENT ACTIONS RESCINDED: NONE		

V. TECHNICAL REPORTS, CORRESPONDENCE ETC., THAT THIS CLOSURE RECOMMENDATION WAS BASED UPON

TITLE:	DATE:
FINAL PRELIMINARY SITE ASSESSMENT AT SITES 22 AND 214 AT NAVAL MEDICAL CENTER, OAKLAND	JANUARY 1996

THIS DOCUMENT AND THE RELATED CASE CLOSURE LETTER, SHALL BE RETAINED BY THE LEAD AGENCY AS PART OF THE OFFICIAL SITE FILE.

SITE CLOSURE SUMMARY

I. AGENCY INFORMATION

Date: August 27, 1997

Agency Name: S.F.B.R.W.Q.C.B.	Address: 2101 Webster Street
City/State/Zip: Oakland, CA 94612	Phone: (510) 286-0301
Responsible Staff Person: Vincent Christian	Title: Associate Water Resource Control Engineer

II. SITE INFORMATION

Site Facility Name: Naval Medical Center, Oakland		
Site Facility Address: Building 214, Mountain Avenue, Oakland		
RB/SMS Case No.: 2199.	Local or LOP Case No.:	Priority:
URF Filing Date:	SWEEPS No.:	
Responsible Parties (include addresses and phone numbers)		
Baha Zarah (415) 244-2519		
Department of the Navy Engineering Field Activities, West Naval Facilities Engineering Command 900 Commodore Drive San Bruno, CA 94066-5006		

Tank No.	Size in Gallons	Contents	Closed In Place/Removed?	Date
214A	6000	Gasoline	Removed	May 1986
214B	6000	Gasoline	Removed	May 1986
214C	8000	Gasoline	Removed	May 1986
214D	Unknown	Unknown petroleum	Removed	May 1986

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: unknown		
Site characterization complete? Yes	Date Approved By Oversight Agency: 8/27/97	
Monitoring wells installed? No	Number: 0	Proper screened interval? NA
Highest GW Depth Below Ground Surface: Unknown, but probably about 30 ft.	Lowest Depth: Unknown	Flow Direction: unknown, but probably west
Most Sensitive Current Use: None		
Most Sensitive Potential Use and Probability of Use : MUN,IND,PRO,AGR		

Are drinking water wells affected? No	Aquifer Name: None
Is surface water affected? No	Nearest/Affected SW Name: NA
Off-Site Beneficial Use Impacts (Addresses/Locations): None	
Report(s) on file? Yes	Where is report(s) filed? Regional Board (2)

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	4tanks, various sizes	Oscar E. Erickson Inc., 225 Park Blvd, Richmond, CA	5/86
Piping	Unknown	Same as above	5/86
Free Product	None		
Soil	NA	Left in place. Treatment will occur from natural biodegredation only	
Groundwater	NA		
Barrels	NA	(NA = Not Applicable)	

MAXIMUM DOCUMENTED POLLUTANT CONCENTRATIONSCBEFORE AND AFTER CLEANUP

POLLUTANT	SOIL (PPM)		WATER (PPB)		POLLUTANT	SOIL (PPM)		WATER (PPB)	
	BEFORE	AFTER	BEFORE	AFTER		BEFORE	AFTER	BEFORE	AFTER
TPH (GAS)	ND	NA	NA	NA	XYLENE	ND	NA	NA	NA
TPH (DIESEL AND JET FUEL)	3.7	NA	NA	NA	ETHYLBENZENE	ND	NA	NA	NA
TPH (MOTOR OIL)	NA	NA	NA	NA	CADMIUM	NA	NA	NA	NA
BENZENE	ND	NA	NA	NA	LEAD	NA	NA	NA	NA
TOLUENE	ND	NA	NA	NA	CHROMIUM	NA	NA	NA	NA

COMMENTS (DEPTH OF REMEDIATION, ETC.):
NO REMEDIATION WAS PERFORMED AT THIS SITE. THIS SITE IS UNLIKELY TO CAUSE ANY SIGNIFICANT IMPACTS TO HUMAN HEALTH OR THE ENVIRONMENT DUE TO THE LOW LEVEL AND TYPE OF POLLUTANTS DETECTED IN THE SOIL. WHILE GROUNDWATER SAMPLES WERE NOT COLLECTED, IT IS UNLIKELY THAT GROUNDWATER HAS BEEN IMPACTED BASED ON THE ABSENCE OF POLLUTANTS DETECTED IN THE DEEPER SOIL SAMPLES. GROUNDWATER IS NOT BEING USED IN THE IMMEDIATE AREA. THIS SITE MEETS THE CRITERIA FOR A LOW RISK SOIL-ONLY CASE.

NA MEANS NOT ANALYZED.

ND MEANS NOT DETECTED.

IV. CLOSURE

DOES COMPLETED CORRECTIVE ACTION PROTECT EXISTING BENEFICIAL USES PER THE REGIONAL BOARD BASIN PLAN? YES		
DOES COMPLETED CORRECTIVE ACTION PROTECT POTENTIAL BENEFICIAL USES PER THE REGIONAL BOARD BASIN PLAN? YES		
DOES CORRECTIVE ACTION PROTECT PUBLIC HEALTH FOR CURRENT LAND USE? YES		
SITE MANAGEMENT REQUIREMENTS: NONE		
MONITORING WELLS DECOMMISSIONED: NO	NUMBER DECOMMISSIONED: 0	NUMBER RETAINED: 0
LIST ENFORCEMENT ACTIONS TAKEN: NONE		
LIST ENFORCEMENT ACTIONS RESCINDED: NONE		

V. TECHNICAL REPORTS, CORRESPONDENCE ETC., THAT THIS CLOSURE RECOMMENDATION WAS BASED UPON

TITLE:	DATE:
FINAL PRELIMINARY SITE ASSESSMENT AT SITES 22 AND 214 AT NAVAL MEDICAL CENTER, OAKLAND	JANUARY 1996

THIS DOCUMENT AND THE RELATED CASE CLOSURE LETTER, SHALL BE RETAINED BY THE LEAD AGENCY AS PART OF THE OFFICIAL SITE FILE.

SITE CLOSURE SUMMARY

I. AGENCY INFORMATION

Date: August 27, 1997

Agency Name: S.F.B.R.W.Q.C.B.	Address: 2101 Webster Street
City/State/Zip: Oakland, CA 94612	Phone: (510) 286-0301
Responsible Staff Person: Vincent Christian	Title: Associate Water Resource Control Engineer

II. SITE INFORMATION

Site Facility Name: Naval Medical Center, Oakland		
Site Facility Address: Officers Residence, Mountain Avenue, Oakland		
RB/SMS Case No.: 2199.	Local or LOP Case No.:	Priority:
URF Filing Date:	SWEEPS No.:	

Responsible Parties (include addresses and phone numbers)

Baha Zarah (415) 244-2519

Department of the Navy
Engineering Field Activities, West
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, CA 94066-5006

Tank No.	Size in Gallons	Contents	Closed In Place/Removed?	Date
L63D	750	Heating Oil	Removed	December 1994
L63E	750	Heating Oil	Removed	December 1994

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: unknown		
Site characterization complete? Yes	Date Approved By Oversight Agency: 8/27/97	
Monitoring wells installed? No	Number: 0	Proper screened interval? NA
Highest GW Depth Below Ground Surface: Unknown, but probably about 30 ft.	Lowest Depth: Unknown	Flow Direction: unknown, but probably west
Most Sensitive Current Use: None		
Most Sensitive Potential Use and Probability of Use : MUN,IND,PRO,AGR		

Are drinking water wells affected? No	Aquifer Name: None
Is surface water affected? No	Nearest/Affected SW Name: NA
Off-Site Beneficial Use Impacts (Addresses/Locations): None	
Report(s) on file? Yes	Where is report(s) filed? Regional Board (2)

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	4 tanks, various sizes	Oscar E. Erickson Inc., 225 Park Blvd, Richmond, CA	12/94
Piping	Unknown	Same as above	12/94
Free Product	None		
Soil	NA	Left in place. Treatment will occur from natural biodegredation only	
Groundwater	NA		
Barrels	NA	(NA = Not Applicable)	

MAXIMUM DOCUMENTED POLLUTANT CONCENTRATIONSCBEFORE AND AFTER CLEANUP

POLLUTANT	SOIL (PPM)		WATER (PPB)		POLLUTANT	SOIL (PPM)		WATER (PPB)	
	BEFORE	AFTER	BEFORE	AFTER		BEFORE	AFTER	BEFORE	AFTER
TPH (GAS)	NA	NA	NA	NA	XYLENE	ND	NA	NA	NA
TPH (DIESEL AND JET FUEL)	2860	NA	NA	NA	ETHYLBENZENE	ND	NA	NA	NA
TPH (MOTOR OIL)	1900	NA	NA	NA	CADMIUM	NA	NA	NA	NA
BENZENE	ND	NA	NA	NA	LEAD	NA	NA	NA	NA
TOLUENE	ND	NA	NA	NA	CHROMIUM	NA	NA	NA	NA

COMMENTS (DEPTH OF REMEDIATION, ETC.):
NO REMEDIATION WAS PERFORMED AT THIS SITE. THIS SITE CONTAINED ONLY FORMER RESIDENTIAL HOME HEATING OIL TANKS. REGIONAL BOARD POLICY, SUMMARIZED IS A LETTER FROM THE EXECUTIVE OFFICER DATED JUNE 21, 1994, STATES THAT THESE TYPE OF TANKS GENERALLY HAVE LITTLE OR NO IMPACT TO WATER QUALITY AND MAY BE CLOSED WITH LITTLE OR NO INVESTIGATION. FURTHERMORE, THIS SITE MEETS THE CRITERIA FOR A LOW RISK SOIL-ONLY CASE.

NA MEANS NOT ANALYZED.

ND MEANS NOT DETECTED.

IV. CLOSURE

DOES COMPLETED CORRECTIVE ACTION PROTECT EXISTING BENEFICIAL USES PER THE REGIONAL BOARD BASIN PLAN? YES		
DOES COMPLETED CORRECTIVE ACTION PROTECT POTENTIAL BENEFICIAL USES PER THE REGIONAL BOARD BASIN PLAN? YES		
DOES CORRECTIVE ACTION PROTECT PUBLIC HEALTH FOR CURRENT LAND USE? YES		
SITE MANAGEMENT REQUIREMENTS: NONE		
MONITORING WELLS DECOMMISSIONED: NO	NUMBER DECOMMISSIONED: 0	NUMBER RETAINED: 0
LIST ENFORCEMENT ACTIONS TAKEN: NONE		
LIST ENFORCEMENT ACTIONS RESCINDED: NONE		

V. TECHNICAL REPORTS, CORRESPONDENCE ETC., THAT THIS CLOSURE RECOMMENDATION WAS BASED UPON

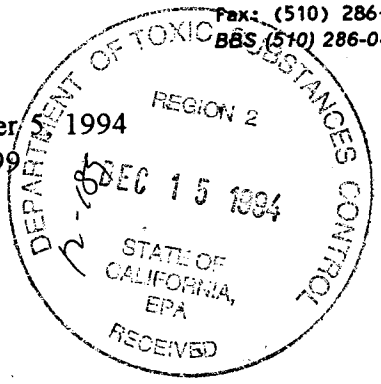
TITLE:	DATE:
UNDERGROUND STORAGE TANK REMOVAL SUMMARY REPORT - COMMANDING OFFICER'S AND EXECUTIVE OFFICER'S RESIDENCES AT NAVAL MEDICAL CENTER, OAKLAND	MAY 1996

THIS DOCUMENT AND THE RELATED **CASE CLOSURE LETTER**, SHALL BE RETAINED BY THE LEAD AGENCY AS PART OF THE OFFICIAL SITE FILE.

STATE OF CALIFORNIA

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
2101 WEBSTER STREET, SUITE 500
OAKLAND 94612

Phone: (510) 286-1255
Fax: (510) 286-1380
BBS (510) 286-0404



December 5, 1994
File: 2199

Baha Y. Zarah
EFA West
Head, Environmental Compliance UST Section
900 Commodore Drive
San Bruno, CA 94066-2402

Subject: Underground Storage Tanks (USTs) 510D and 111A, Naval Medical Center, Oakland, California

This letter confirms the completion of site investigation and remedial action for the subject USTs formerly located at the Naval Medical Center.

Based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank releases is required.

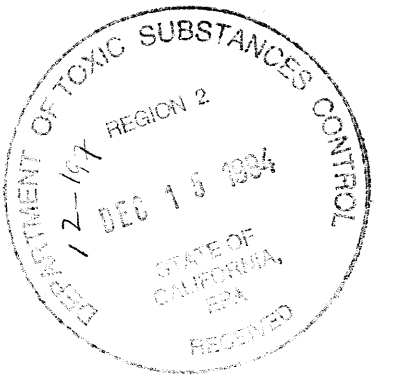
This notice is issued pursuant to a regulation contained in Title 23, Division 3, Chapter 16, Section 2721(e) of the California Code of Regulations.

Please contact Vincent Christian at (510) 286-4222 if you have any questions regarding this matter.

Sincerely,

Steven R. Ritchie
Executive Officer

cc: Mary Rose Cassa, DTSC
Barbara Smith, USEPA



FINAL ENVIRONMENTAL BASELINE SURVEY/ COMMUNITY ENVIRONMENTAL RESPONSE FACILITATION ACT REPORT FOR NAVAL MEDICAL CENTER OAKLAND CONTRACT N62474-92-D-3607 DELIVERY ORDER (0004)

Prepared For:

Engineering Field Activity West
Naval Facilities Engineering Command
San Bruno, California

December 1, 1994

Prepared By:

ERM-WEST, INC.
1777 Botelho Drive
Suite 260
Walnut Creek, CA 94596

Approved By: *Date:*

Baha Y. Zarah 22 Nov 1994
Baha Y. Zarah
BRAC Environmental Coordinator
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LIST OF ACRONYMS

ACM	Asbestos-Containing Material
A/E	Architect/Engineer
AR	Administrative Record
ARAR	Applicable or Relevant and Appropriate Requirement
AST	Aboveground Storage Tank
BAAQMD	Bay Area Air Quality Management District
BCP	BRAC Cleanup Plan
BCT	BRAC Cleanup Team
BEC	BRAC Environmental Coordinator
bls	Below Land Surface
BRAC	Base Closure and Realignment Act of 1988 and Defense Base Closure and Realignment Act of 1990, collectively
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action Navy
CR	Community Relations
CRP	Community Relations Plan
CSR	Central Storage Rooms
CSWRCB	California State Water Resources Control Board
CTO	Contract Task Order
DoD	Department of Defense
DOT	Department of Transportation
EBS	Environmental Baseline Survey
EBMUD	East Bay Municipal Utilities District
ECE	Environmental Compliance Evaluation
EFA WEST	Engineering Field Activity, West (formerly WESTDIV)
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FFA	Federal Facilities Agreement
FOSL	Finding of Suitability to Lease
FOST	Finding of Suitability to Transfer
IAG	Interagency Agreement
IRP	Installation Restoration Program

LIST OF ACRONYMS

IR site	Installation Restoration Site
LUST	Leaking Underground Storage Tank
NAVSEADET RASO	Naval Sea Systems Command Detachment, Radiological Affairs Support Office
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEESA	Naval Energy and Environmental Support Activity
NEHC	Navy Environmental Health Center
NEPA	National Environmental Policy Act, as amended
NEX	Navy Exchange
NMCO	Naval Medical Center Oakland
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
OSHA	Occupational Safety and Health Administration
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyl
pCi/L	Picocuries Per Liter
POTW	Publicly-Owned Treatment Work
ppm	Part Per Million
PRC	PRC Environmental Management, Inc.
PWCSFB	Public Works Center, San Francisco Bay
RA	Remedial Action
RAB	Restoration Advisory Board
RCRA	Resources Conservation and Recovery Act, as amended
RFA	RCRA Facilities Assessment
RI/FS	Remedial Investigation/Feasibility Study
SARA	Superfund Amendments and Re authorization Act of 1986
SWMP	Solid Waste Management Plan
TSCA	Toxic Substances Control Act of 1976
USC	United States Code
UST	Underground Storage Tank
WESTDIV	Western Division Naval Facilities Engineering Command. Redesignated as EFA WEST effective 1 October 1994.

EXECUTIVE SUMMARY

The U.S. Navy is required under the Community Environmental Response Facilitation Act (CERFA), signed into law on October 19, 1992 (Public Law 102-426), to collect data and document the existing environmental condition of Naval installations that are being closed under Base Realignment and Closure (BRAC). The initial phase of the required investigation is the completion of an Environmental Baseline Survey (EBS).

Engineering Field Activities West, Naval Facilities Engineering Command (EFA WEST) in San Bruno, California, directed ERM-West, Inc. (ERM-West) to perform an EBS of the Naval Medical Center, Oakland (NMCO) in Oakland, California. As part its EFA WEST mandated *Subcontracting Plan*, ERM-West secured the services of Shawnee Company, Inc., a small disadvantaged business enterprise.[1] Tasks required to satisfy the requirements for an EBS were completed for every parcel.[2] The primary objective, as directed by EFA WEST, was to complete the EBS identifying those parcels which were CERFA-eligible.[3] This report presents the findings of that survey. This report has been prepared in compliance with the requirements of the delivery order and is generally consistent with the guidelines and criteria set forth by CERFA and the Department of Defense Policy on the Implementation of the Community Environmental Response Facilitation Act.[4]

The primary objectives of this report were to identify CERFA-eligible parcels and to classify parcels into area types according to the Base Realignment and Closure (BRAC) Cleanup Plan guidance as discussed in Section 3, Parcel Classification. The area types range from "Areas where no storage, release, disposal, or contamination migration has

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1 It should be noted that the work provided by ERM-West, Inc. and its subcontractor, Shawnee Company, Inc. was authorized by EFA WEST under Delivery Order 0004 to Contract N62474-92-D-3607. EFA WEST is primarily responsible for the content of this report. See also the Disclaimer covered in Section 6.

2 The base was divided into parcels. See Section 2, Methodology, for a complete description.

3 CERFA-eligible is the term used to describe parcels where no hazardous substances and no petroleum products or their derivatives were stored for one year or more, known to have been released, or disposed of on the parcel and where contamination migration has not occurred. This corresponds to the CERFA definition of "uncontaminated".

4 DOD Policy on the Implementation of the Community Environmental Response Facilitation Act, dated May 19, 1993.

occurred" where there was no evidence uncovered during the survey indicating potential environmental concern (i.e., BRAC Area Type 1/CERFA-eligible), to "Areas that are unevaluated or that require further evaluation," where data gaps exist that would require physical inspection, historical investigation, or sampling (i.e., BRAC Area Type 7).

It should be noted that the EBS is a review at one point in time based on the data available at the time of the review. The EBS is the first phase in the process of determining whether a parcel is suitable for lease or transfer. Based on information developed in the EBS, information data gaps are identified so that areas where additional investigation is required can be assessed.

The EBS involved analysis of existing information concerning Naval Medical Center, Oakland covering a 60-year period.[5] For ease of investigation and reporting, Naval Medical Center, Oakland was divided into 63 parcels. The classification of parcels was based on an investigation of Naval Medical Center real property to determine or discover the storage, release, or threatened release, of any hazardous substance[6] or any petroleum product or its derivatives, including aviation fuel and motor oil, on the real property. Included in the work undertaken were: a detailed search of base environmental records pertaining to Naval Medical Center, Oakland; a review of local, state, and federal government files for the base; a review of historical information; analysis of aerial photographs; identification of potential sources of contaminant migration from adjacent parcels; interviews with current and former employees; and a site inspection of the facility.

The results of the EBS indicated the classification of two undeveloped parcels (Parcels 101 and 119) as BRAC Area Type 1 (i.e., CERFA-eligible) and the remaining 61 parcels as BRAC Area Type 7 (see parcel classification map, Figure ES-1).

Regarding the two BRAC Area Type 1 parcels, it should be noted that pesticide records were not available for the parcels (or for the entire base for that matter). However, it should also be noted that neither of these two BRAC Area Type 1 parcels are developed or cultivated, and it

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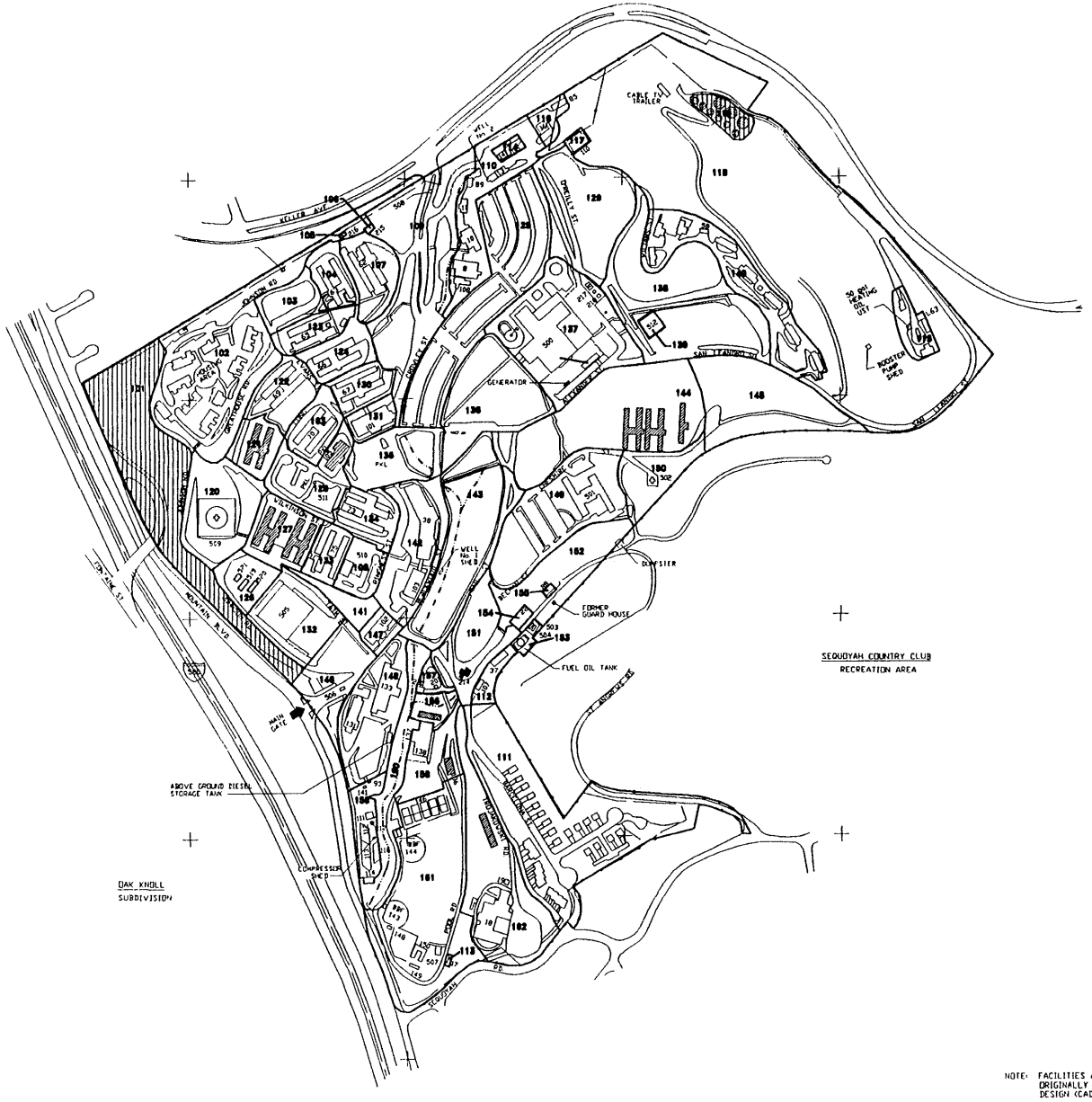
5 EFA WEST defined the 60 year period to be January 1, 1932 through December 31, 1992. However, base records were reviewed through January 31, 1994.

6 As used in this report, "hazardous substance" means all CERCLA hazardous substances (42 USC 9601(14)), California hazardous substances, and includes petroleum products and their derivatives, such as oil and lubricants.



LEGEND

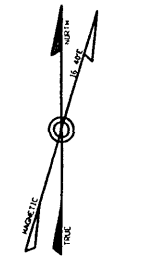
CREEK

ABANDONED OR DEMOLISHED STRUCTURES

CLASSIFICATION LEGEND

BRAC AREA TYPE 1

BRAC AREA TYPE 7



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NOTE: FACILITIES AND/OR STRUCTURES SHOWN REFLECT THOSE ORIGINALLY PROVIDED TO ERM-WEST IN COMPUTER AIDED DESIGN (CAD) FORMAT AND MAY NOT BE CURRENT.

ERM

FIGURE ES-1

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

NAVAL MEDICAL CENTER, OAKLAND

PARCEL CLASSIFICATION MAP

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scale AS NOTED		Date 12/01/94/21242358 sheet 1 of 1

appears unlikely that significant quantities of herbicides or pesticides were ever applied.

As directed by EFA WEST, both of the two BRAC Area Type 1 parcels were reviewed by Naval Sea Systems Command Detachment, Radiological Affairs Support Office (NAVSEADET RASO) for potential use/disposal of radioactive materials and by the Navy Environmental Health Center (NEHC) regarding all available records of medical uses of radioactive material at NMCO for the subject parcels. After a review of their records, both agency's concluded that there is no historical evidence indicating that radioactive materials were used or disposed of in parcels 101 or 119.

The major data gaps which caused the rest of the parcels to have BRAC Area Type 7 classification were:

- The disposal of hazardous substances in the storm drains and sanitary sewer system which had the potential to contribute to soil and groundwater contamination;

- The possible existence of friable asbestos associated with the underground steam system;

- The presence of adverse present or past activities such as laboratories, clinics, and surgery which would have lead to chemical storage and use;

- The possibility that contamination may remain following the demolition of a building;

- The absence of pesticide application and storage history records of the facility; and

- EFA WEST efforts to obtain concurrence from NAVSEADET RASO and NEHC for all of the remaining non-CERFA-eligible parcels regarding radioactive materials and mixed waste issues. Resolution of this effort is still pending. At this point, three additional parcels could be nominated for CERFA-qualified pending concurrence from NAVSEADET RASO and NEHC. Those parcels are:

  - Parcel 111 - Base Housing;

  - Parcel 120 - Subsistence Commissary; and

  - Parcel 140 - Base Housing.

Efforts to address data gaps identified and reflected in BRAC Area Type 7 parcel categorization are planned as follow-on efforts to this study.

SECTION 1

INTRODUCTION

This Environmental Baseline Survey (EBS) report summarizes information gathered by ERM-West, Inc., (ERM-West) during the period of October 1993 to January 1994 for real property at Naval Medical Center, Oakland (NMCO) in Oakland, California. For site location, see Figure 1-1. An EBS is a fence-to-fence[7] environmental survey of the base, including contaminated and uncontaminated parcels. Its purpose is to collect data, document the existing environmental condition of the base, and identify data gaps. However, it should be pointed out that the EBS is a review at only one point in time based on the data available.

Objective

The primary objectives of this report were to identify CERFA-eligible parcels and to classify parcels according to the BRAC Area Types discussed in Section 3, Parcel Classification. The area types range from "Areas where no storage, release, disposal, or contamination migration has occurred," where there was no evidence uncovered during the survey indicating potential environmental concern, to "Areas that are unevaluated or that require further evaluation," where significant data gaps exist that would require physical inspection, historical investigation, or sampling. EBS assessments are defined in the "DOD Policy on the Implementation of the Community Environmental Response Facilitation Act (CERFA)".

For purposes of our work, ERM-West has assumed the definition of "parcel" is flexible and can be correlated to actual Navy property usage rather than to any assessor's parcel number found in the county records. For example, a parcel may constitute a single building or encompass grouped buildings, such as housing. Parcels were defined, in many cases, to separate different use areas or to divide known contaminated property from potentially uncontaminated property.

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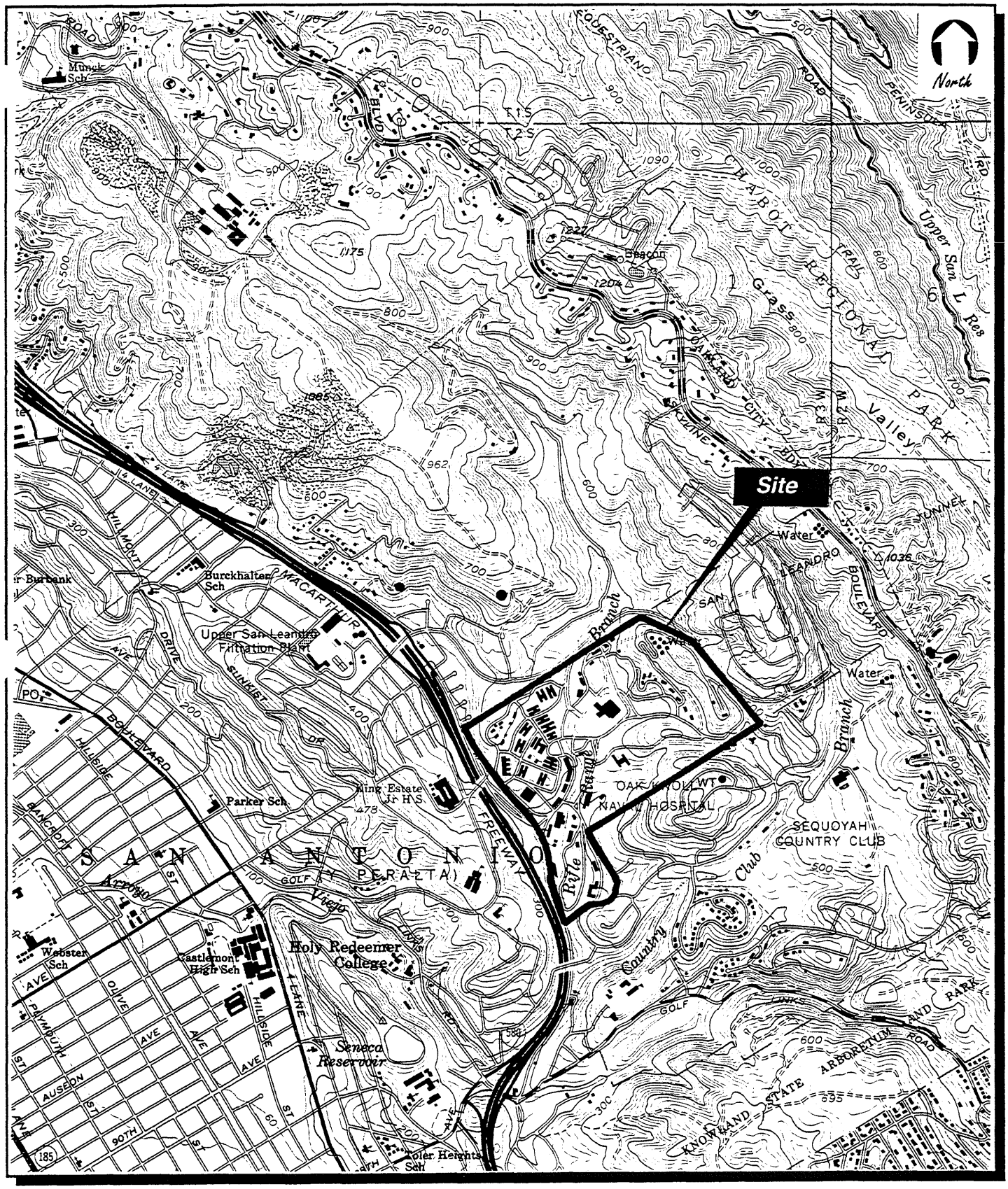
7 It should be noted that EFA WEST has interpreted fence-to-fence to include that portion of real property that is within the property line only.



Based From USGS 7.5 Minute Topographic Map Series, Oakland, California (1983)

ERM-West, Inc. 3'94
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Figure 1-1

Naval Medical Center, Oakland

Site Location Map

Oakland, California

An investigation of NMCO real property was conducted to determine or discover the storage, release or threatened release of any hazardous substance or any petroleum product or its derivatives, including aviation fuel and motor oil, on the real property during the 60-year period.

The following tasks describe the general scope of work performed for this project:

- A detailed search of federal government records pertaining to the real property;
- A review of recorded chain-of-title documents focusing on ownership history of the property, as well as any easements that were granted for underground utilities that could have an environmental impact on the property;
- A review of aerial photographs of the real property;
- A physical inspection of the real property and any buildings, structures, equipment, pipe, pipeline, or other improvements on the real property;
- A visual inspection of property adjacent[8] to NMCO;
- A review of reasonably obtainable local, state, and federal government records concerning each adjacent facility where there has been a documented release of any hazardous substance or any petroleum product or its derivatives, including aviation fuel and motor oil, and which is likely to cause or contribute to a release or threatened release of any hazardous substance or any petroleum product or its derivatives, including aviation fuel and motor oil, on the real property; and
- Interviews with current and former employees involved in operations on the base.

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8 According to EFA WEST guidance, surveillance of neighboring property is limited to one-quarter mile from the property boundary. In general, EFA WEST viewed the one-quarter mile radius as appropriate due to the residential nature of the surrounding area. However, service stations along Mountain Blvd. and Sequoyah Country Club tank sites, outside the 1/4 mile radius, were also included in this study.

Regulatory Background and Process

The scope of work required for an EBS is derived from CERFA and the Department of Defense (DOD) Guidance Policy on CERFA[9]. Together, these documents constitute the first step in the process of evaluating parcels of real property on the base. The EBS incorporates known information and serves as a reference in developing the CERFA report and the Base Realignment and Closure Cleanup Plan (BCP). The following is a description of CERFA and the other documents listed above.

CERFA and DOD Guidance Policy

The Community Environmental Response Facilitation Act (CERFA) amends the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) to require the federal government, before termination of federal activities on any real property owned by the government, to identify real property where no hazardous substance was stored, released, or disposed of. Specifically, the law states that for a property to be classified as uncontaminated, no hazardous substances and no petroleum products or their derivatives are known to have been stored on the property for one year or more, or are known to have been released or disposed of on the property.

The DOD Policy on the Implementation of CERFA applies to uncontaminated property that is being considered for transfer by deed consistent with protection of public health and the environment and without interference with the environmental restoration process or response actions.

Both CERFA and the DOD Policy on the Implementation of CERFA state that identification of uncontaminated parcels is not considered complete until concurrence with the results of the identification is obtained. In the case of real property that is part of a facility on the National Priorities List, concurrence must come from the EPA Administrator, or, in the case of real property that is not part of a facility on the National Priorities List, from the appropriate state official.

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9 Deputy Secretary of Defense Policy Memorandum, dated 19 May 1993.

CERFA Report

Information used to create the CERFA section of this report is taken directly from the results of the EBS. Section 5, *CERFA Eligible Parcels*, identifies those parcels that are classified as BRAC Area Type 1, "areas where no storage, release, or disposal (including migration) has occurred" or Area Type 2, "areas where only storage has occurred" for less than one year.

Base Realignment and Closure Cleanup Plan (BCP)

The BCP will document the environmental condition of all parcels of real property on the base and outline the appropriate action to accomplish the transfer of the property. For parcels that are not suitable for immediate transfer to the community, the document will address data gaps (missing or incomplete information) identified in the EBS, as well as site conditions and remedial actions associated with parcels known to be contaminated. The BCP will specify the methods to be used to either fill in the data gaps, investigate, or remediate the parcels. The BCP will be revised on a periodic basis. The BCP will reflect all parcels' status changes through time, until each parcel is transferred.

EBS Report Outline

This report presents the findings of ERM-West's investigation. The report consists of seven sections:

- Executive Summary
- Introduction
- Survey Methodology
- Parcel Classification
- Results
- CERFA Qualified Parcels
- Disclaimer

The appendices include a summary of the information collected for the NMCO. Appendix A presents the database design including the data dictionaries. Appendix B contains the bibliographic references by

reference number. Appendix C presents the data output by parcel. Appendix D presents the Agency Information Consultants (AIC) Report.

SECTION 2

SURVEY METHODOLOGY

This section describes the approach used to collect and evaluate the data necessary to produce the NMCO EBS. To carry out the EBS investigation, a work program consisting of nine tasks was undertaken. These nine tasks were divided into two phases of work and are listed below:

Phase I

- Presite Activities
- Environmental Department Records Review
- Title Search
- Documented Contaminated Sites Program Reviews
- Historical Record and Aerial Photograph Reviews
- Regulatory Agency Reviews

Phase II

- Neighboring Property Reconnaissance
- Detailed Physical Inspection
- Interviews with Current and Past Employees

The Phase I tasks centered on presite activities and document review of various regulatory agency files and files at NMCO. Some interviews with current employees occurred in Phase I because of the timing opportunity offered during this phase. Phase II included the detailed physical inspection, neighboring property reconnaissance, and employee interviews. The purpose of separating the tasks into two phases of work was to establish a basis for directing the Phase II investigation by obtaining information supplemental to that uncovered during Phase I.

The EBS was based on the 60-year period from January 1, 1932 through December 31, 1992. However, base records were reviewed through

January 31, 1994. Data collected for each task were entered into a database, as described below. A description of Phase I and Phase II activities follows the database discussion.

Database

Forms were used to collect data for each of the nine tasks on a parcel-by-parcel basis, with the exception of the offsite property review. Data from the field investigations and file review were compiled in two Filemaker Pro™ databases. The first of these databases served as a bibliographic reference point, compiling a list all the files, interviews, and documents reviewed during the investigation. The second database contains the summaries of relevant information from the files, interviews, and documents. This second database was used to collegiate the results of the investigation into a format that could be used for classification. The database can also be used as central source of environmental information for later stages of the base closure process. Data dictionaries from the two databases are located in Appendix A.

The bibliographic reference is printed in Appendix B.

A major goal of the project was to classify the various parcels according to the predefined BRAC categories. (See Section 3, Parcel Classification, for a description of the categories.) Thus, the output of the second database was designed to collect and organize the information for quick review. The output of the database by parcel is contained in Appendices C101 to C163. For example, all the information collected concerning Parcel 101 is contained in Appendix C101; all the information concerning Parcel 102 is contained in Appendix C102; and so on. To determine the rational for each parcel's classification, one need only review the information in its corresponding Appendix.

Parcel 900 was assigned to the offsite property adjacent to the base. Relevant information is included in Appendix C under the corresponding parcel number. These adjacent offsite parcels were not subject to classification.

The following paragraphs describe the scope of activities conducted for each of the tasks.

Phase I

Phase I activities consisted of presite activities, environmental department records review, a title search, historical records and aerial photograph reviews, and regulatory agency file reviews.

Pre-Site Activities

Activities undertaken during this task included: acquiring and reviewing the environmental database search report; completing agency document review requests; acquiring and analyzing the base map; and defining parcels.

Environmental Database Report. A commercially available report was acquired from Agency Information Consultants (AIC) in Austin, Texas, for the base and facilities located within a one-quarter mile radius of the base boundary. Exceptions to the one-quarter mile search radius included facilities identified on the Environmental Response Notification System (ERNS) database, Registered Underground Storage Tank list, RCRA Notifiers, and RCRA Evaluations/Violations databases. Searches were restricted to the base property only for the ERNS database and to the base and adjoining properties on the Registered Underground Storage Tank list, RCRA Notifiers database, and RCRA Evaluations/Violations databases. The regulatory agency databases that were included in AIC's environmental database report were searched using the same radii recommended by the American Society of Testing and Materials (ASTM)[10] E1527-93 when conducting Phase I Environmental Site Assessments, except that the maximum search distance was limited to one-quarter mile at the request of EFA WEST. The basis for the one-quarter mile radius was the general residential nature of the surrounding area. However, information was reviewed for leaking underground storage tanks at service stations along Mountain Blvd. and at Sequoyah Country Club, both of which are found beyond a 1/4 mile from the site.

Information provided by this report included sites of documented and suspected soil or groundwater contamination, either on the base itself or on facilities located within one-quarter mile of the base. Sites of documented and suspected contamination at NMCO were obtained by

10 ASTM E157-93 and E158-93 guidelines are the recognized standard in the field of Phase I Environmental Site Assessments. Phase I Environmental Site Assessments are commonly conducted when commercial properties are sold and are very similar in scope to an EBS.

AIC from federal, state, and local databases. Sites of documented or suspected soil or groundwater contamination were plotted on the base map. Information for base-identified sites was entered in the database under the appropriate parcel, and nearby sites of concern were plotted on a USGS Topographic Map (Figure 2-1). See Appendix D for a copy of the AIC report.

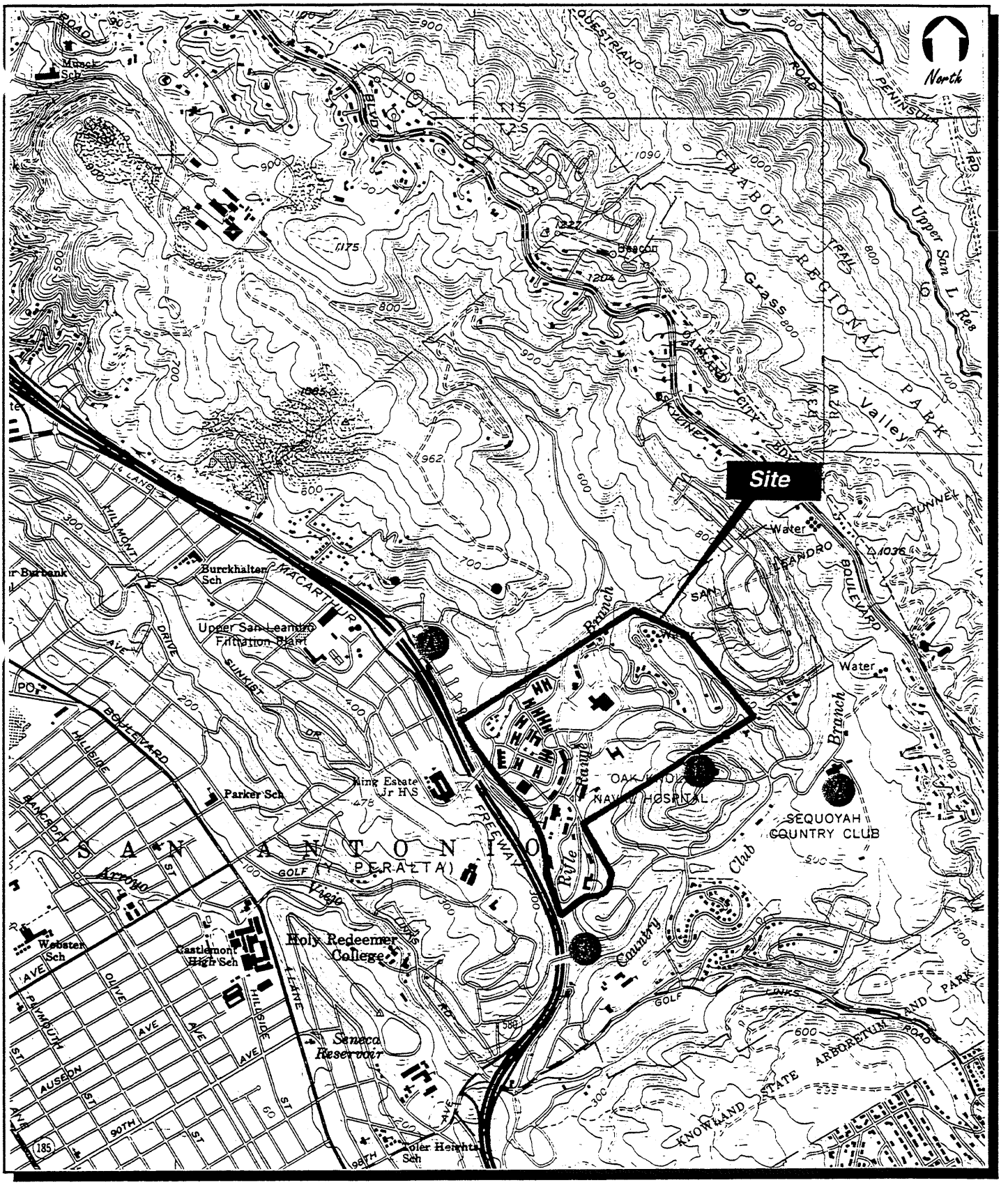
Agency File Review Requests. Upon review of the AIC environmental database report, Freedom of Information Act (FOIA) request letters were prepared and mailed to the local, state, and federal agencies identified as having information about the base or adjacent properties within one-quarter mile of the base based on the AIC environmental report. All documents reviewed are referenced in Appendix B, Bibliographic Reference.

Base Map Acquisition and Parcel Description. A map of the base was acquired from EFA WEST. The map was put on ERM-West's CAD system. Base property was divided into parcels. For purposes of this project, ERM-West has assumed the definition of "parcel" is flexible and can be correlated to actual Navy property usage rather than to any assessor's parcel number found in the county records. Where possible, properties with like uses were grouped together in a single parcel. For example, a housing development was treated as a single parcel.

Parcelization occurred very early in the EBS study since information was to be collected on a parcel-by-parcel basis. Parcels were created to be smaller rather than larger in order to expedite the reuse process. For future transfer or lease, it was assumed to be easier to group parcels together at some later date rather than to separate a large parcel into smaller sections. The parcelization objective was to obtain the largest section of property that would meet the definition of CERFA-eligible. An attempt was made to separate areas with known contamination or current significant hazardous material usage from areas where contamination was not suspected. United States Environmental Protection Agency's and California Environmental Protection Agency's position on several issues, such as whether a transformer was considered oil storage and whether parking lot stains were considered releases, also influenced parcelization. Parcels were also created to establish property of high reuse interest.

Environmental Department Records Review

This task included a review of pertinent base Environmental Department records; and, when necessary, additional departments were contacted for appropriate environmental records. Reference documents examined during the Environmental Department records



Based From USGS 7.5
Minute Topographic Map Series,
Oakland, California (1983)

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Figure 2-1

Naval Medical Center, Oakland

Sites of Potential Environmental Concern

Oakland, California

Sites of Potential Environmental Concern
Naval Medical Center, Oakland
Key to Figure 2-1

Site No.	Notes
1[a]	Former dumping site adjacent to NMCO
2[b]	Sequoyah Country Club Registered underground storage tank
3[b]	Former Exxon Service Station Mountain Blvd.
4[a,b]	Former Texaco Service Station Mountain Blvd.

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a Sites not included in AIC Report.

b Sites are outside of the 1/4 mile radius area of concern.

review are referenced in Appendix B, Bibliographic Reference. An attempt was made to identify and review records for all topics listed below:

- Aboveground and Underground Storage Tanks;
- Air Quality Permits;
- Asbestos;
- Building Information;
- Documented Contamination Sites;
- Hazardous Materials/Waste Management Sites and Units;
- Lead;
- Medical/Biohazardous Wastes;
- Ordnance;
- Pesticide Management;
- Polychlorinated Biphenyls (PCBs);
- Radon;
- Radioactive Materials;
- Mixed Wastes;
- Spills and Incidents;
- Utilities;
- Wastewater;
- Oil/Water Separators; and
- Stormwater.

From the above mentioned list, there were no files available to review for the following topics:

- Lead;
- Polychlorinated Biphenyls (PCBs);

- Pesticide Management; and
- Oil/Water Separators.

The task was limited to "readily available" appropriate and applicable files, documents, or records that could be obtained by ERM-West. The files were reviewed in detail, and relevant findings were summarized and documented on the appropriate forms. The results were entered into the database and cross-referenced to the parcel grid system.

The task also included interviews with the key base environmental personnel responsible for these areas.

The descriptions below describe information collected or attempted to be collected.

Aboveground and Underground Storage Tanks. Information collected on aboveground and underground storage tanks included tank capacity, the material stored in the tank (e.g., gasoline or diesel fuel), the material used to construct the tank, and dates of installation and removal, if applicable. For removed tanks, we attempted to review information that indicated if the tank was monitored for leakage during operation and if soil samples and/or groundwater samples were collected and analyzed upon removal.

Air Quality Permits. For air permits, ERM-West reviewed the source and type of permitted emission, period of use, and fuel or chemicals used at a building location. The emission itself was not the primary concern; rather, the greatest consideration was the fuel or chemical creating the emission. A brief description of the fuel or types of chemicals used at each parcel is listed in the database.

Asbestos. For parcels where an asbestos survey had been performed, the following questions were answered: was asbestos identified; where was the asbestos-containing material located (e.g., floor tile, pipe insulation); and was the asbestos friable. Where information was available about renovation or removal of asbestos-containing materials, ERM-West indicated the removal date and gave a description of what was removed.

Building Information. Information gathered on buildings included the date constructed, demolition date if applicable, uses of the structure and applicable dates of use, square footage, and type of construction (e.g., wood frame, concrete tilt-up).

Information concerning the buildings on the property was also gathered so that a prediction could be made on the use of asbestos-

containing construction materials and lead-based paint if asbestos and/or lead-based paint surveys were not performed.

Documented Contamination Sites. Contaminated sites are composed of three categories: Installation Restoration Program (IR) sites, Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) sites, and Leaking Underground Storage Tank (LUST) sites.

A brief description of the extent of contamination (i.e., the impacts to soil or groundwater) was given if available. The status of the investigation or remedial program was also documented.

Hazardous Materials/Waste Management Sites and Units. For each parcel, information regarding hazardous materials and waste was gathered. For parcels where hazardous materials were stored or used, an inventory of the chemical types used, typical quantities stored, types and purpose of the use, and the dates of use were gathered. On parcels where hazardous wastes were generated, stored, treated, or disposed, information regarding the type of wastes and quantities were entered into the database.

For the purposes of this study, hazardous materials/wastes were classified into one of 11 categories: metals; corrosives (acids, bases, oxidizers); halogenated organics; nonhalogenated organics, explosives; pesticides/herbicides/fungicides; radioactive materials/waste; petroleum products (lubricants, greases, oils); fuel products (gasoline, jet fuel, diesel); polychlorinated biphenyls (PCBs); and other.

Chemicals specifically excluded from consideration were incidental quantities of household-type cleaning chemicals and consumer office products.

Medical/Biohazardous Wastes. For parcels where healthcare facilities were located, ERM-West gathered information concerning the generation, storage, and disposal of infectious and biohazardous wastes. The type of waste, amount, and the means of disposal were identified.

Ordnance. Information gathered on ordnance included the type (e.g., solid or liquid fuel) and uses (e.g., burn pit, or storage only) of the ordnance. The period of time that the ordnance was stored or used on site was also noted.

Radon. Radon surveys conducted at the base were reviewed to identify locations of radon that were below or exceeded the EPA-approved safe exposure level of 4 picocuries/liter.

Radioactive Materials or Mixed Wastes. File information was reviewed at the base to identify parcels where radioactive materials or mixed wastes were stored and the period of time they were stored. Information giving a description of the material was included in the database. Radioactive sources which were incorporated into equipment were also noted.

In addition to a review of local files, EFA WEST initiated a review by the Naval Sea Systems Command Detachment, Radiological Affairs Support Office (NAVSEADET RASO) for potential use/disposal of radioactive materials and by the Navy Environmental Health Center (NEHC) regarding all available records of medical uses of radioactive materials at NMCO. This search was limited to CERFA-eligible parcels, however.

Spills and Incidents. Information obtained on spills and incidents included the type of incident (e.g., fire, explosion, or spill), date of the incident, the type and amount of chemicals involved, and what clean-up actions were taken in response to the incident.

Information not included in this category included records on leaking underground tanks and other contamination incidents previously addressed in documented contaminated sites.

Utilities. Utility systems reviewed included sanitary sewer lines (Figure 2-2), storm drains (Figure 2-3), and steam/condensate lines (Figure 2-4). Information collected for these utilities included the identification of lines that were known or suspected to have transported hazardous substances. In the case steam/condensate lines, the primary concern was the presence of friable asbestos wrapping of the buried lines (especially when the piping breaks the ground surface) and the potential for release of friable asbestos into the ground and groundwater environment.

ERM-West did not review information on other types of utility lines that did not contain or transport hazardous materials. Although these lines may serve as conduits for the migration of contamination, it was assumed that investigations into areas of known contamination would examine this possibility.

Wastewater. Information collected on industrial wastewater included the type of process generating the flow (e.g., plating operations), the type of chemicals found in the wastewater, and the location and flow path of drain lines.

Stormwater. Information gathered on stormwater included the discharge point, the area of drainage, and the results of stormwater


KELLER AVE
JOHNSON RD
WELL No. 2
CABLE TV TRAILER
O'REILLY ST
WORKSHOP
50,000 GAL HEATING OIL UST
BOOSTER PUMP SHED
SAN LEANDRO ST
GENERATOR
ALTAMONT ST
LEANDRO ST
HH 1
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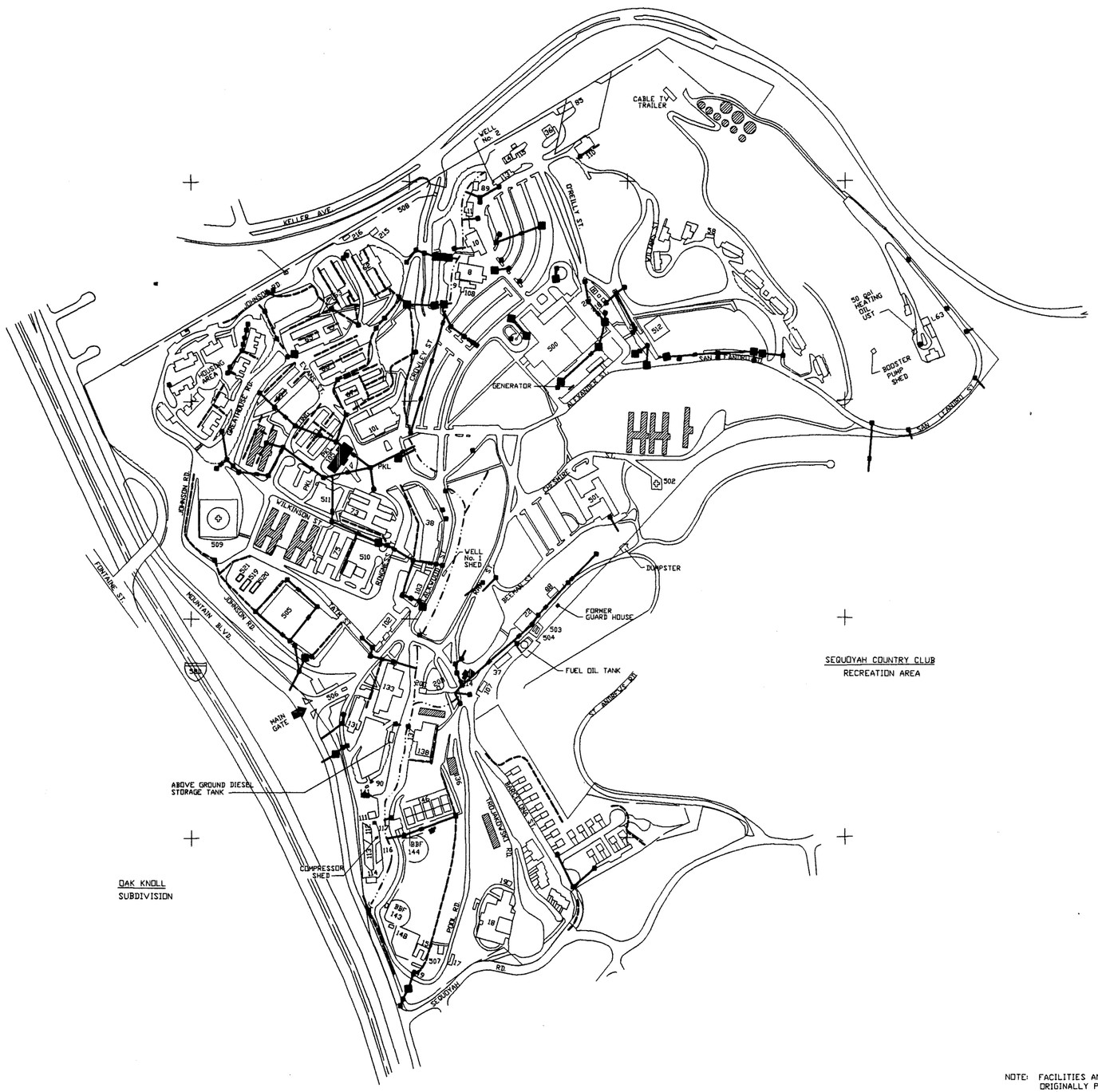


LEGEND

- CREEK
- ABANDONED OR DEMOLISHED STRUCTURES
- MANHOLE
- CATCH BASIN
- STORM SEWER
- CONCRETE GUTTER

NORTH
16 APR
MAGNETIC
TRUE

SCALE IN FEET
200 0 200 400 600
1" = 200'

FINAL
12-01-94

FIGURE 2-3

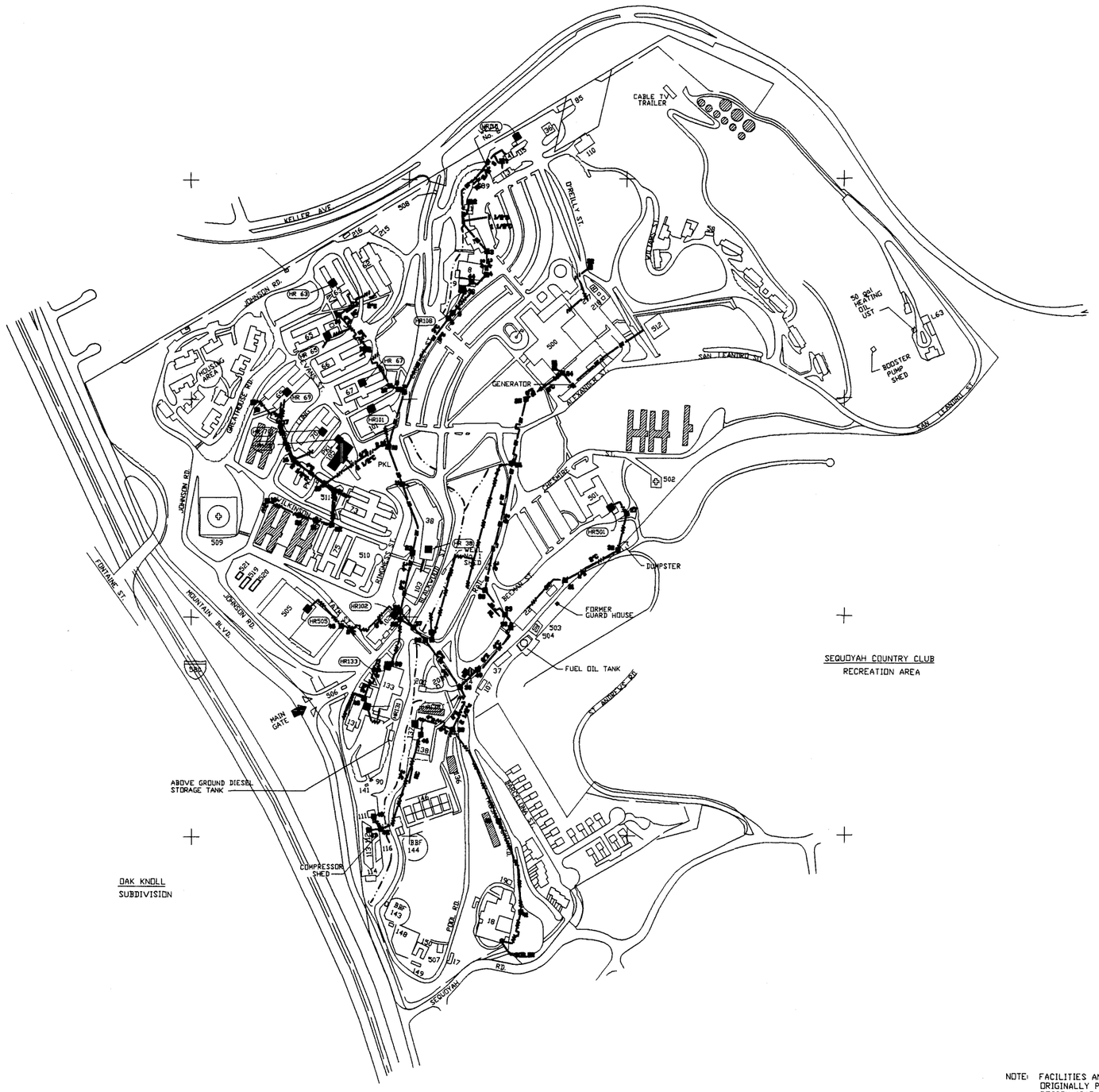
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

NAVAL MEDICAL CENTER, OAKLAND
(EXISTING)
STORM DRAINS

size	ERM Identification	Drawing Compiled by ERM from Naval Facilities Engineering Drawing Number 6249368
B	92240205.dwg	
	DIA_DRAWMWHDP	
scale AS NOTED		Date: 12.01.94/2124.2310 SHEET 1 OF 1

NOTE: FACILITIES AND/OR STRUCTURES SHOWN REFLECT THOSE ORIGINALLY PROVIDED TO ERM-WEST IN COMPUTER AIDED DESIGN (CAD) FORMAT AND MAY NOT BE CURRENT

ERM


KELLER AVE
JOHNSON RD
DRAKE AVE
DRAKE AVE
DRAKE AVE

sampling, if any. Of particular concern were storage areas for hazardous materials that were exposed to stormwater runoff.

Title Search

As required by CERFA and DOD Guidance, this task consisted of a review of EFA WEST Real Estate Department records for information concerning property ownership. The review focused on ownership history of the property and on easements granted for underground utilities, such as industrial sewers and petroleum pipelines, that might have an environmental impact on the property.

Additionally, a commercial title search was purchased from BBL as EFA WEST title records may not go back for the required 60 years. Chain-of-title searches were limited to property ownership and a record of easements that might have environmental impact. The search was conducted for the 60 years beginning January 1, 1932 and ending December 31, 1992.

Documented Contaminated Sites Programs

Information collected during this task was intended to supplement information already obtained during base environmental documents review. Documents in the contractor files were reviewed to provide additional information. Navy and contractor personnel were interviewed concerning project status of Leaking Underground Storage Tank (LUST) sites.

Hydrology/Topography. This task was primarily a review of the local geology/hydrogeology and topography information contained in Installation Restoration Program (IRP), RCRA Facilities Assessment (RFA), and LUST program documents. If there were no IRP, RFA, and LUST sites at the base, a review was made of literature about the local area or literature contained in the regulatory agency files on nearby contaminated sites, as identified in the AIC environmental database report. If available, information for this task included identification of soils on the base, depth to groundwater, and direction of groundwater flow.

Underground Tank Program. Information was gathered on the base tank management program. This included tank installation date, contents, and results of integrity testing. An interview with the base's underground storage tank program administrator was conducted to gather any additional information on the program other than what was available in base files.

Historical Record Reviews

Historic files were searched at the base, EFA WEST and the Public Works Center, San Francisco to determine land use over time. In this phase, ERM-West documented historical adverse usage and reviewed aerial photographs.

Historical Document Review. Two sources of historic information were researched at the base: the Facilities Office and Public Affairs Office. Three sources of historic information were researched off base: the Oakland Public Library, the Oakland Museum, and the Oakland Tribune. None of these sources had information applicable to this project. Documents from the base sources were reviewed to learn more about historical land use and potential areas of environmental concern, such as buildings that no longer exist in which chemicals may have been stored or used.

Aerial Photograph Review. A review of aerial photographs was performed to evaluate prior uses of the real property. Aerial photographs reviewed for this base were obtained from Pacific Aerial Survey in Oakland, California, Table 2-1. This review period was adequate to document notable changes in the base over time relative to the detail and clarity provided by the photos. The photographs were reviewed in a scale of one inch equals 650 feet.

Information obtained from a review of the photographs included dates when buildings appeared and disappeared, locations of aboveground tanks, locations of pump islands indicating underground tanks, and locations of outside storage and use areas. Additionally, indications of spills or significant staining (other than incidental staining associated with vehicle parking) were identified. However, it should be noted that because a significant number of buildings were identical in appearance it was difficult to discern actual use.

For properties located within the one-quarter mile study area beyond the base boundary, gasoline stations and areas of land use concerns were identified. The primary type of land use was noted to the north, south, east, and west. Land use was classified as either agricultural/undeveloped, residential, or commercial/industrial. Commercial/industrial areas of land use are judged to be the most significant in terms of the potential for contamination to migrate from these sites onto the base.

Table 2-1: Aerial Surveys
NAVAL MEDICAL CENTER, OAKLAND

Photo No.	Date	Source
1	24 Apr 47	Pacific Aerial Surveys, Oakland, CA
2	2 Oct 53	Pacific Aerial Surveys, Oakland, CA
3	8 Jul 59	Pacific Aerial Surveys, Oakland, CA
4	21 Apr 66	Pacific Aerial Surveys, Oakland, CA
5	18 May 71	Pacific Aerial Surveys, Oakland, CA
6	29 May 75	Pacific Aerial Surveys, Oakland, CA
7	16 Jun 81	Pacific Aerial Surveys, Oakland, CA
8	15 May 85	Pacific Aerial Surveys, Oakland, CA
9	12 Jun 90	Pacific Aerial Surveys, Oakland, CA
10	20 Apr 92	Pacific Aerial Surveys, Oakland, CA

Regulatory Agency Reviews

As required by DOD guidance, ERM-West reviewed files on the site at appropriate regulatory agencies. At a minimum, requests to review any files regarding the base location were made to the United States Environmental Protection Agency (USEPA), Cal-EPA's Department of Toxic Substances Control (DTSC) and Bay Area Regional Water Quality Control Board (RWQCB), and the Bay Area Air Quality Management District. In addition, files from local and regional agencies were reviewed if they were believed to have significant information, such as records of inspections and responses to spills and incidents. The only local agency that provided information in this report was the Alameda County Environmental Health Department. The East Bay Municipal Utility District and the Oakland Fire Department had no information relating to NMCO. Information gathered from these agencies was primarily supplemental to the information gathered during the review of base environmental documents.

Files for adjacent properties identified in the AIC report were reviewed at the appropriate agency to obtain information regarding whether or not contamination from these sites is believed to have migrated to the base.

In addition, if signs were observed during the neighboring property drive-by that an investigation was underway (stockpiled soil, open tank pits, drummed soil/water), an attempt was made to identify the agency with jurisdiction so that a file review of the site could be made. These additional sites included those not previously identified on the AIC report.

Phase II

Phase II activities included a neighboring property reconnaissance, employee interviews, and a detailed physical inspection.

Neighboring Property Reconnaissance

Neighboring property reconnaissance was conducted of all properties within one-quarter mile of the site boundary to identify sites of potentially significant chemical use or storage that may impact NMCO. The neighboring property is predominately residential. However, the types of businesses identified did include gasoline stations. Locations of soil mounds that might be indicative of excavated contaminated soil and drums of groundwater or soil cuttings from drilling activities were

also documented, if noted during the drive-by inspection. Onsite physical inspection of neighboring properties was not conducted because the files/records reviews and the drive-by did not detect aboveground storage or other conditions of concern.

In addition, this neighboring property reconnaissance was used to confirm the location of off-site facilities of concern identified in the AIC report. Offsite facilities of concern include the former dump area, the former Exxon and Texaco Service Stations on Mountain Boulevard, and the Sequoyah Country Club, 4550 Heafey Road. See Figure 2-1 for their approximate offsite location. It should be noted that the service stations and the Country Club are outside the 1/4 mile radius of concern. Information collected was entered into the results database using parcel number 900.

Detailed Physical Inspection

A detailed fence-to-fence physical inspection of buildings, structures, and undeveloped property was conducted. Specific goals of the inspection included the identification of chemical use, spillage, or other contamination and examination of outdoor areas for signs of stressed vegetation or other indications of chemical use or disposal. The physical inspection did not involve identification of asbestos or lead paint, nor did it include environmental sampling.

Transformers that were readily observable were viewed for evidence of staining; however, visual inspection of energized transformers requires deactivation and specialized OSHA training. Therefore, visual inspection of transformers were not conducted as part of this scope of work. It was understood that Public Works Center, San Francisco Bay (PWCSFB) would be conducting transformer inspections as well as transformer sampling for PCB content. It is expected that these results will be added to the EBS data base.

Additionally, visual observations were made indicating the potential for surface contamination migration onto the subject parcel from surrounding adjacent parcels These observations were made from a location on the subject parcel.

It should be noted that EFA WEST has interpreted fence-to-fence to include that portion of real property that is within the property line as defined on maps supplied by EFA WEST.

Excluded from the detailed physical inspection was the inspection of the interior of any private dwelling such as base housing.

Interviews with Current and Past Employees

Interviews were held with current and former site employees. ERM-West attempted to identify and interview key employees who worked at the site during periods where limited records were available. The goal was to identify the use of hazardous materials on the parcel and the potential for contamination during these earlier periods.

Employees interviewed included the following:

Name	Employment Status	Organization
John Parsons	Current Employee	PWC SF
Dan Yee	Current Employee	Environmental Dept.
Dave Lankford	Current Employee	Housekeeping Dept.
Larry Douchand	Current Employee	Environmental Dept.
Chief Sisler	Current Employee	Security
Captain Volksta	Retired Employee	Animal Hospital Facility
Ben Wilson	Retired Employee	Facilities Dept.
Lt. Commander Gorsuch	Current Employee	Radiation Safety Dept.
Mike Debol	Current Employee	PWC at NMCO

SECTION 3

PARCEL CLASSIFICATION

For purposes of our work, ERM-West has assumed the definition of "parcel" is flexible and can be correlated to actual Navy property usage rather than to any assessor's parcel number found in the county records. In this EBS, parcels may vary by size. For example, a parcel may constitute a single building or encompass grouped buildings, such as housing. Parcels were defined, in many cases, to separate different use areas or to divide known contaminated property from potentially uncontaminated property.

In accordance with Section 120(h)(4) of CERCLA as amended by CERFA, area type determinations were made on: a records search for the subject parcel and adjacent property, chain of title review, aerial photograph review, a visual inspection of the subject parcel and adjacent property, and interviews with current and former employees.

Parcels were classified according to the categories specified by the Base Realignment and Closure (BRAC) Cleanup Plan Guidebook procedures.[11] Below is a description of these categories.

BRAC Area Type 1, Areas Where No Storage, Release or Disposal (Including Migration) Has Occurred

This area type is defined as parcels where investigation results show no hazardous substances[12] or petroleum products were stored, released into the environment, or disposed of on site property.[13] BRAC Area Type 1 parcels are CERFA-eligible parcels.

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11 Department of Defense, "Base Realignment and Closure Clean-up Plan," Fall, 1993, Section 4.10.

12 "Contaminant" and "hazardous substance" used in this section means all CERCLA hazardous substances (42 USC 9601 (14)), California hazardous substances, and also specifically includes petroleum, petroleum products, oil, and lubricants.

13 The phrase "or site structures" was deleted from the BRAC Area Type 1 definition (see reference in note 11) per verbal direction from EFA WEST on 8 November 1994. EFA WEST conclusions were based on letter from Esther Hill, EPA Region IX to John Corpos, EFA WEST, dated 13 September 1994.

BRAC Area Type 2, Areas Where Only Storage Has Occurred

This area type is defined as parcels where investigation results show only that storage of hazardous substances or petroleum products has occurred, but no release, disposal, or migration from adjacent areas has occurred. Parcels where storage has occurred for less than one year and there were no known releases may be CERFA-eligible.

BRAC Area Type 3, Areas of Contamination Below Action Levels

This area type is defined as parcels where investigation results show that storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but the quantities present do not require a response action to protect human health and the environment. Such quantities of hazardous substances or petroleum products can be below defensible detection limits, or can be above detection limits but below action levels.[14] In addition, risk estimates for the contamination do not exceed the specific levels/indices set forth in the Guidebook.[15]

Information used to determine a release came from existing information only. No sampling was done to confirm the concentrations or quantities. The determination that there was no risk came from a review of existing information or from a formal declaration that no further remediation was needed by a regulatory agency. No risk assessment was performed as part of this scope of work.

It should be noted that due to the defined scope of this EBS, none of the parcels could be considered for BRAC Area Type 3 at this time. All determinations of this category type should be made on the basis of a site investigation level of effort. This level of effort may include biased field sampling and laboratory analysis to support a conceptual understanding of the area, followed by the appropriate assessment of risk to human health or the environment.

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14 Below action levels means, in the absence of installation specific risk-based or standards-based criteria, that the concentration in any medium does not exceed chemical specific ARARs (Applicable or Relevant and Appropriate Requirements).

15 Department of Defense, "Base Realignment and Closure Clean-up Plan," Fall, 1993, Section 4.10, page 4-53.

BRAC Area Type 4, Areas Where All Remedial Action Has Been Taken

This area type is defined as parcels where investigation results show hazardous substances or petroleum products have been released or disposed of, but all remedial actions necessary to protect human health and the environment with respect to any hazardous substance remaining on the property have already been taken to meet the provisions of CERCLA 120(h)(3). "All remedial action has been taken" means the remedial investigation is completed, and the remedial remedy is installed under a regulatory-approved program and is operating successfully for at least one year.

These areas have the potential to be free of contamination, except for an ongoing remedial program (e.g., pump and treat).

BRAC Area Type 5, Areas of Known Contamination With Removal and/or Remedial Action Under Way

This area type is defined as parcels where investigation results show the presence of sources or releases of hazardous substances or petroleum products (including derivatives) and are confirmed based on the results of sampling and analysis in electronic databases and/or environmental restoration and compliance reports. By definition, this area type contains contamination concentrations above action levels. Additionally, remedial systems are partially or entirely in place, but have not been fully demonstrated.

None of the parcels have been classified as BRAC Area Type 5. The review of documented contaminated sites did not include review or assessment of action levels.

BRAC Area Type 6, Areas of Known Contamination Where Required Response Actions Have Not Yet Been Implemented

This area type is defined as parcels where investigation results show the presence of sources or releases of hazardous substances or petroleum products (including derivatives) and are confirmed based on the results of sampling and analysis in electronic databases and/or environmental restoration and compliance reports. By definition, this area type contains contamination concentrations above action levels.

Additionally, required remedial systems have not been selected or implemented.

None of the parcels have been classified as BRAC Area Type 6. The review of documented contaminated sites did not include review or assessment of action levels.

BRAC Area Type 7, Areas That Are Unevaluated or That Require Further Evaluation

This area type is defined as parcels where investigation results show the presence of sources or releases of hazardous substance or petroleum products (including derivatives) is suspected, but not well characterized, based on the results of a properly scoped records search, chain of title review, aerial photograph review, visual inspection, set of employee interviews, and possibly sampling and analysis.

Parcels classified in this category have data gaps that would require physical inspection, site history investigation, or sampling. Each parcel placed in this category is accompanied by a list of issues that potentially constrain its transfer.

SECTION 4

RESULTS

The information presented below is a summary of the findings for each of the parcels at NMCO. Figure 4-1 is a base map that shows parcel boundaries and the buildings currently located within the parcels. Included in Figure 4-1 are the approximate locations of tanks, radiological use areas, generator accumulation sites, and silver recovery units. In order to provide the reader with a better understanding of what buildings and designated outdoor use areas are currently and in the past located on the base, two tables have been prepared. Both tables provide the reader with the following information: parcel number, building number and name, and designated outdoor use areas. Table 4-1 organizes the information numerically by parcel number and Table 4-2 organizes the information numerically by building number. Figure 4-2 is a map depicting basewide parcel classification.

To assist the reader's understanding as to why parcels were assigned their respective classifications, a history of land use on the base property is presented below. This historical write-up is followed by a description of local geologic/hydrogeologic information and the classification of each parcel.

History

NMCO has been a major West Coast military hospital complex from the time of its development in the early 1940s. The Medical Center is on the wooded site of a former golf and country club and the first actual land purchase of 176 acres occurred February 26, 1931. The Medical Center is responsible for general and specialized clinical/hospitalization services for active duty Navy and Marine Corps personnel, active duty members of other armed forces, dependents of active duty personnel, and other eligible persons. Although there are several medical commands present, the major nonmedical command is PWCSFB which is responsible for the operation of family housing, utility, and maintenance facilities for the installation.

Table 4-1: Buildings by Parcel Number
Naval Medical Center, Oakland

Parcel Number	Bldg. Number	Status	Description
101	NE corn. of prop.	D	Pump house Auxiliary
101	NE corn. of prop.	D	Pump house
102	Housing	E	Base Housing Units
102	68	R	Quarters (sick officers)
102	81	R	Ward
102	82	R	Ward
102	83	R	Ward
102	59	D	Storehouse
103	64	R	Ward
104	63	E	Facilities administration, medical equipment repair
105	216	E	Hazardous materials storage
106	59	D	Storehouse
106	215	E	Hazardous materials storage
107	62	E	Financial management
108	74	D	Ward
108	510	E	Service station, not in use
109	59	D	Storehouse
109	60	D	Ward
109	61	D	Ward
109	109	D	PWC storehouse
109	139A	D	Outdoor stage and dressing rooms
109	139B	D	Projection booth
109	508	E	Gatehouse
110	8	E	Storage, formerly a laundry
110	9	E	Storage, former laundry maintenance workshop
110	10	E	PWC offices, maintenance shops (carpenter, elect., P.F., machinist, sheetmetal)
110	11	E	Storage of plumbing and electrical materials, formerly sheet metal shop, electrical shop
110	12	D	Service station
110	13	E	Paint shop, A/C repair
110	51	D	Ward
110	89	E	Storage, formerly upholstery shop
110	108	E	Boiler room for building 8

D=Demolished; R=Removed; E=Existing.

Table 4-1: Buildings by Parcel Number
Naval Medical Center, Oakland

Parcel Number	Bldg. Number	Status	Description
111	Housing	E	Base Housing Units
112	37	E	Not in use, storehouse, formerly stables
112	107	E	Not in use, formerly rad storage
113	17	E	Hazardous materials storage (flammables) and rad waste storage
114	14	E	Operating room
114	115	E	Animal housing, surgery teaching, lab laundry
116	36	E	Firestation
116	85	E	Office and storage
117	110	E	Storage, dry goods
118	130	D	Water chlorination plant
118	West of CO res.	E	Booster pumphouse
120	106	D	Subsistance Commissary
121	71	D	Ward
122	69	E	Not in use, enlisted mens's quarters
123	65	E	Drug screening laboratory
124	66	E	Quarters, CPO
125		D	Administration building
125	4	D	Laboratories, central supply
125	4 shed	D	Storage, adjacent to Building 4
125	5	D	Cast room, blood bank
125	6	D	Subsistance Commissary
125	45	D	Ward
125	46	D	Ward
125	50	D	Ward
125	51	D	Ward
126	79	D	Ward
126	80	D	Ward
126	519	E	Storage, dry goods
126	520	E	Storage, dry goods
126	521	E	Hazardous waste storage
127	76	D	Ward
127	77	D	Ward
128	72	D	Ward
128	105	D	Surgery and outpatient clinic

D=Demolished; R=Removed; E=Existing.

Table 4-1: Buildings by Parcel Number
Naval Medical Center, Oakland

Parcel Number	Bldg. Number	Status	Description
128	511	E	Credit Union
129	47	D	Ward
129	48	D	Ward
129	49	D	Ward
130	67	E	Dental annex
131	101	E	Naval School of Health Sciences
132	78	D	Ward
132	79	D	Ward
132	87	D	Oxygen storage
132	505	E	General warehouse, supplies
133	75	E	Education, training, radiation safety
134	73	E	Administration building, various organizations
136	2	D	Physical therapy
136	3	D	X-ray building
136	4	D	Laboratories, central supply
136	4 shed	D	Storage, adjacent to Building 4
136	5	D	Cast room, blood bank
136	6	D	Subsistance Commissary
136	34	D	Dental Building
136	40	D	Quarters
136	41	D	Ward
136	91	D	Storage, flammables
137	6	D	Subsistance Commissary
137	7	D	Subsistance Commissary
137	41	D	Ward
137	42	D	Ward
137	43	D	Ward
137	44	R	Ward
137	45	D	Ward
137	46	D	Ward
137	96	D	Storage, flammables
137	217	E	Hospital plant auxiliary utility building
137	218	E	Hospital plant auxiliary utility building
137	223	E	Liquid oxygen storage
137	500	E	Hospital

D=Demolished; R=Removed; E=Existing.

Table 4-1: Buildings by Parcel Number
Naval Medical Center, Oakland

Parcel Number	Bldg. Number	Status	Description
137	MRI. Bldg.	E	MRI building
137	North corn. of hosp	E	Champus Service Center
138	52	R or D	Ward, donated
138	53	D	Quarters
138	54	D	Quarters
138	55	R or D	Quarters
138	56	D	Quarters
138	57	D	Steam regulating unit
138	58	D	Storehouse, initially on Parcel 138; however, the records show that it was also on Parcel 125/136 and was subsequently moved to Parcel 140
139	52	R or D	Ward, donated
139	53	D	Quarters
139	512	E	Hospital boiler building
140	Housing	E	Base Housing Units
142	38	E	Community Service Building
142	103	E	Bowling alley
143	125A	D	Hotwell
143	125C	D	Pumphouse
143	Shed	E	Shed for Well No. 1 and Well No. 1 equipment
144	25	D	Quarters
144	26A	R	Quarters
144	26B	R	Quarters
144	27	D	Occupational Therapy and quarters
144	28	R	Quarters
144	31	D	Recreation building
144	32	D	Bag Storage
144	39	D	Library
144	123	D	Quarters
144	124	D	Quarters
144	129	D	Quarters
144	132	D	Animal house, cold storage, class rooms
144	135	D	Quarters

D=Demolished; R=Removed; E=Existing.

Table 4-1: Buildings by Parcel Number
Naval Medical Center, Oakland

Parcel Number	Bldg. Number	Status	Description
145	127	R	Quarters
146	16A	D	Water distribution pumphouse
146	16B	D	Sentry house, main gate
146	16C	D	Marine detachment
146	16D	D	Liberty & visitor's pass office
147	102	E	Security, machine shop
148	86	D	Storehouse
148	131	E	Administration offices
148	133	E	Command education, archives, excess property
149	23	D	Quarters
149	24	D	Quarters
149	501	E	BEQ
150	28	R	Quarters
150	29	D	Quarters
150	35	R	Quarters
151	33	D	Medical storehouse
151	104	D	Storage
151	125B	D	Hotwell and pumphouse
151	214	D	Service Station
151	Shed	D	Temporary storage, near Building 214
152	Guard Shack	D	Guard shack
152	Shed east of 88	D	Paint and oil shed
154	22	E	Not in use, formerly facility boiler plant
155	88	E	Storage, funiture, junk
156	20A	D	Gardeners' group
157	20B	E	Office, landscape contractor
157	20C	E	Storage, garden supplies
157	21	D	Gardeners' group, lath house
158	136	D	Storehouse, liquor store
158	137	E	Chlorine and pump building, swimming pool
158	138	E	Swimming pool
159	90	E	Oil storage building
159	111	E	Transportation office
159	112	E	Vehicle repair shop

D=Demolished; R=Removed; E=Existing.

Table 4-1: Buildings by Parcel Number
Naval Medical Center, Oakland

Parcel Number	Bldg. Number	Status	Description
159	113	E	Vehicle storage
159	114	E	Storage, conservation corp
159	116	E	Vehicle storage
159	117	D	PWC service station
159	117P	D	Service station
159	Shed	E	Houses air compressor
161	84	D	Storehouse
161	134	D	Storehouse
161	147	E	Raquetball courts
161	150	E	Covered picnic area
161	507	E	Restrooms
161	Shed	E	Athletic equipment shed adjacent to dugout, first base line
161	Shed	E	Athletic equipment shed adjacent to dugout, third base line
161	Shed	E	Athletic equipment shed/concession booth, behind home plate
162	18	E	Officer's and enlisted personnel open mess
162	19	E	Garage, two car, adjacent to building 18
162	118	D	Quarters
163	70	E	Alcohol Rehabilitation
Unk	142	D	Unknown

D=Demolished; R=Removed; E=Existing.

Table 4-2: Parcels by Building Number
Naval Medical Center, Oakland

Bldg. Number	Parcel Number	Status	Description
1	125	D	Administration building
2	136	D	Physical therapy
3	136	D	X-ray building
4	125	D	Laboratories, central supply
4	136	D	Laboratories, central supply
4 shed	125	D	Storage, adjacent to Building 4
4 shed	136	D	Storage, adjacent to Building 4
5	125	D	Cast room, blood bank
5	136	D	Cast room, blood bank
6	125	D	Subsistance Commissary
6	136	D	Subsistance Commissary
6	137	D	Subsistance Commissary
7	137	D	Subsistance Commissary
8	110	E	Storage, formerly a laundry
9	110	E	Storage, former laundry maintenance workshop
10	110	E	PWC offices, maintenance shops (carpenter, elect., P.F., machinist, sheetmetal)
11	110	E	Storage of plumbing and electrical materials, formerly sheet metal shop, electrical shop
12	110	D	Service station
13	110	E	Paint shop, A/C repair
14	114	E	Operating room
16A	146	D	Water distribution pumphouse
16B	146	D	Sentry house, main gate
16C	146	D	Marine detachment
16D	146	D	Liberty & visitor's pass office
17	113	E	Hazardous materials storage (flammables) and rad waste storage
18	162	E	Officer's and enlisted personnel open mess
19	162	E	Garage, two car, adjacent to building 18
20A	156	D	Gardeners' group
20B	157	E	Office, landscape contractor
20C	157	E	Storage, garden supplies
21	157	D	Gardeners' group, lath house
22	154	E	Not in use, formerly facility boiler plant
23	149	D	Quarters

D=Demolished; R=Removed; E=Existing.

Table 4-2: Parcels by Building Number
Naval Medical Center, Oakland

Bldg. Number	Parcel Number	Status	Description
24	149	D	Quarters
25	144	D	Quarters
26A	144	R	Quarters
26B	144	R	Quarters
27	144	D	Occupational Therapy and quarters
28	144	R	Quarters
28	150	R	Quarters
29	150	D	Quarters
31	144	D	Recreation building
32	144	D	Bag Storage
33	151	D	Medical storehouse
34	136	D	Dental Building
35	150	R	Quarters
36	116	E	Firestation
37	112	E	Not in use, storehouse, formerly stables
38	142	E	Community Service Building
39	144	D	Library
40	136	D	Quarters
41	136	D	Ward
41	137	D	Ward
42	137	D	Ward
43	137	D	Ward
44	137	R	Ward
45	125	D	Ward
45	137	D	Ward
46	125	D	Ward
46	137	D	Ward
47	129	D	Ward
48	129	D	Ward
49	129	D	Ward
50	125	D	Ward
51	110	D	Ward
51	125	D	Ward
52	138	R or D	Ward, donated
52	139	R or D	Ward, donated
53	138	D	Quarters

D=Demolished; R=Removed; E=Existing.

Table 4-2: Parcels by Building Number
Naval Medical Center, Oakland

Bldg. Number	Parcel Number	Status	Description
53	139	D	Quarters
54	138	D	Quarters
55	138	R or D	Quarters
56	138	D	Quarters
57	138	D	Steam regulating unit
58	138	D	Storehouse, initially on Parcel 138; however, the records show that it was also on Parcel 125/136 and was subsequently moved to Parcel 140
59	102,	D	Storehouse
59	106	D	Storehouse
59	109	D	Storehouse
60	109	D	Ward
61	109	D	Ward
62	107	E	Financial management
63	104	E	Facilities administration, medical equipment repair
64	103	R	Ward
65	123	E	Drug screening laboratory
66	124	E	Quarters, CPO
67	130	E	Dental annex
68	102	R	Quarters (sick officers)
69	122	E	Not in use, enlisted mens' quarters
70	163	E	Alcohol Rehabilitation
71	121	D	Ward
72	128	D	Ward
73	134	E	Administration building, various organizations
74	108	D	Ward
75	133	E	Education, training, radiation safety
76	127	D	Ward
77	127	D	Ward
78	132	D	Ward
79	126	D	Ward
79	132	D	Ward
80	126	D	Ward
81	102	R	Ward
82	102	R	Ward
83	102	R	Ward

D=Demolished; R=Removed; E=Existing.

Table 4-2: Parcels by Building Number
Naval Medical Center, Oakland

Bldg. Number	Parcel Number	Status	Description
84	161	D	Storehouse
85	116	E	Office and storage
86	148	D	Storehouse
87	132	D	Oxygen storage
88	155	E	Storage, funiture, junk
89	110	E	Storage, formerly upholstery shop
90	159	E	Oil storage building
91	136	D	Storage, flammables
96	137	D	Storage, flammables
101	131	E	Naval School of Health Sciences
102	147	E	Security, machine shop
103	142	E	Bowling alley
104	151	D	Storage
105	128	D	Surgery and outpatient clinic
106	120	D	Subsistance Commissary
107	112	E	Not in use, formerly rad storage
108	110	E	Boiler room for building 8
109	109	D	PWC storehouse
110	117	E	Storage, dry goods
111	159	E	Transportation office
112	159	E	Vehicle repair shop
113	159	E	Vehicle storage
114	159	E	Storage, conservation corp
115	114	E	Animal housing, surgery teaching, lab laundry
116	159	E	Vehicle storage
117	159	D	PWC service station
117P	159	D	Service station
118	162	D	Quarters
123	144	D	Quarters
124	144	D	Quarters
125A	143	D	Hotwell
125B	151	D	Hotwell and pumphouse
125C	143	D	Pumphouse
127	145	R	Quarters
129	144	D	Quarters
130	118	D	Water chlorination plant

D=Demolished; R=Removed; E=Existing.

Table 4-2: Parcels by Building Number
Naval Medical Center, Oakland

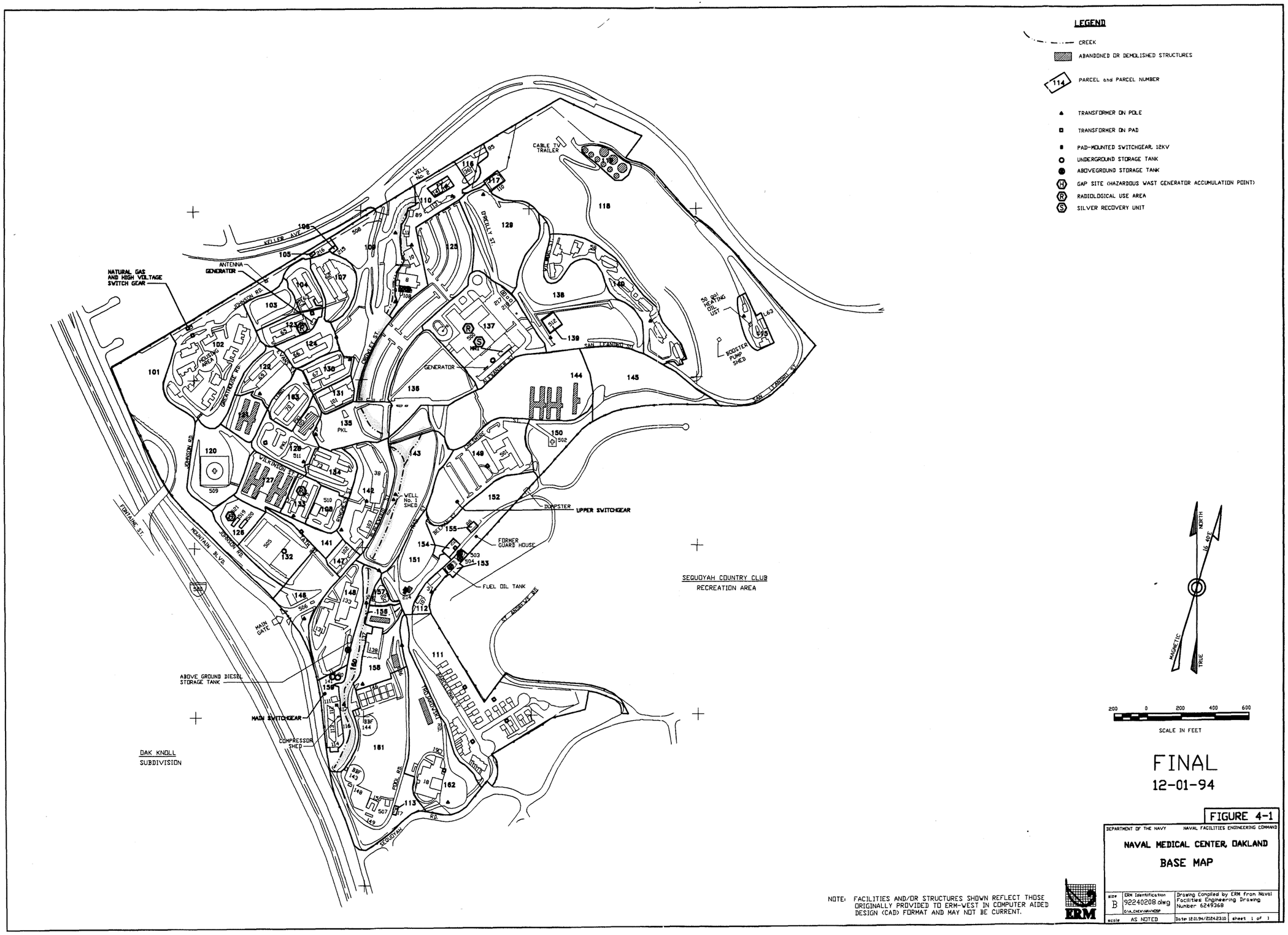
Bldg. Number	Parcel Number	Status	Description
131	148	E	Administration offices
132	144	D	Animal house, cold storage, class rooms
133	148	E	Command education, archives, excess property
134	161	D	Storehouse
135	144	D	Quarters
136	158	D	Storehouse, liquor store
137	158	E	Chlorine and pump building, swimming pool
138	158	E	Swimming pool
139A	109	D	Outdoor stage and dressing rooms
139B	109	D	Projection booth
142	Unk.	D	Unknown
147	161	E	Raquetball courts
150	161	E	Covered picnic area
214	151	D	Service Station
215	106	E	Hazardous materials storage
216	105	E	Hazardous materials storage
217	137	E	Hospital plant auxiliary utility building
218	137	E	Hospital plant auxiliary utility building
223	137	E	Liquid oxygen storage
500	137	E	Hospital
501	149	E	BEQ
505	132	E	General warehouse, supplies
507	161	E	Restrooms
508	109	E	Gatehouse
510	108	E	Service station, not in use
511	128	E	Credit Union
512	139	E	Hospital boiler building
519	126	E	Storage, dry goods
520	126	E	Storage, dry goods
521	126	E	Hazardous waste storage
Guard Shack	152	D	Guard shack
Housing	102	E	Base Housing Units
Housing	111	E	Base Housing Units
Housing	140	E	Base Housing Units

D=Demolished; R=Removed; E=Existing.

Table 4-2: Parcels by Building Number
Naval Medical Center, Oakland

Bldg. Number	Parcel Number	Status	Description
MRI. Bldg.	137	E	MRI building
NE corn. of prop.	101	D	Pump house Auxiliary
NE corn. of prop.	101	D	Pump house
NE corn. of hosp.	137	E	Champus Service Center
Shed	143	E	Shed for Well No. 1 and Well No. 1 equipment
Shed	151	D	Temporary storage, near Building 214
Shed	159	E	Houses air compressor
Shed	161	E	Athletic equipment shed adjacent to dugout, first base line
Shed	161	E	Athletic equipment shed adjacent to dugout, third base line
Shed	161	E	Athletic equipment shed/concession booth, behind home plate
Shed east of 88	152	D	Paint and oil shed
West of CO res.	118	E	Booster pumphouse

D=Demolished; R=Removed; E=Existing.



FINAL
12-01-94

FIGURE 4-1

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

NAVAL MEDICAL CENTER, OAKLAND

BASE MAP

size B	ERM Identification 92240208.dwg C:\A_CHEK\NAVMCSP	Drawing Compiled by ERM from Naval Facilities Engineering Drawing Number 6249368
scale AS NOTED		Date 12.01.94/2124:23:10 sheet 1 of 1

NOTE: FACILITIES AND/OR STRUCTURES SHOWN REFLECT THOSE ORIGINALLY PROVIDED TO ERM-WEST IN COMPUTER AIDED DESIGN (CAD) FORMAT AND MAY NOT BE CURRENT.

ERM



LEGEND

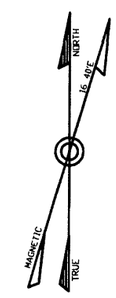
CREEK

ABANDONED OR DEMOLISHED STRUCTURES

CLASSIFICATION LEGEND

BRAC AREA TYPE 1

BRAC AREA TYPE 7



-200 0 200 400 600

SCALE IN FEET

FINAL

12-01-94

NOTE: FACILITIES AND/OR STRUCTURES SHOWN REFLECT THOSE ORIGINALLY PROVIDED TO ERM-WEST IN COMPUTER AIDED DESIGN (CAD) FORMAT AND MAY NOT BE CURRENT.

ERM

FIGURE 4-2

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

NAVAL MEDICAL CENTER, OAKLAND

PARCEL CLASSIFICATION MAP

size	ERM Identification	Drawing Compiled by ERM from Naval Facilities Engineering Drawing Number 6249368
B	92240206.dwg	
scale	AS NOTED	Date: 12.01.94/2124.23.10 sheet 1 of 1

The hospital has undergone several major building programs with the demolition of old buildings making way for newer structures over time. There have been over 160 buildings built on the site and presently there are approximately 70 buildings or structures standing.

The major activities area of concern involving the handling of hazardous materials or waste products has been the historic practice, now discontinued, of disposing of chemical and some medical waste, into the sanitary sewer system. Sewer systems often leak and thus provide a pathway for contaminants that they may carry into the soil and groundwater.

Geology/Hydrogeology

The following geological and hydrogeological description is based upon the *Geohydrology and Groundwater-Quality Overview, of the East Bay Plain, Alameda County, California, 205(j) Report,* dated June 1988, and submitted to the California Regional Water Quality Control Board, San Francisco, by the Alameda County Flood Control and Water Conservation District.

The NMCO site is represented on the U.S. Geological Survey Oakland East, California 7-1/2 minute topographic quadrangle (Figure 1-1). The site is located within the East Bay Hills which exist along the eastern edge of the city of Oakland. At its most proximal point to the subject site, San Leandro Bay (part of the San Francisco Bay) is located approximately 3.3 miles to the west-southwest of the subject site. The topography at the site is variable. Elevations at the subject site range between 280 and 980 feet above mean sea level. Numerous hills, slopes and drainages are present at the site. In general, the highest elevations are encountered in the northeast portion of the subject site; the lowest elevations are found in the southwest part of the site. A major southeast trending drainage called the County Club Branch transects the northeastern portion of the subject site. The southward trending Rifle Range Branch transects the southwestern portion of the subject property. These two branches intersect further downstream and off of the subject property.

The underlying geology of NMCO site is very complex. The property is located within the Hayward Fault Zone, an active fault zone. One large-scale fault has been mapped as transecting the property and being oriented in a northwest trending direction. The southwest portion of the subject site is underlain by Miocene rhyolite of uncertain age. In the middle of the subject property lies a small assemblage of the Franciscan Complex of either Jurassic or Cretaceous age. This complex

generally consists of mixed lithologies assembled in a chaotic package. Common lithologies include greenstone, sandstone, shale, conglomerate, metagraywacke, and lesser amounts of chert and limestone. The northeastern portion of the subject site is underlain by the Panoche Formation of Cretaceous age and consisting of interbedded marine sandstone and shale. The Panoche is separated from the other lithologies by the fault associated with the Hayward Fault Zone that was previously discussed. A small amount of Quarternary alluvium consisting of silt, sand and gravel is also located in the downstream portions of the bottom of the Country Club Branch drainage that transects the site.

References consulted indicate that the water-bearing properties of the bedrock units underlying the subject site are not well known. Groundwater has been found in some of the sandstone and conglomerate units and in joints and fractures in the rock types described above in various locations within the East Bay Hills. When groundwater is encountered, these units generally have low yields.

Base Specific Issues

There are several unique environmental issues at the NMCO. The first relates to the tremendous amount of development and redevelopment that has occurred. The older structures had several environmentally potential adverse uses such as laboratories, clinics, x-ray or photo development, and surgery. Within any given structure, uses of the space changed over time as departments were moved from one location to another. The environmental impact from adverse prior use and demolition of such structures is unknown.

A second area of concern is the contamination that may have occurred from the past disposal of chemicals into the sanitary sewer system. As the chemicals traveled through the sewer system, the downstream parcels were exposed to contamination due to potential leaks in the sewer system.

A third area of concern is the practice of using the storm sewer system to dispose of boiler blowdown. The chemicals in the boiler system had the possibility of contaminating the downstream parcels and contaminating the creek which runs the length of the facility and is used as a major runoff pathway.

Asbestos is another area of concern. Although asbestos wholly contained within a site structure is not a concern with respect to CERFA, nonfriable asbestos is often found in the exterior siding and

roofing of many of the older buildings. The underground steam distribution system is a possible source of friable asbestos.

Based upon interviews with base personnel, the facility has never had any oil/water separators. Lead paint, pesticide usage, and PCB transformer information for the facility were not available at the time of the information review.

It should be noted that concurrence by NAVSEADET RASO and NEHC is required for BRAC Area Type 1 parcel classification for radiological issues. Concurrence will be required prior to transfer of any non-BRAC Area Type 1 parcels as well.

Parcel Classification

A major goal of the project was to classify the various parcels according to the predefined categories. (See Section 3, Parcel Classification, for a description of these categories.) Thus, the output of the parcel-specific database was designed to collect and organize the information for quick review.

To classify each parcel, all data gathered for the parcel during this investigation was extracted from the database and reviewed. The output of the database by parcel is contained in Appendices C101 to C163. For example, all the information collected concerning Parcel 101 is contained in Appendix C101, all the information concerning Parcel 102 is contained in Appendix C102, and so on. To determine the rational for each parcel's classification, one need only review the information in its corresponding appendix.

Based on the investigation results, each parcel was classified according to one of the seven categories described in Section 3. Table 4-3, Summary of Parcel Classifications, lists each of the parcels, its classification number, and the reason for the classification. Information is grouped by the general headings on Table 4-3, "Chemical Storage & Use", "Drains", "Contamination Issues", and "Missing Data". Information about the storage, release, or potential contamination, or potential contamination migration of hazardous substances, and petroleum products or its derivatives was used to classify the parcels. "Missing Data" heading contain information collected during the survey that might limit the ability of the parcel to be transferred without constraints, based on DOD policy. The column title identified as "Phase II Study Completed" refers to those parcels where both Phase I (document review) and Phase II (physical

Table 4-3: Summary of Parcel Classifications
NAVAL MEDICAL CENTER, OAKLAND

			Chemical Storage & Use												Drains		Contamination Issue														Missing Data			Comments
Parcel #	BRAC Area Type Classification	Phase II Study Completed	Chemical Storage	Hazardous Waste Generation and/or Storage	Radioactive Materials	Mixed Wastes	Oil-filled Transformer or Switch (not PCB tested)	PCB-containing Transformer or Switch	Ordnance Storage or Use	Underground Storage Tanks	Aboveground Storage Tanks	Biohazardous	Potentially Contaminated Storm Drain	Potentially Contaminated Sanitary Sewer	Friable Asbestos, Steam Lines	Known Contamination, not under investigation	Current Documented Contamination Site	Potential Contamination Migration onto Parcel	Spills/Incidents without Approved Cleanup	Leaks/Spills/Incidents with Approved Cleanup	Significant Staining in Aerial Photo	Former Chemical Storage Area, no Known Release	Visual Inspection, No Concerns Noted	Visual Inspection, Concerns Observed	Potential Historical Adverse Use	Other (see comments)	No Lead Paint Survey or Incomplete Survey	No or Incomplete Asbestos Survey	No Radon Survey	
101	1	✓																					✓				×	×	×	
102	7	✓			P	P	✓																✓		✓		✓	✓	✓	Former storehouse
103	7	✓			P	P	✓																✓				×	×	×	
104	7	✓	✓		P	P							✓	✓	✓								✓				×	✓	×	Medical equip. repair shop
105	7	✓	✓	✓	P	P																	✓				×	×	×	Hazardous mat'ls storage bldg.
106	7	✓	✓	✓	P	P																	✓		✓		×	×	×	Hazardous mat'ls storage bldg.
107	7	✓	✓		P	P								✓	✓								✓				×	✓	×	
108	7	✓	✓		P	P				✓				✓			✓						✓		✓		×	✓	×	Former service station, closure not completed
109	7	✓			P	P	✓							✓				✓					✓		✓		×	✓	×	Former storehouse
110	7	✓	✓		P	P	✓				✓		✓	✓				✓						✓	✓		×		×	PWC, past and presesnt shops, demolished service station
111	7	✓			P	P	✓																✓				✓	✓	✓	
112	7	✓		✓	✓	P	✓																✓		✓		×	✓	×	Former radiation waste storage
113	7	✓	✓		✓	P																	✓				×	✓	×	Rad waste and hazardous materials storage bldg.
114	7	✓	✓		P	P						✓		✓									✓		✓		×	✓	×	Animal reseach activities, out of service incincerator
115	7	✓	✓		P	P	✓			✓									✓				✓				✓	✓	✓	
116	7	✓	✓		✓	P								✓									✓		✓		×	✓	×	Fire station, former rad waste storage bldg.
117	7	✓			✓	P																	✓		✓		×	✓	×	Former rad waste storage bldg.
118	7	✓	✓		P	P	✓																✓				×	×	×	
119	1	✓																					✓				×	×	×	
120	7	✓			P	P																	✓				×	×	×	
121	7	✓			P	P									✓								✓				×	✓	×	
122	7	✓			P	P	✓								✓								✓				×	✓	×	
123	7	✓	✓	✓	✓	P	✓				✓		✓	✓	✓								✓		✓		×	✓	×	Drug Screening Laboratory
124	7	✓			P	P	✓						✓										✓				✓	✓	×	
125	7	✓			P	P								✓					✓				✓		✓		×	×	×	Former laboratories, surgery
126	7	✓	✓	✓	P	P																	✓				×	×	×	Hazardous waste storage bldg.
127	7	✓			P	P									✓								✓				×	✓	×	
128	7	✓	✓		P	P	✓							✓	✓								✓		✓		×	✓	×	Former surgery
129	7	✓			P	P	✓								✓								✓				×	×	×	
130	7	✓	✓		P	P	✓						✓	✓	✓								✓		✓		×	✓	×	Dental
131	7	✓	✓	✓	P	P								✓									✓				×	✓	×	Former laboratories
132	7	✓	✓	✓	P	P				✓				✓	✓								✓		✓		×	✓	×	Central stores, former surgery and laboratory
133	7	✓	✓		✓	P	✓							✓	✓								✓				×	✓	×	Radiation safety, dark room
134	7	✓	✓		P	P							✓	✓	✓								✓		✓		×	✓	×	Dark room
135	7	✓			P	P	✓						✓	✓	✓			✓					✓				×	×	×	
136	7	✓			P	P								✓									✓		✓		×	×	×	Former X-ray and dental

Table 4-3: Summary of Parcel Classifications
NAVAL MEDICAL CENTER, OAKLAND

			Chemical Storage & Use												Drains		Contamination Issue												Missing Data			Comments
Parcel #	BRAC Area Type Classification	Phase II Study Completed	Chemical Storage	Hazardous Waste Generation and/or Storage	Radioactive Materials	Mixed Wastes	Oil-filled Transformer or Switch (not PCB tested)	PCB-containing Transformer or Switch	Ordnance Storage or Use	Underground Storage Tanks	Aboveground Storage Tanks	Biohazardous	Potentially Contaminated Storm Drain	Potentially Contaminated Sanitary Sewer	Friable Asbestos, Steam Lines	Known Contamination, not under Investigation	Current Documented Contamination Site	Potential Contamination Migration onto Parcel	Spills/Incidents without Approved Cleanup	Leaks/Spills/Incidents with Approved Cleanup	Significant Staining in Aerial Photo	Former Chemical Storage Area, no Known Release	Visual Inspection, No Concerns Noted	Visual Inspection, Concerns Observed	Potential Historical Adverse Use	Other (see comments)	No Lead Paint Survey or Incomplete Survey	No or Incomplete Asbestos Survey	No Radon Survey	
137	7	✓	✓	✓	✓	P				✓		✓	✓	✓	✓				✓				✓		✓		×	✓	×	Main hospital-laboratories, morgue, surgery
138	7	✓			P	P	✓								✓								✓		✓		×	✓	×	
139	7	✓	✓		P	P				✓				✓									✓				×	✓	×	Boiler system, emergency generator
140	7	✓			P	P	✓																✓				✓	✓	✓	
141	7	✓			P	P	✓								✓								✓				×	✓	×	
142	7	✓	✓		P	P	✓						✓	✓									✓				×	✓	×	Bowling alley
143	7	✓			P	P	✓						✓	✓	✓			✓					✓				×		×	
144	7	✓			P	P								✓									✓		✓		×	×	×	Former laboratory, hobby shops
145	7	✓			P	P												✓					✓				×	×	×	Off site source
146	7	✓			P	P	✓							✓									✓				×	✓	×	
147	7	✓	✓		P	P			✓					✓	✓								✓		✓		×	✓	×	Security, machine shop, former laboratory
148	7	✓	✓		P	P								✓	✓								✓		✓		×	✓	×	Former medical repair room
149	7	✓			P	P	✓								✓				✓				✓		✓		×	✓	×	
150	7	✓			P	P												✓					✓				×	×	×	Off site source
151	7	✓	✓		P	P				✓				✓	✓				✓				✓		✓		×		×	Closed soil pile, demolished service station
152	7	✓	✓		P	P									✓								✓		✓		×		×	Former paint and oil storage
153	7	✓	✓		P	P					✓													✓	✓		×	×	×	Two AST's
154	7	✓	✓		P	P	✓								✓									✓	✓		×	✓	×	Old boiler plant
155	7	✓	✓		P	P	✓																	✓	✓		×	✓	×	Transformer storage,/quonset hut
156	7	✓			P	P								✓	✓								✓				×		×	Former greenhouse
157	7	✓	✓		P	P								✓	✓								✓				×	✓	×	Landscape contractor area
158	7	✓	✓		P	P	✓							✓	✓								✓		✓		×	✓	×	Swimming pool and swimming pool water treatment
159	7	✓	✓		P	P				✓				✓	✓				✓				✓		✓		×		×	Existing and demolished service stations, type writer repair shop
160	7	✓			P	P	✓						✓	✓	✓			✓					✓				×	✓	×	Main creek pathway
161	7	✓			P	P																	✓		✓		×	×	×	
162	7	✓	✓		P	P	✓																✓				✓	✓	×	Possible historic structure
163	7	✓	✓		P	P								✓	✓								✓				×	✓	×	

✓ indicates parcel is affected. Concurrence from NAVSEADET RASO and NEHC is pending for Radioactive Materials and Mixed Waste issues.

Blank indicates parcel is not affected.

X in Missing Data column indicates not applicable.

P in Radioactive Materials or Mixed Wastes column indicates concurrence from NAVSEADET RASO and NEHC is pending.

☐ indicates RASO concurrence ph 7/2/95 LHa

inspection) activities have occurred. A description of each of the column titles is given below.

The symbols used to identify information on the table include a "✓" mark, a "blank", "X", and a "P". Boxes marked with a "✓" mark indicate that the information in the column title has an environmental affect on the parcel. Conversely, a blank box indicates the parcel is not affected. Information marked with an "X", in the "Missing Data" column title indicates that the criterion does not apply. For example, an asbestos survey would not be required for a site with no structure. Boxes marked with a "P" are only for columns associated with radiological materials and mixed wastes. A "P" indicates that concurrence from NAVSEADET RASO and NEHC is pending for that parcel. NAVSEADET RASO and NEHC concurrence is required prior to CERFA-eligible nomination or for lease or transfer (see radiological materials below).

Phase II Study Completed

A check mark was made in this column if the parcel was subject to Phase II activities (i.e., physical inspection and interviews with current and past employees). The absence of a check in this column means that the parcel is automatically classified as a BRAC Area Type 7 since an EBS is not complete until the Phase II activities have been conducted. At NMCO, a detailed physical inspection was performed for all parcels.

Chemical Storage and Use

The column titles that fall under this general heading capture the different types of chemical usage that affect parcel classification. The meaning of a "✓" in each of the columns is described below.

Chemical Storage. A check mark indicates that storage of any quantity of a hazardous substance or any petroleum product or its derivatives, including aviation fuel and motor oil, had been or is currently being stored on the parcel. Incidental storage of household-type cleaning chemicals and consumer office products were excluded. Chemical storage greater than one year would preclude a parcel from being CERFA-eligible. In most cases, however, storage times were unknown and therefore the storage time was assumed to be greater than one year.

Hazardous Waste Generation and/or Storage. A check mark indicates that hazardous wastes have at any time been stored or generated on a parcel. A check mark would preclude a parcel from being CERFA-eligible. Hazardous waste generation and/or storage greater than one

year would preclude a parcel from being CERFA-eligible. In most cases, however, storage times were unknown and therefore the storage time was assumed to be greater than one year.

Radioactive Materials. A check mark indicates that radioactive materials are currently or were formerly used, stored, or disposed of on the parcel. This would preclude a parcel from being CERFA-eligible. In addition to review of onsite records, EFA WEST requested that NAVSEADET RASO and NEHC search for information on known and potential uses of radioactive materials at the base. NAVSEADET RASO and NEHC concurrence is required prior to nomination for CERFA or for lease or transfer of any parcel. A "blank" in this column indicates that NAVSEADET RASO and NEHC concurrence has been received. Information has been referenced in the EBS data base for the subject parcel. A "P" or check in this column indicates that NAVSEADET RASO and NEHC concurrence is pending for the subject parcel.

Mixed Wastes. A check mark indicates that mixed waste materials are currently or were formerly used, stored, or disposed of on the parcel. This would preclude a parcel from being CERFA-eligible. As with the Radioactive Materials column above, NAVSEADET RASO and NEHC concurrence is required prior to nomination as CERFA, lease, or transfer of the subject parcel. See Radioactive Materials above for further explanation.

Oil-filled Transformer or Switch (not PCB tested). A check mark indicates that an oil-filled transformer or switch is currently or has formerly been located on the parcel, but the PCB content is unknown because it had not been tested. A check mark would not preclude CERFA-eligibility assuming that the transformer were part of an active electrical distribution system and the transformer was not leaking. Disclosure of the presence of the transformer to a prospective tenant would be required under DOD guidance on the finding of suitability to lease or transfer.

PCB-Containing Transformer or Switch. A check mark indicates that a transformer whose PCB fluid concentration is greater than 5 parts per million (ppm) is currently or formerly located on the parcel. An operating PCB-containing transformer with no evidence of leakage would not preclude CERFA-eligibility. Disclosure of the presence of the transformer to a prospective tenant would be required under DOD guidance on the finding of suitability to lease or transfer.

Ordnance Storage or Use. A check mark indicates that ordnance (weapons or ammunition) are currently or have been formerly stored or used on the parcel. This would preclude a parcel from being

CERFA-eligible. However, incidental storage of ammunition for security purposes was not considered to have environmental impact; therefore, this type of storage would not preclude CERFA-eligibility.

Underground Storage Tanks. A check mark indicates that underground storage tanks containing hazardous substances were used (past or present). This would preclude a parcel from being CERFA-eligible.

Aboveground Storage Tanks. A check mark indicates that above-ground storage tanks containing hazardous substances were used (past or present). This would preclude a parcel from being CERFA-eligible.

Biohazardous. A check mark indicates that biohazardous wastes are or were located on the parcel. This would preclude a parcel from being CERFA-eligible.

Drains

Drain lines and drainage channels are described below. A check mark in any of these columns would preclude a parcel from being CERFA qualified and would place the parcel into BRAC 7 for further investigation.

Potentially Contaminated Storm Drain. A check mark indicates that there was a potential for chemicals or industrial wastewater to have been discharged to a storm drain that passes through the parcel. Drainage piping can leak from cracks or joints, or piping may corrode, releasing chemicals into the surrounding soil. This would preclude a parcel from being CERFA-eligible. A check mark places the parcel into BRAC Area Type 7. After further evaluation and/or sampling, the parcel may be reclassified.

Potentially Contaminated Sanitary Sewer. A check mark indicates that there was a potential for chemicals or industrial wastewater to have been discharged to a sanitary sewer that passes through the parcel. Sewer piping may leak from cracks or joints, or piping may corrode, releasing chemicals into the surrounding soil. This would preclude a parcel from being CERFA-eligible. A check mark places the parcel into BRAC Area Type 7. After further evaluation and/or sampling, the parcel may be reclassified.

Contamination Issues

When an indication that contamination was either suspected or known to have occurred on the parcel or had affected the parcel, a notation was made in the appropriate column heading within this category.

Friable Asbestos, Steam Lines. A check mark indicates that asbestos was determined to be friable (easily crumbled or pulverized with hand pressure) based on the results of an asbestos survey, or a potential existed for friable asbestos from existing underground steam lines. Note that ERM-West did not survey asbestos as part of this work. The presence of friable asbestos in an enclosed space or building where asbestos is not being released to the environment does not preclude a parcel from being CERFA-eligible. However, DOD Guidance suggests that friable asbestos be identified and disclosed prior to transfer or lease.

Known Contamination, Not Under Investigation. A check mark indicates sampling has confirmed that contamination has occurred; however, no remedial investigation has begun to determine the extent of contamination. For example, an underground tank failing an integrity test and then abandoned in place without soil and/or groundwater sampling would receive a check mark. This would preclude a parcel from being CERFA-eligible. A check mark places the parcel into BRAC Area Type 7. After further evaluation and/or sampling, the parcel may be reclassified.

Current Documented Contaminated Site. A check mark indicates that sampling has occurred to confirm the existence of contamination, and the site is being overseen by an agency to determine the extent of contamination for the purpose of determining cleanup methods. This would include parcels involved in IR programs. This would preclude a parcel from being CERFA-eligible. A check mark could place the parcel into BRAC Area Type 6.

Potential Contamination Migration onto Parcel. A check mark indicates that contaminants have the potential to have traveled to the parcel through soil pores and/or groundwater. This category includes sources of potential contamination including both onsite (on base) and offsite (neighboring properties). If an adjacent parcel had known contamination, the extent of contamination was unknown, and the subject parcel was believed to be potentially downgradient, then this box was checked. If the extent of the contamination was unknown and the downgradient direction was unable to be determined by a document review, all surrounding parcels were checked. This would preclude a parcel from being CERFA-eligible. A check mark could place

the parcel into BRAC Area Type 7. After further evaluation and/or sampling, the parcel may be reclassified.

Spills/Incidents without Approved Cleanup. A check mark indicates that spills and incidents occurred in which there has been no cleanup or that cleanup has occurred without regulatory agency oversight and approval. This may not have been a requirement for the type of release that took place. An example would be a small spill that was cleaned up with absorbent material and no testing was done to confirm the cleanup level is below action levels. This would preclude a parcel from being CERFA-eligible. A check mark places the parcel into BRAC Area Type 7. After further evaluation and/or sampling, the parcel may be reclassified.

Leaks/Spills/Incidents with Approved Cleanup. A check mark indicates that leak, spill, and incident cleanups have been completed under regulatory agency oversight. An example would be a parcel on which a remedial action for a surface spill had been completed and the regulatory agency had indicated no further action was required. This would preclude a parcel from being CERFA-eligible but might allow a parcel to be classified as BRAC Area Type 3. A check mark could place the parcel into BRAC Area Type 4.

Significant Staining in Aerial Photo. A check mark indicates that areas in a photograph were observed to have significant staining of the ground. Incidental small staining associated with vehicle parking was not considered. This would preclude a parcel from being CERFA-eligible. A check mark could place the parcel into BRAC Area Type 7. After further evaluation and/or sampling, the parcel may be reclassified.

Former Chemical Storage, no Known Release. A check mark indicates that currently there is no storage of chemicals; however, chemicals were stored on the parcel in the past and there was no indication that a release had occurred. This would preclude a parcel from being CERFA-eligible. A check mark could place the parcel into BRAC Area Type 2.

Visual Inspection, No Concerns Noted. A check mark indicates no observations of environmental concern were noted during the Phase II visual inspection. Issues of environmental concern included evidence of chemical use and/or storage, evidence of release including surface soil staining (excluding normal staining associated with parking lots), stressed vegetation, and potential surface migration from an adjacent parcel, etc. This parcel may be CERFA-eligible.

Visual Inspection, Concerns Noted. A check mark indicates observations of environmental concern were noted during the Phase II

visual inspection. Issues of environmental concern included evidence of chemical use and/or storage, evidence of release including surface soil staining (excluding normal staining associated with parking lots), stressed vegetation, and potential surface migration from an adjacent parcel, etc. This would preclude a parcel from being CERFA-eligible. A check mark could place the parcel into BRAC Area Type 7. After further evaluation and/or sampling, the parcel may be reclassified.

Potential Historical Adverse Use. A check mark indicates parcels where there have been building or property uses believed to include hazardous chemicals (e.g., dry cleaners, gas stations, repair shops, medical clinics), and there were no records of storage or release were found during the document review. This would preclude a parcel from being CERFA-eligible. A check mark could place the parcel into BRAC Area Type 7. After further evaluation and/or sampling, the parcel may be reclassified.

Other (see Comments). A check mark indicates that these parcels included former buildings with unknown use, buildings with names indicating chemical use/storage with no chemical inventories available, railroad tracks with no soil sampling done beneath them, or other issues that impact parcel classification that were not shown elsewhere on the table. See the Comments column for a description of the concern. This may preclude a parcel from being CERFA-eligible. A check mark could place the parcel into BRAC Area Type 7. After further evaluation and/or sampling, the parcel may be reclassified.

Missing Data - Existing Condition Only

Information that is missing with regard to draft DOD policy[16] on lead-based paint, asbestos, and radon are indicated in the columns in this section. A "✓" in any of these columns would not preclude a parcel from being CERFA-eligible, but may require sampling or disclosure to the prospective transferee based on DOD policy.

No or Incomplete Lead-based Paint Survey. A check mark indicates that either a lead-based paint survey was not conducted or that the survey was incomplete. A determination of an incomplete survey means that a representative portion of the structure or parcel was not surveyed. Information used to make this determination came either

16 Deputy Assistant Secretary of the Navy (Environment and Safety) Draft Policy Memorandum on Asbestos, Lead-based Paint, and Radon at Base Realignment and Closure Properties, dated 24 January 1994.

from the survey results or were verbally given to ERM-West by the Navy or by the Navy's lead-based paint contractor.

An "X" in the column indicates that the criteria is not applicable. Draft DOD policy only requires housing[17] to be tested for lead paint and there is no State or Federal requirement.

No or Incomplete Asbestos Survey. A check mark indicates that either an asbestos survey was not conducted or the survey was incomplete. Incomplete means that a portion of the structure or parcel was not surveyed. Information used to determine that a survey was incomplete came either from the survey results or were verbally given to ERM-West by the Navy or by the Navy's asbestos contractor. Following draft DOD policy asbestos surveys are required for commercial/industrial property, as well as for housing. However, the presence of asbestos within a structure does not preclude a parcel from being CERFA-eligible.

An "X" in the column indicates that the criteria is not applicable. Asbestos surveys are not required for a parcel with no structures.

No Radon Survey. A check mark indicates that no radon study had been conducted on the parcel.

Following draft DOD policy, radon will only be considered as a disclosure issue for parcels containing housing. For all other parcels, radon will be noted if representative sampling has not been completed. Radon will not be considered in the classification process for nonhousing parcels. In addition, radon is not an issue which would preclude a parcel from being CERFA-eligible.

An "X" in the column indicates that the criteria is not applicable. Radon surveys are not needed for open spaces or unoccupied structures.

Summary

Of the 63 parcels at NMCO, two were classified as BRAC Area Type 1. Both of these parcels were open, undeveloped parcels. For further discussion of these parcels, see Section 5, *CERFA-Qualified Parcels*. The remaining 61 parcels were classified as BRAC Area Type 7. The

17 EFA WEST has interpreted housing to refer only to residential family housing, schools, and childcare centers. Specifically excluded from this definition are barracks and motels.

major data gaps which resulted in BRAC Area Type 7 classification were as follows:

- The disposal of hazardous substances in the storm drain and sanitary sewer system which might have led to the potential for soil and groundwater contamination;

- The possible existence of friable asbestos associated with the underground steam system;

- The presence of adverse present or past activities such as laboratories, clinics, and surgery which would have lead to chemical storage and use;

- The possibility that contamination may remain following the demolition of a building;

- The absence of pesticide application and storage history records of the facility; and

- EFA WEST efforts to obtain concurrence from NAVSEADET RASO and NEHC for all of the remaining non-CERFA-eligible parcels regarding radioactive materials and mixed waste issues. Resolution of this effort is still pending. At this point, three additional parcels could be nominated for CERFA-qualified pending concurrence from NAVSEADET RASO and NEHC. Those parcels are:

  - Parcel 111 - Base Housing;

  - Parcel 120 - Subsistence Commissary; and

  - Parcel 140 - Base Housing.

SECTION 5

CERFA-ELIGIBLE PARCELS

Information used to create this CERFA report is taken directly from the EBS report. Using the survey methodology discussed in Section 2, Survey Methodology, some parcels were identified as CERFA-eligible or CERFA "uncontaminated". CERFA defines "uncontaminated" as parcels "on which no hazardous substances and no petroleum products or their derivatives were stored for one year or more, known to have been released or disposed of." CERFA qualified parcels correspond to BRAC Area Type 1, "areas where no storage, release, or disposal (including migration) has occurred" or Area Type 2, "areas where only storage has occurred" for less than one year. Database forms for these parcels are included in Appendix C.

At NMCO, two parcels were CERFA-eligible. As additional information becomes available from further investigation and/or sampling, additional parcels may become CERFA-eligible. Both CERFA and the DOD Policy on the Implementation of CERFA state that identification of parcels suitable for transfer is not considered complete until concurrence with the results of the identification is obtained. In the case of real property that is part of a facility on the National Priorities List, concurrence must come from the EPA Administrator, or, in the case of real property that is not part of a facility on the National Priorities List, from the appropriate state official.

The two parcels are open areas and appear to have never been developed. The investigators feel that the results of any future investigation regarding pesticide usage will not have a high likelihood of altering their present BRAC Area Type 1 classification. NAVSEADET RASO and NEHC concurrence regarding radiological issues has been conducted for both nominated CERFA-eligible parcels.

A brief description of each CERFA-eligible parcel is provided below.

Parcel 101

Parcel 101 borders the southern edge of the facility along Mountain Boulevard (see Figure 4-2). The terrain is densely wooded, undeveloped and is on very steep grade. No observations of environmental concern were noted upon physical inspection of this parcel. There was no evidence of any chemical use or storage on this parcel. There is no documentation or evidence indicating contaminants have migrated onto this parcel via sewer lines, storage tanks, or known contaminated areas. Parcel 126 is the only parcel contiguous to Parcel 101 which could be a source of contaminant migration. However, Johnson Drive, which separates these parcels, serves to direct any migration of contaminants away from Parcel 101.

Parcel 119

Parcel 119 is at the northwest corner of the facility (see Figure 4-2). At one time this parcel held redwood water tanks with a combined capacity of over one million gallons. The tanks have since been removed. A physical inspection of the site provided no evidence of environmental concern. There is no documentation or evidence of any chemical use or storage on this parcel. There is no documentation or evidence indicating contaminants may have migrated onto this parcel via sewer lines or known contaminated areas. Furthermore, Parcel 119 is located at a higher elevation relative to Parcel 118, which surrounds Parcel 119. Current activities present no apparent exposure to chemical migration onto this parcel. The area is secured and access is not permitted to unauthorized persons or vehicles.

SECTION 6

DISCLAIMER

ERM-West and its subcontractor, Shawnee Company, Inc. are not engaged in environmental auditing and reporting for the purpose of advertising, sales promotion, or endorsement of any client's interests, including raising investment capital or recommending investment decisions, or other publicity purposes. The Navy acknowledges and agrees that this report is for the sole and exclusive use and benefit of the Navy. ERM-West and its subcontractor, Shawnee Company, Inc. does not represent that this work, in and of itself, constitutes "all appropriate inquiry into the previous ownership and uses of the properties," as this phrase is used in Section 101 (35) (B) of the Federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended through P.L. 99-499 (October 17, 1986) and may not be relied upon by a purchaser as a guarantee that the property is uncontaminated. ERM-West and its subcontractor, Shawnee Company, Inc. assumes no liability for existing conditions on the sites.

Nothing contained in the report of ERM-West and its subcontractor, Shawnee Company, Inc. shall be construed as a warranty or affirmation by ERM-West and its subcontractor, Shawnee Company, Inc. that the sites and properties described in the report are suitable collateral for any loan or that acquisition of such properties by any lender through foreclosure proceedings or otherwise will pose no risk of potential environmental liability on the part of such lender.

APPENDIX A

DATABASE DESIGN

Data from the field investigations were compiled in two Filemaker Pro™ databases. The first of these databases served as a bibliographic reference point, compiling all the files, interviews, and documents reviewed during the course of the investigation. The second database was used to colligate the results of the investigation into a format that could be used for classification. Below we discuss each of the databases and their data dictionaries.

Reference Database

The reference database was configured to allow entry and retrieval of bibliographic information. All files reviewed during the project were entered into the database, even if they yielded no useful information. By contrast, only references yielding useful information were entered into the results database.

A copy of the field structure of the database is attached.

Results Database

The results database was configured to allow entry and retrieval of a wide variety information collected during the course of the investigation. There are 42 views of the data, typically one to three views for each type of data entry. Views are keyed by a field entitled "information type"; for example, asbestos information viewed in the hazardous waste view makes little sense.

Common key fields include the base name, location, parcel, reference, reviewer, date of review, and information type. Other fields are defined on a view basis, as specified in the data dictionary. In the following material you will find a master list of field names, a print of each view, and a copy of the data dictionary for each view.

FIELD DATA DICTIONARY FOR EACH LAYOUT

Layout	Field Label	Field Name	Type
MASTER FIELDS	FACILITY NAME	FACILITY NAME	TXT
	LOCATIONS(S)	LOCATION	TXT
	PARCEL(S)	PARCEL	TXT
	INFO TYPE	INFORMATION TYPE	TXT
	REVIEWER INITIALS	AUDITOR	TXT
	REFERENCES	REFERENCE	TXT
	DATE OBTAINED	DATE OF ACQUISITION	DATE
AERIAL PHOTO-ONSITE	PHOTO SOURCE	TXT1	TXT
	DATE OF PHOTO	TXT7	TXT
	PHOTO NUMBER	COMMENT5	TXT
	OBJECT & DESCRIPTION	TXT2	TXT
	OBJECT & DESCRIPTION	TXT3	TXT
	OBJECT & DESCRIPTION	TXT4	TXT
AERIAL PHOTO-OFFSITE	PHOTO SOURCE	TXT1	TXT
	DATE OF PHOTO	TXT7	TXT
	PHOTO NUMBER	COMMENT5	TXT
	LAND USE DESCRIPTION (N)	TXT2	TXT
	LAND USE DESCRIPTION (S)	TXT3	TXT
	LAND USE DESCRIPTION (E)	TXT4	TXT
	LAND USE DESCRIPTION (W)	TXT5	TXT
AIR QUALITY	EMISSION SOURCE #	TXT1	TXT
	EMISSION SOURCE TYPE	TXT2	TXT
	PERIOD OF USE	TXT3	TXT
	DESCRIPTION OF FUEL/CHEMICAL USE & EMISSIONS	TXT4	TXT
ASBESTOS	ASBESTOS SURVEY? (Y/N)	YN1	NUMBER
	ASBESTOS? (Y/N)	YN2	NUMBER
	LOCATION OF ASBESTOS	TXT1	TXT
	REMARKS	COMMENT1	TXT

FIELD DATA DICTIONARY FOR EACH LAYOUT

Layout	Field Label	Field Name	Type
ASBESTOS RENOVATION	RENOVATION/REMOVAL? (Y/N)	YN4	NUMBER
	DATE DONE	TXT7	TXT
	DESCRIPTION	TXT1	TXT
BUILDING	DATE CONSTRUCTED	TXT7	TXT
	USE	TXT1	TXT
	APPLICABLE DATE	TXT5	TXT
	SQUARE FOOTAGE	TXT2	TXT
	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	TXT3	TXT
	REMARKS	COMMENT1	TXT
BUILDING VISUAL INSPECTION	BUILDING DESCRIPTION, INCLUDING CURRENT USE	TXT1	TXT
	EVIDENCE OF CHEMICAL STORAGE/USE	TXT2	TXT
CHEMICAL INVENTORY	CHEMICALS	TXT1	TXT
	QUANTITIES STORED	TXT2	TXT
	USES	TXT3	TXT
	APPLICABLE DATE	TXT4	TXT
HAZARDOUS WASTE	HAZARDOUS WASTE GENERATION/ DISPOSAL/TREATMENT/STORAGE? (Y/N)	YN1	NUMBER
	TYPE/QUANTITY	TXT1	TXT
	PERIOD OF COVERAGE	TXT3	TXT
	DESCRIPTION	TXT2	TXT
HISTORIC/CULTURAL	SUBJECT	TXT1	TXT
	REMARKS	COMMENT1	TXT
INTERVIEWS	NAME OF INTERVIEWEE(S), PHONE NUMBERS, AND ADDRESSES	TXT1	TXT
	INFORMATION, INCLUDING APPLICABLE YEARS(S)	TXT2	TXT
IR/RFA/LUST SITES	DESCRIBE SOURCE, INCLUDING CHEMICALS	TXT1	TXT
	DESCRIBE CONTAMINATION (EXTENT, CHEMICALS OF CONCERN, CONCENTRATION)	TXT2	TXT
	DESCRIBE STATUS OF INVESTIGATION/REMEDIATION	TXT3	TXT
LEAD PAINT	LEAD PAINT SURVEY FOR BUILDING? (Y/N)	YN1	NUMBER
	LEAD PAINT FOUND? (Y/N)	YN2	NUMBER
	RESULTS OF SURVEY FOR BUILDING	TXT1	TXT

FIELD DATA DICTIONARY FOR EACH LAYOUT

Layout	Field Label	Field Name	Type
LEAD ISSUES-OTHER	TYPE OF ISSUE (PIPE, SHOOTING RANGE, ETC.)	TXT1	TXT
	DESCRIPTION	TXT2	TXT
MEDICAL/BIOHAZARDOUS	MEDICAL FACILITY IN BUILDING? (Y/N)	YN1	NUMBER
	INFECTIOUS/MEDICAL WASTE EVER STORED OR DISPOSED? (Y/N)	YN2	NUMBER
	REMARKS ON TYPES/AMOUNTS/DISPOSAL	TXT1	TXT
MISCELLANEOUS	SUBJECT	TXT1	TXT
	REMARKS	COMMENT1	TXT
NEIGHBORHOOD	ADDRESS & CROSS STREET	TXT1	TXT
	OBSERVATION	TXT2	TXT
	REMARKS	COMMENT1	TXT
OIL/WATER SEPARATOR	DETAILED LOCATION	TXT1	TXT
	APPLICABLE DATE	TXT3	TXT
	DESCRIPTION (SIZE/FLOW/DISPOSITION)	TXT2	TXT
OPEN SPACE SURVEY	IS THIS OPEN SPACE DEVELOPED? (Y/N)	YN1	NUMBER
	WHAT IS THE GROUND COVER?	TXT1	TXT
	ARE THERE ANY DRAINS IN THIS AREA?	YN2	NUMBER
	WHAT IS THE USE OF THIS AREA (Y/N)		
	MATERIAL STORAGE	YN3	NUMBER
	WASH DOWN	YN4	NUMBER
	VEHICLE PARKING	YN5	NUMBER
	OUTDOOR REPAIR	YN6	NUMBER
	TRAINING	YN7	NUMBER
	DRUM STORAGE	YN8	NUMBER
	EQUIPMENT PARKING	YN9	NUMBER
	DISPOSAL	YN10	NUMBER
	RECREATIONAL	YN11	NUMBER
	OTHER (EXPLAIN)	TXT3	TXT
	REMARKS	TXT2	TXT
	DESCRIBE ANY STAINS, STRESSED VEGETATION, ETC.	COMMENT1	TXT

FIELD DATA DICTIONARY FOR EACH LAYOUT

Layout	Field Label	Field Name	Type
ORDNANCE	ORDNANCE PRESENT? (Y/N)	YN1	NUMBER
	APPLICABLE DATES	TXT1	TXT
	ORDNANCE TYPE(S) & USE(S)	TXT2	TXT
	REMARKS	COMMENT1	TXT
PCB BALLASTS	BALLAST SURVEY? (Y/N)	YN1	NUMBER
	PCB BALLASTS? (Y/N)	YN2	NUMBER
	REMARKS	COMMENT1	TXT
PESTICIDES	PESTICIDE STORAGE OR USE? (Y/N)	YN1	NUMBER
	TYPE OF USE (DESCRIBE, INCLUDING TIME PERIOD)	TXT1	TXT
	TYPE OF PESTICIDES	TXT2	TXT
PHOTO LOG	DETAILED LOCATION DESCRIPTION	COMMENT1	TXT
	OBJECT PHOTOGRAPHED	COMMENT2	TXT
RADIOACTIVE/MIXED	RADIOACTIVE/MIXED MATERIALS PRESENT? (Y/N)	YN1	NUMBER
	PERIOD OF COVERAGE	TXT1	TXT
	DESCRIPTION OF MATERIALS/AMOUNT	TXT2	TXT
RADON	RADON SURVEY (Y/N)	YN1	NUMBER
	RESULTS	TXT1	TXT
	ABOVE EPA LIMIT? (Y/N)	YN2	NUMBER
SPILLS/INCIDENTS	TYPE OF INCIDENT	TXT1	TXT
	DATE OF INCIDENT	TXT7	TXT
	CHEMICALS	TXT2	TXT
	AMOUNT OF CHEMICALS	COMMENT1	TXT
	CLEANUP	COMMENT2	TXT
STORAGE TANKS	STORAGE TANK SIZE (GALLONS)	TXT1	TXT
	TYPE OF TANK	TXT2	TXT
	MATERIAL STORED	TXT3	TXT
	APPLICABLE DATES	TXT4	TXT
	REMARKS (TIGHTNESS TESTING, REMOVAL, ETC.)	COMMENT1	TXT
STORMWATER	STORMWATER DISCHARGE POINT	TXT1	TXT
	DESCRIBE DRAINAGE AREA & SAMPLING RESULTS	TXT2	TXT
TITLE SEARCH	ISSUE OF CONCERN/REMARKS	TXT1	TXT
	TRANSFER INFORMATION AND DATE	TXT2	TXT

FIELD DATA DICTIONARY FOR EACH LAYOUT

Layout	Field Label	Field Name	Type
TRANSFORMERS	TRANSFORMER #	TXT1	TXT
	SIZE	TXT2	TXT
	DATE APPLICABLE	TXT3	TXT
	PCB (Y/N)	YN1	NUMBER
	PCB CLASSIFICATION	CLASSIFICATION	TXT
	REMARKS (INCLUDING SPILL/REMOVAL INFO)	COMMENT1	TXT
UTILITIES	UTILITY TYPE	TXT1	TXT
	DESCRIPTION	TXT2	TXT
	POTENTIAL FOR CONTAMINATION	COMMENT1	TXT
WASTEWATER	WASTEWATER GENERATED? (Y/N)	YN1	NUMBER
	TYPES OF WASTEWATER (PROCESS/CHEMICALS/FLOW)	TXT1	TXT
	DISCHARGE FLOW DRAIN LINE	TXT2	TXT
WELLS	WELL #	TXT2	TXT
	APPLICABLE DATE	TXT3	TXT
	DESCRIPTION (FLOW, LOCATION, AQUIFER, ACTIVITY)	TXT1	TXT
WETLANDS	WETLANDS PRESENT? (Y/N)	YN1	NUMBER
	DESCRIBE	TXT1	TXT

APPENDIX B

BIBLIOGRAPHIC REFERENCE

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
ASC-1	Building Visual Inspection Escort, 12/2/93	Mike Debol - PWC Oak Knoll Naval Hospital, Bldg 10 Oakland, CA (510) 633-6313	Yes
ASC-10	Aerial photos	Pacific Aerial Survey 8407 Edgewater Oakland, CA (510)632-2020	Yes
ASC-11	Letter from RASO to NAVFACENGR Command dated 19 Nov 1994 indicating their records show no historic use or disposal of radioactive material on parcels 101 and 119.	John Corpos EFA West, NAVFACENG Command 900 Commodore Drive San Bruno, CA 94066	Yes
ASC-2	Letter, D.L. Wilson, Martin Marietta, to Chief Chris Elwood, Report, Radon Test Results for Non-Housing, 7/21/93	Ann Sun Navy Facilities Engineering Command, Western Division 900 Commodore Drive San Bruno, CA 94066 (415)244-2531	Yes
ASC-3	Building Visual Inspection Interview, HM3 Mc Minn, conducted by Art Chen, 12/2/93	HM3 McMinn, Bldg 14 Animal Lab Oak Knoll Hospital Oakland, CA (510) 633-6787	Yes
ASC-4	Building Visual Inspection Interview, Fire Fighting Staff, conducted by Art Chen, 12/2/93 and 12/3/93	Fire Fighting Staff, Fire Station Oak Knoll Naval Hospital, Bldg. 36 Oakland, CA (510)633-5000	Yes
ASC-5	Disposal & Impediment Maps for Base Closure Nominees as of July 1990, NAVFAC drawings 6118012, 6118013, 6118014 (WESTDIV drwings C-104198, C-104199, C-104200 dated 2-23-90)	Mike Mahoney Navy Facilities Engineering Command, Western Division 900 Commodore Drive San Bruno, CA 94066 (415)244-3859	Yes
ASC-6	Assessors's Map 43A , Block 4675	Recorders Office County of Alameda 12th & Oak Streets Oakland, CA	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
ASC-7	Naval Shore Facilities Inventory, 30 Sept 93, Page 150 and following	John Parsons (510)466-3800 PWC SF Oakland Army Base, Building 796, Room 129 Oakland, CA	Yes
ASC-8	Interview with John Parsons, conducted by Art Chen,	John Parsons Navy Public Works Center-San Francisco Oakland Army Base, Building 796, Room 129 Oakland, CA (510) 466-3800	Yes
ASC-9	Interview with Dan Yee, conducted by Art Chen, 12/3/93	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-1	Letter, M.S. Horner, DTSC, to Donald W. Jensen, Permit By Rule, 3/3/92	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-10	Letter, Dwight R. Horning, DTSC, to Capt. Donald L. Sturtz, Contaminated Soil, 1/30/84	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-100	Inspection form, compliance verification, 8/20/90	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	No
DET-100	BAAQMD memo, Inv 1819, Warning of Impending Legal Action, 7/20/92	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	No
DET-101	Source data sheet, 8/25/92	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	No

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-102	Inspection form, compliance verification, 8/25/92	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	No
DET-103	Inspection form, compliance verification, 1/20/93	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	No
DET-104	Source data sheet, 1/15/93	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	No
DET-105	Emergency Report, POV leaking fuel, 5/12/92	Fire Department Oak Knoll Naval Hospital, Bldg. 36 Oakland, CA (510)633-5000	Yes
DET-106	Emergency Report, Mercury spill, 4/2/92	Fire Department Oak Knoll Naval Hospital, Bldg. 36 Oakland, CA (510)633-5000	Yes
DET-107	Emergency report, Smell of formaldehyde, 6/23/92	Fire Department Oak Knoll Naval Hospital, Bldg. 36 Oakland, CA (510)633-5000	Yes
DET-108	Emergency report, Leaking vehicle, 12/9/92	Fire Department Oak Knoll Naval Hospital, Bldg. 36 Oakland, CA (510)633-5000	Yes
DET-109	Grid Map Premium, AIC#01-0020485, Project #2121.022, Oak Knoll, CA, Agency Information Consultants, Inc., 10/13/93	ERM- West 1777 Botelho Drive, Suite 260 Walnut Creek, CA (510)946-0455	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-11	California Extremely Hazardous Waste Disposal Permit, 5/20/83	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-110	Workspace Hazardous Material Inventory List, Drug Screening Laboratory, Bldg 17, 6/3/83	Oak Knoll Naval Hospital, Bldg. 65 Oakland, CA (510)633-5000	Yes
DET-111	Administrative Department Hazardous Material Inventory, Bldg 101, 12/2/93	Naval School of Health Sciences Oak Knoll Naval Hospital, Bldg. 101 Oakland, CA (510)633-5000	Yes
DET-112	EPA RCRA data base list, run 15.52.03, 11/3/93	Sharon Jang U.S. Environmental Protection Agency, Region IX 75 Hawthorne Street San Francisco, CA 94105 (415)744-1586	Yes
DET-113	Interview with Dave Lankford, Acting Head, Housekeeping, 12/20/93	Dave Lankford Oak Knoll Naval Hospital, Bldg. 500 Oakland, CA (510)633-5992	Yes
DET-114	BAAQMD Vapor Recovery Inspection Sheet, Exxon Station, 8008 Mountain Blvd, 12/30/88	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	No
DET-115	BAAQMD Vapor Recovery Inspection Sheet, Exxon Station, 8008 Mountain Blvd, 6/12/89	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	No
DET-116	BAAQMD Vapor Recovery Inspection Sheet, Exxon Station, 8008 Mountain Blvd, 12/12/80	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	No

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-117	Letter from John P.Werfel, BAAQMD, to Ms. Janet Simons, Gettler-Ryan, Inc., Soil Aeration Project Exxon Service Station, 8008 Mountain Blvd, 5/2/90	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	Yes
DET-118	BAAQMD internal memo, Matt W. to Phil Wright, Soil Aeration Requirements, 3/26/90	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	Yes
DET-119	Letter, Chariman, Navy Radiation Safety Committee to Commanding Officer, Navy Drug Screening Laboratory, Navy Radioactive Permit Amendment, 1/25/93	Lt. Commander Gorsuch Oak Knoll Naval Hospital, Bldg. 75 Oakland, CA (510)633-5000	No
DET-12	Publication for California Extremely Hazardous Waste Permit, 5/11/83	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200,, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-120	Letter, Chariman, Navy Radiation Safety Committee to Commander Naval Medical Center, Navy Radioactive Permit Amendment, 10/18/93	Lt. Commander Gorsuch Oak Knoll Naval Hospital, Bldg. 75 Oakland, CA (510)633-5000	No
DET-121	Facilities and equipment, Annotated Drawings, Locations of Byproduct Material Storage, undated	Lt. Commander Gorsuch Oak Knoll Naval Hospital, Bldg. 75 Oakland, CA (510)633-5000	No
DET-122	Alterations in and Additions to Buildings, 1948 - 1966, 1908 - 1971, undated	Public Affairs Office Oak Knoll Naval Hospital, Bldg. 73 Oakland, CA (510)633-5000	Yes
DET-123	Letter, HD, Facilities Management Department, to Environmental Baseline Study Team, Status of Wells, Oil/Water Separators, and PCB Ballasts, 11/16/93	Lt. Commander G.D. Smith Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-124	Earthdata Drawing 6085577P, Page 3 of 4, Utility Distribution Storm Sewer, 7/11/77	Jeff Lew Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes
DET-125	Master Plan Naval Hospital, Oakland, California, September, 1984	Facilities Department Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300 Response to initial site visit questionaire, 25 August 93	Yes
DET-126	Interview with Mr. Larry Douschand, Environmental Program Manager, conducted by Dennis Tretheway, 1/7/94	Larry Douschand Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6302	Yes
DET-127	Interview with Lynn Valdivia, Environmental Scientist, PRC, conducted by Dennis Tretheway, 1/4/94	Lynn Valdivia PRC Environmental Inc. 120 Howard Street, Suite 700 San Francisco, CA 94105 (510)543-4880	Yes
DET-128	BAAQMD Permit to Operate, expires 7/1/94, Undated	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-129	Letter, CO, Naval Hospital, Oakland, CA to Chief, Bureau of Medicine and Surgery via Commander, Western Division, Naval Facilitties Engineering, GD Smith, Polychlorinated (PCB) Elimination Plan, 8	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-13	Site Tracking Sheet, Rick Robison 4/10/87	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-130	Letter, Commander, Western Division, Naval Facilities Engineering Command to Distribution, Polychlorinated Biphenyl (PCB) Elimination Plans, 5090 Ser 1822/0124	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-131	Telephone interview, Ray Maxwell, Wastewater Control Representative, and Lew Jones, Supervisor, Wastewater Inspectors, EBMUD, conducted by Dennis Tretheway, 1/4/94	Ray Maxwell and Lew Jones East Bay Municipal Utility District (EBMUD) 375 11th Street Oakland, CA 94607 (510)287-1655	Yes
DET-132	Interview with Chief Sisler, Security, conducted by Dennis Tretheway, 1/7/94	Chief Sisler Oak Knoll Naval Hospital , Building 102 Oakland, CA (510)633-5000	Yes
DET-133	Sanitary Sewer Source List, Dennis E. Tretheway and Art S. Chen, 12/30/93	ERM- West 1777 Botelho Drive, Suite 260 Walnut Creek, CA (510)946-0455	Yes
DET-134	WESTNAVFACENGCOM letter from Doug Pomeroy, to Mary Doyle, Ray Chiang, Jerry Hemstock, Hank Gee, Jue Mear (PRC),Kathy McKinney-Tovar (ERM-West), Species list, 1/6/94	ERM -West 1777 Botelho Drive, Suite 260 Walnut Creek, CA (510)946-0455	Yes
DET-135	Letter, Dale A. Pierce, Fish and Wildlife Service to John H. Kennedy, Naval Facilities Engineering Command, Species list, 12/31/93	ERM-West 1777 Botelho Drive, Suite 260 Walnut Creek, CA (510)946-0455	Yes
DET-136	Building Visual Inspection conducted by Dennis Tretheway and Peter Ylmbo, Shawnee Company, Inc., 12/1/93-12/3/93	N/A	Yes
DET-137	Building List for Oak Knoll Hospital, Dennis E. Tretheway and Arthur S Chen, Shawnee Company, Inc., 12/10/93	ERM- West 1777 Botelho Drive, Suite 260 Walnut Creek, CA (510)946-0455	Yes
DET-138	Steam Lines / Parcel Map, 12/93, ERM-West	ERM- West 1777 Botelho Drive, Suite 260 Walnut Creek, CA (510)946-0455	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-14	Record of Communication Oak Knoll Naval Hospital, no author, 6/28/85	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-15	Toxic Substances Control Division Facility Inventory Information, Naval Med Center Building 5, ASPIS-21, 4/23/87	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	No
DET-16	Toxic Substances Control Division Facility Background Information, Naval Med Center Building 5, ASPIS-02-1,2, 4/23/87	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-17	Abandoned Site Program Information System Overnight Actions Reporting Form Naval Regional Med Center Building 5, 4/23/87	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	No
DET-18	Onsite Hazardous Waste Treatment Notification Form , DTSC 1772	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-19	Hazardous Materials Management Report, 6/12/84	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	No
DET-2	Fixed Treatment Unit Permit by Rule Initial Notification of Intent to Operate, 1/30/92	California Environmental Protection Agency Department of Toxic Substance Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-20	Martin Marietta Letter, K. Mike Davis to Ldcr. Strickland, Asbestos Survey and Assessment Final Report, 12/5/91,	Mike Mahoney Navy Facilities Engineering Command, Western Division 900 Commodore Drive San Bruno, CA 94066 (415)244-3859	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-21	BAAQMD, Permit to Operate, 7/1/94	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-22	BAAQMD, Permit to Operate, 31968, 6/26/91	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-23	BAAQMD, Permit to Operate, 7/1/92	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-24	BAAQMD, Permit to Operate, 7/1/91	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-25	Letter, ACHCS to CO, Navy Rescue Activity, 12/26/90	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	No
DET-26	Letter, Department of the Navy to California Water Recources Control Board, 12/1/84	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	No
DET-27	Letter, Commanding Officer to Officer in Charge, Request for UST Records, 5/15/91	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	No
DET-28	Letter, Commanding Officer to Officer in Charge, Closure and Removal of Exchange UST's, 8/27/91	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-29	Letter, Commanding Officer to Officer in Charge, Leaking Gas Tank, 6/14/91	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-3	Hazardous Waste Surveillance and Compliance Report, 6/19/84	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-30	Letter, Diablo Tank & Equipment to Oak Knoll Naval Hospital, 2/18/89	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-31	UST Program Tank Permit Application Information for Tanks 141A, 141B, 500A, 8/27/90	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-32	UST Program Tank Permit Application Information for Tanks 510A, 510B, 510C, 510D, 2/5/91	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-33	Application For Permit To Operate UST, for Tanks 111A, 214A, 214B, 214C, 214D, 500A, 505A, 510A, 510B, 510C, 510D, 5/14/86	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-34	Hazardous Substance Storage Statement for Tanks 114A, 141A, 141B, 214A, 214B, 214C, 214D, 500A, 505A, 540A, 510B, 510C, 510D	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-35	Final Report, Tank Testing Program, March 1989, Prepared By Erm West, Rancho Cordova	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-36	Letter, Lt. Commander RW Darr to California Water Resources, Tank Reservation Forms, 12/11/84	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-37	Letter, Cynthia Chapman, Alameda County Health Care Services, to CO, NHO, UST Permit Application, 12/26/90	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-38	Letter, W.A. Buckendorf, Dept of Navy, to CO, NHO, Closure and Removal of Exchange UST's, 8/27/91	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-39	Letter, J.P. Kelly, Dept of Navy, to CO, NHO, Request for UST Records, 5/15/91	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-4	Hazardous Materials Sample Analysis Request, HML No. 9880, 6/19/84	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-40	Letter, D.T. Peart, Officer in Charge, Navy Resale Activity, NAS Alameda, to CO, NHO, Leaking Gas Tank, 6/14/91	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-41	Letter, Richard H. Fahey, Diablo Tank & Equip, to NHO, UST Air Test, 2/18/89	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-42	NHO Building List, 1/31/89	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-43	Storm Water Pollution Prevention Plan, Appendix A, Illicit Discharges Prevention Program, NHO, 4/16/93	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-44	Draft Report, Cultural Resources Assesment and Context Statement, Naval Hospital, Oakland, California, 9/93	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-45	Letter, Christopher J. Marten, DTSC, to Unknown, Disposal Procedures for Lead Painted Buildings, 3/10/89	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-46	Letter, R. E. Elster, Officer in Charge. to CO, NHO, Environmental Complaine Evaluation, NHO, 7/2/92	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-47	Letter, Ellen Brown, Commander, Naval Facilities Engineering Command, Western Division, to Chief, Naval Health Care Support Office, Environmental Compliance Evaluation, NHO, 7/2/92	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-48	Environmental Compliance Evaluation for NHO, May 5-8, 1992	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-49	Letter, E.L. Kornegay, Chief, Bureau of Medicine & Surgery to Unknown, Environmental Compliance Evaluation Self Audits and Trends, 9/7/93	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-5	Hazardous Materials Laboratory, Laboratory Report, 8/16/84	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-50	Naval Medical Center Oakland ECE Self Audit Report, Undated	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-51	Solicitation No. NG2474-92-B-0523, Hazardous Waste Colection and Disposal by Incineration at Naval Hospital, 3/17/92	Facilities Department Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300 Response to initial site visit questionaire, 25 August 93	Yes
DET-51	Solicitation No. Ng2474-92-b-0523, Hazardous Waste Collection and Disposal by Incineration at Naval Hospital, 3/17/92	Facilities Department Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300 Response to initial site visit questionaire, 25 August 93	Yes
DET-52	Hazardous Materials Inventory, Undated	Facilities Department Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300 Response to initial site visit questionaire, 25 August 93	Yes
DET-53	Letter, J. D. Blaylock, Head, Preventative Medicine Department., Survey of the Water Well at NHO, 2/13/85	Facilities Department Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300 Response to initial site visit questionaire, 25 August 93	Yes
DET-54	NHO Well Report, 1/18/85	Facilities Department Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300 Response to initial site visit questionaire, 25 August 93	Yes
DET-55	Service Contract for Pick-up of Radioactive Waste Req. No. 55126Q, N6885293MDDT0000 and Amendment	Facilities Department Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300 Response to initial site visit questionaire, 25 August 93	Yes
DET-56	Letter, D.L. Wilson, Martin Marietta, to Chief Chris Elwood, Report, Radon Test Results for Non-Housing, 7/21/93	Facilities Department Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300 Response to initial site visit questionaire, 25 August 93	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-57	Letter, G.D. Smith, CO, NHO, to CO-PWC, BAAQMD Plant Operating Permit Renewal, 5/30/89	Facilities Department Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300 Response to initial site visit questionaire, 25 August 93	Yes
DET-58	BAAQMD Permit to Operate N0. 9878, Ethylene Oxide Sterilizer, 12/11/92	Facilities Department Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300 Response to initial site visit questionaire, 25 August 93	Yes
DET-59	Detailed Inventory of Naval Shore Facilities, Navy Facilities Engineering Command, Western Division, 900 Commodore Drive, San Bruno, Ca 9/30/92	Facilities Department Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300 Response to initial site visit questionaire, 25 August 93	Yes
DET-6	Copy of photograph, " Oakland Naval Hospital, 6/19/84, Excavation of Gasoline Tank Removed"	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200 Berkeley, CA 94710 (510)540-3532	Yes
DET-60	Asbestos Survey and Assessment Report for PWC SFB, Volume, 12/5/91, Martin Marietta	Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes
DET-61	UST Management Plan, Volume I, Undated	Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	No
DET-62	Decommissioning Records, 11/19/93 Lt. Com. Gorsuch	Lt. Commander Gorsuch Oak Knoll Naval Hospital, Bldg. 75 Oakland, CA (510)633-5000	Yes
DET-63	Quantities of Bio Hazardous Waste 1991, 1992	Housekeeping Oak Knoll Naval Hospital, Bldg. 500 Oakland, CA (510)633-6309	No

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-64	Solid Waste Management Plan for Naval Medical Center Oakland, November, 1993	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	No
DET-65	Memorandum, G.C Smith to Environmental Study Team, Status of Wells, Oil Water Separators and PCB Ballasts, 11/16/93	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-66	PRC Environmental Management, Inc. Report, Soil Sampling and Ground Water Monitoring Site Investigation Tank 111A, Final Field Work Plan, 1/29/93	Lynn Valdivia PRC Environmental Inc. 120 Howard Street, Suite 700 San Francisco, CA 94105 (510)543-4880	Yes
DET-67	PRC Environmental Management, Inc. Report, Underground Storage Tank Removal, Tanks 510 A-D Final Summary Report, 1/29/93	Lynn Valdivia PRC Environmental Inc. 120 Howard Street, Suite 700 San Francisco, CA 94105 (510)543-4880	Yes
DET-68	PRC Environmental Management, Inc. Report, Soil Sampling and Ground Water Monitoring Site Investigation Tanks 510A-D, Final Field Work Plan Phase I, 1/29/93	Lynn Valdivia PRC Environmental Inc. 120 Howard Street, Suite 700 San Francisco, CA 94105 (510)543-4880	Yes
DET-69	PRC Environmental Management, Inc., Closure Report - Soil Pile Remediation of Gasoline Contaminated Soils of Oakland Naval Hospital, Oakland, California, 10/20/93	Lynn Valdivia PRC Environmental Inc. 120 Howard Street, Suite 700 San Francisco, CA 94105 (510)543-4880	Yes
DET-7	Copy of Photograph, "Oakland Naval Hospital, 6/19/84, Excavation - Gasoline"	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-70	Final Report, Naval Medical Command, Northwest Region, Oakland, CA. Tank Testing Program, March 1989	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-71	Draft Report - Cultural Resources Assessment and Context Statement Naval Hopspital, Oakland, California, September 1993	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-72	Letter, Radiaition Safety Officer to Commander, Amendment to Navy Radioactive Material Permit (NRMP), 11/8/93	Lt. Commander Gorsich Oak Knoll Naval Hospital, Bldg. 75 Oakland, CA (510)633-5000	No
DET-73	Letter, Head of Preventative Medicine Department, to Head Of Facilities Management Department, Survey of the Water Well at NHO, 2/13/85	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-74	Disposal & Impediment Map, 7/3/90, Sheet 1,	Mike Mahoney Navy Facilities Engineering Command, Western Division 900 Commodore Drive San Bruno, CA 94066 (415)244-3859	Yes
DET-75	Update GDM, 7/12/92, PWC# 126331, Sheet 1 of 1	Jeff Lew Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes
DET-76	Electrical Power System 12.5 Kv Distribution, PWC# 108, 640, 5/13/91, Sheet 2 of 10	Jeff Lew Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes
DET-77	Natural Gas System Utility Distribution PWC# 108, 646, 12/18/90, Sheet 8 of 10	Jeff Lew Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes
DET-78	Utility Distribution Storm Sewer PWC# 52616, Sheet 10 of 10	Jeff Lew Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-79	Naval Hospital Oakland General Development Map, PWC# 108, 639, 5/1/92, Sheet 1 of 10	Jeff Lew Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes
DET-8	Copy of Photograph, "Oakland Naval Hospital, 6/19/84, Backhoe Removing Soil From Gasoline Pit"	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes
DET-80	Naval Regional Medical Center General Development Map, Undated, Taken from Aerial Photos, 4/27/89, Index Plus, Sheets 1-4	Jeff Lew Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes
DET-81	Steam And Condensate System Utility Distribution, PWC # 108, 644, 10/14/89, Sheet 6 of 10	Jeff Lew Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes
DET-82	Earthdata - General Development Map Index of Structures, NAVFAC #6085568, 3/8/83, SHEET 4 of 4	Jeff Lew Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes
DET-83	Earthdata - Vicinity And Regional Map, NAVFAC #6085565, 10/25/77. Sheet 1 of 4	Jeff Lew Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes
DET-84	Earthdata - Genral Development Map, Key Map, NAVFAC #6085566, 10/25/77, Sheet 2 of 4	Jeff Lew Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes
DET-85	Letter, OIC, Naval Sea Systems Command Detachment, Radiological Affairs Support Office to CO, Naval Hospital, Low Level Radioactive Waste Disposal Under Navy Control No. USN 92-009, 27	Lt. Commander Gorsuch Oak Knoll Naval Hospital, Bldg. 75 Oakland, CA (510)633-5000	No

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-86	Letter, Officer In Charge, Naval Sea System Detachment, Radiological Affairs Support Office, Low Level Radioactive Waste Disposal, to Commanding Officer, Naval Hospital	Lt. Commander Gorsuch Oak Knoll Naval Hospital, Bldg. 75 Oakland, CA (510)633-5000	No
DET-87	Letter, Radiation Officer to Dennis Tretheway, Shawnee Co, Inc, Requested Documentation of Radioactive Material Use, 11/29/93	Lt. Commander Gorsuch Oak Knoll Naval Hospital, Bldg. 75 Oakland, CA (510)633-5000	Yes
DET-88	US Naval Hospital Oakland, California 12th Naval District, June 30, 1949, Map	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-89	Map of US Naval Hospital, Oakland, Ca, Freshwater Distribution, 2/10/65	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
DET-9	Clean-up Plan For Contaminated Soil in the Underground Fuel Tank Area, Naval Hospital, Oakland, Ca, Alex E. Dong, WETNAVFACENGCOM, 6/22/84	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200 Berkeley, CA 94710 (510)540-3532	Yes
DET-90	Facsimile, A. A. Germes to Dennis Tretheway, Decomissioning Records, Undated	Lt. Commander Gorsuch Oak Knoll Naval Hospital, Bldg. 75 Oakland, CA (510)633-5000	Yes
DET-91	Letter, Radiation Health Officer to Radiation Safety Officer, Historical Summary of Naval Hospital License / Permit, 12/3/93	Lt. Commander Gorsuch Oak Knoll Naval Hospital, Bldg. 75 Oakland, CA (510)633-5000	Yes
DET-92	Radioactive Spill Reports, 1984-1993	Lt. Commander Gorsich Oak Knoll Naval Hospital, Bldg. 75 Oakland, CA (510)633-5000	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
DET-93	Oak Knoll Fire Station Emergency Reports, 1987 to 1993	Fire Department Oak Knoll Naval Hospital, Bldg. 36 Oakland, CA (510)633-5000	Yes
DET-94	Interview With Ben Nelson, Conducted by Dennis Tretheway & Art Chen, 12/15/93	Ben Nelson 18887 Center Street Castro Valley, CA (unlisted Phone number)	Yes
DET-95	Phone Interview With Retired Capt. Volksta Conducted by Phone, Dennis Tretheway & Art Chen, 12/15/93	ERM- West 1777 Botelho Drive, Suite 260 Walnut Creek, CA (510)946-0455	Yes
DET-96	Sanitary Sewer System / Parcel Map, 12/93, ERM-West	ERM- West 1777 Botelho Drive, Suite 260 Walnut Creek, CA (510)946-0455	Yes
DET-97	List, Detail & Inventory, Plant 235, 12/12/92	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	Yes
DET-98	Source data sheet, 7/10/90	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	No
DET-99	Inspection form, compliance verification, 7/10/90	Rochelle Walker Bay Area Air Quality Management District (BAAQMD) 939 Ellis Street San Francisco, CA 94109 (510)771-6000	No
POY-1	Letter, Donald L. Sturtz to DTSC, Comlpetion of the Removal of Contaminated Soil from UST Site, 11/8/85	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
POY-10	Letter, D. L. Wilson to Chief C. Elwood, Radon Test Results for Non Housing, 7/21/93	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
POY-11	Underground Storage Tank Management Plan, Navy Public Works Center (PWC) SF, Vol. 1, 7/15/92	Jeff Lew Navy Public Works Center-San Francisco Bay Naval Supply Center, Building 441B Oakland, CA (510)302-5415	Yes
POY-12	Letter Cynthia Chapman, Alameda County Health Care Services, to Chief C. Elwood, USTs At Oak Knoll, 12/26/90	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	No
POY-13	Memoranda, UST Removal , Leaking Gas Tanks and UST Records, 5/15/91, 6/14/91, and 8/27/91	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
POY-14	Situation Maps and Disposal and Impediment Maps for Base Closure Nominees, 7/90	Mike Mahoney Naval Facilities Engineering Command-Western Div 900 Commodore Drive San Bruno, CA	No
POY-15	Advertised RFP, PWC SF, Biohazardous Waste Collection & Disposal by Incineration at Naval Hospital, 2/76	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	No
POY-16	Environmental Compliance Evaluation (ECE), Naval Hospital, Oakland, 8/18/92	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
POY-17	PRC Environmental Magagement, Inc. Final Summary Report, Underground Storage Tank Removal, UST 111A, 1/29/93	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
POY-18	Memorandum, G. D. SMITH, BAAQMD Permitting for 9 Operating Sources and 2 Exempt Sources, No Date	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
POY-19	Letter, PRC to Gina Kathuria of RWQCB, Status of USTs 510A, 510B, 510C, 510D and 111A, 9/7/93	Regional Water Quality Control Board Records Room 2101 Webster Street Oakland, Ca 94612 (510)286-1255	Yes
POY-2	Copies of 23 manifests, from 6/11/84 to 6/20/84, documenting 412 yd^3 of contaminated soil shipped from Oak Knoll to IT Corp. disposal site	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	No
POY-20	Letter, Juliet Shin, RWQCB, to Dan Yee, Oak Knoll Naval Hospital, Required Investigations at Oak Knoll Hospital, 10/23/92	Juliet Shin Regional Water Quality Control Board 2101 Webster Street Oakland, Ca 94612 (510)286-1255	Yes
POY-21	PRC Environmental Management, Inc. Report, Underground Storage Tank Removal, Tank 111A Final Summary Report, 1/29/93	Regional Water Quality Control Board 2101 Webster Street Records Room Oakland, Ca 94612 (510)286-1255	No
POY-22	PRC Environmental Management, Inc. Report, Underground Storage Tank Removal, Tanks 510 A-D Final Summary Report, 1/29/93	Regional Water Quality Control Board Records Room 2101 Webster Street Oakland, Ca 94612 (510)286-1255	No
POY-23	PRC Environmental Management, Inc. Report, Underground Storage Tank Removal Field Work Plan, 10/9/91	Regional Water Quality Control Board Records Room 2101 Webster Street Oakland, Ca 94612 (510)286-1255	No
POY-25	PRC Environmental Management, Inc. Report, Soil Sampling and Ground Water Monitoring Site Investigation Tanks 510A-D, Final Field Work Plan Phase I, 1/29/93	Regional Water Quality Control Board Records Room 2101 Webster Street Oakland, Ca 94612 (510)286-1255	No

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
POY-26	Letter, C.G. Strom to Alameda County DEH, Hazmat Division, Oak Knoll's Business Plan, 3/23/89	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-27	Naval Hospital Oakland Business Plan - Part 1, 3/23/89	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	Yes
POY-28	Letter, Juliet Shin, Alameda County Health, to Mr. Pratt of Sequoyah Country Club, Investigations of USTs, No date	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	Yes
POY-29	Letter, to John Dearden, Sequoyah County Club, Notice of reimbursement, 11/29/93	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-3	Manifest for Shipment of 99% Water & 1% Unleaded Gasoline to Ericson, Inc., 5/16/84	California Environmental Protection Agency Department of Toxic Substances Control 700 Heinz, Suite 200, Records Room Berkeley, CA 94710 (510)540-3532	No
POY-30	Letter, Scott O. Seery, Alameda County Health Care Services, to Marla D. Guensler, Exxon Corp, USTs. 1/92	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	Yes
POY-31	Letter, UST removal at Exxon station, 1/22/91	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-32	Letter (with attachment), Tank removal at Exxon station, 1/3/91	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
POY-33	UST Authorized Release Leak/contamination Report, 7/19/89	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	Yes
POY-34	Tank fitness test report at Exxon Station, Petro-Check, Inc., 4/13/88	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	Yes
POY-35	State of California UST Program Facility Site Information and/or Permit Application for Exxon Station,4/13/88	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-36	Application to operate 3 USTs , Exxon Station, Ahmad Aghel,9/25/85	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-37	Data chart for tank system, tightness test for Exxon Station, Petro Tite Tank Tester, 6/2/82	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-38	Tank tightness test at Exxon Station on 4/28/88, No date	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-39	Permit to operate Air Pressure Tank # 2505-92, NB#37070 by Cal OSHA, No date	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-40	Letter, Julie Bates, West Coast Locators, Inc., to Dan Yee, Results of 550 Gal Diesel Tank Leak Test, No Date	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	No

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
POY-41	BAAQMD's permit to operate at Gasoline Dispensing Facility at Sequoyah Country Club, No date	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-42	Field notes, 70 gallons of waste oil was picked up 2/19/93 by PRC, Patterson, Inc. (DBA Refineries Service), No date	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-43	Field notes, 85 gallons of waste oil was picked up 2/13/92 from Sequoyah Country Club by Evergreen Environmental Services, No date	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-44	Liquid Carbonic supplied acetylene and oxygen to Sequoyoh Country Club	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-45	Field notes, Inspection of Sequoyah Country Club on 6/17/93, No date	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	Yes
POY-47	Sequoyah Country Club Hazardous Materials Management Plan and Emergency Response Plan, No date	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-48	UST unauthorized release leak/contamination site report for Sequoyah Country Club on 6/1/92, 6/1/92	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	Yes
POY-49	UST Permit Application Form A, Sequoyah Country Club, 6/20/91	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
POY-50	Letter, U.S. EPA to Oak Knoll, Receipt Of Complete Information for Preliminary Assessment-No Further Action by the EPA at Oak Knoll,11/15/91	U.S. Environmental Protection Agency, Region IX Records Room, 9th Floor 75 Hawthorne Street San Francisco, CA 94105 (415)744-2100	Yes
POY-51	UST Permit Application, Form B, Sequoyah Country Club, 11/28/90	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-52	Tank fitness test results, Sequoia Country Club, Paradiso Construction Company, No date	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-53	Data chart for tank system tightness test of 550 gal & 5000 gal steel tanks, Sequoia Country Club, 10/28/88	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-54	State of California UST Program Facility Site Information and/or permit Application, Sequoyah Country Club, 11/10/88	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	No
POY-55	Quarterly groundwater monitoring reports, of 9/28/93, 6/25/93 & 4/12/93, Sequoyah Country Club, RESNA Industries, No date	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	Yes
POY-56	Groundwater monitoring reports of 2/9/93, 1/14/93, 12/28/92, 10/92, 6/92, 4/92, & 12/91, Sequoyah Country Club, IT Corporation	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	Yes
POY-57	Remediation Effectiveness Evaluation of Sequoyah Country Club, IT Corporation, 4/91	K. Logan Alameda County Environmental Health, Haz. Mat. Division 80 Swan Way, Room 200 Oakland, CA 94621 (510)271-4320	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
POY-58	1988 Generator Annual Report, 4/4/88, 7/6/88, 8/4/88	Petty Officer Kim Jackson Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-5000	Yes
POY-59	Memorandum, J.J. Nesius to File, 1989 Hazardous Waste Report- Oak Knoll exempt as a Small Quantity Generator, 5/13/91	Petty Officer Kim Jackson Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-5000	Yes
POY-60	Annual Facility Hazardous Waste Report for 1986, No date	Petty Officer Kim Jackson Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-5000	No
POY-61	Ecology & Environment, Inc Report to EPA Region IX, Federal Facility Preliminary Assessment Review, No Date	U.S. Environmental Protection Agency, Region IX Records Room, 9th Floor 75 Hawthorne Street San Francisco, CA 94105 (415)744-2100	Yes
POY-62	Memorandum , Naval Drug Screening Laboratory 65B, to Unspecified, Disposal of Hazardous Waste from the Drug Screening Lab, 1/9/84	Petty Officer Kim Jackson Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-5000	Yes
POY-63	Hazardous Waste Tax Returns, Oak Knoll 7/12/90, 7/12/89, 7/12/88, 7/12/87, 7/12/86, 7/12/85, 1/6/90, 1/6/89, 1/6/88, 1/6/87, 1/6/86, 1/6/85	Petty Officer Kim Jackson Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-5000	Yes
POY-64	State Hazardous Waste Superfund Tax Returns, Oak Knoll, 1990, 1989, 1988, 1987, 1986, 1985 & 1984	Petty Officer Kim Jackson Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-5000	Yes
POY-65	Building 500 Chemical Inventory List, C. Baldwin, 12/15/93	C. Baldwin Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6300	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
POY-66	Workspace Hazardous Materials Inventory List, Bldg 65 - Naval Drug Screening Lab, 11/22/93	Naval Drug Screening Laboratory Oak Knoll Naval Hospital, Bldg. 65 Oakland, CA (510)633-5000	Yes
POY-67	Naval Hospital Disaster Preparedness Plan, R. E. Faucett, 11/1/72	Crews Library Oak Knoll Naval Hospital, Bldg. 101 Oakland, CA (510)633-5000	No
POY-69	State Hazardous Waste Superfund Tax Return,1990	Petty Officer Kim Jackson Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-5000	Yes
POY-70	State Hazardous Waste Superfund Tax Return,1989	Petty Officer Kim Jackson Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-5000	Yes
POY-71	State Hazardous Waste Superfund Tax Return,1988	Petty Officer Kim Jackson Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-5000	Yes
POY-72	State Hazardous Waste Superfund Tax Return,1987	Petty Officer Kim Jackson Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-5000	Yes
POY-73	State Hazardous Waste Superfund Tax Return,1986	Petty Officer Kim Jackson Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-5000	Yes
POY-74	State Hazardous Waste Superfund Tax Return,1984	Petty Officer Kim Jackson Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-5000	Yes

NAVAL MEDICAL CENTER, OAKLAND LIST OF REFERENCES

Reference#	Reference	Location of Reference	Used? (Y/N)
POY-75	Materials Management Department Stock Control Division Customer Catalog, 11/4/93	Master Chief Spaulding's Office Oak Knoll Naval Hospita, Bldg. 505 Oakland, CA (510)633-5000	No
POY-76	Interview, Larry Douschand and Gail Castenada, Conducted by Peter Yimbo, Biohazardous wastes, 11/19/93	Larry Douschand Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6302	Yes
POY-77	Phone Interview, Dan Yee, Conducted by Peter Yimbo, Air Permit requirements for the fume hoods in Bldg. 65, 1/7/94.	Dan Yee Oak Knoll Naval Hospital, Bldg. 63 Oakland, CA (510)633-6309	Yes
POY-78	Interview, Lt. Commander Gorsuch, Conducted by Peter Yimbo, Management practices for radioactive materials/wastes at Oak Knoll Hospital, 11/19/93	Lt. Commander Gorsuch Oak Knoll Naval Hospital, Bldg. 75 Oakland, CA (510)633-5000	Yes
POY-79	Medical Inventory Control System Special Material Content Codes and Descriptions, 1/21/94	Lt. Spratt Oak Knoll Naval Hospital, Bldg. 505 Oakland, CA (510)633-5000	No

APPENDIX C

PARCEL SPECIFIC INFORMATION

APPENDIX C

PARCEL 101 SPECIFIC INFORMATION

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107,108,109,110,111,112,113,114,115, 116, 117,118,119, 120,121,122, 123,124,125,126,127,128,129,130,131, 132,133, 134,135,136,137,138,139,140,141,142, 143,144,145,146,147,148,149,150,151, 152,153,154,155,156,157,158,159,160, 161,162,163		APPLICABLE DATE					Z-BLANK
101	NE corner of the property	Pre 1949 APPLICABLE DATE Demolished	Pump House Auxiliary	400	Wood frame		DET-88
101	NE corner of the property	Pre1949 APPLICABLE DATE Demolished	Pump House	600	Wood frame		DET-88

NAVHOSP OAKLAND

RADIOACTIVE/MIXED MATERIALS

LOCATION(S) Fenceline

PARCEL(S) 101

INFO TYPE RAD **REVIEWER INITIALS** ASC **DATE OBTAINED** 11/19/94

REFERENCES ASC-11

RADIOACTIVE/MIXED MATERIALS PRESENT? (Y/N) No

PERIOD OF COVERAGE FACILITIES EXISTENCE

DESCRIPTION OF MATERIALS/AMOUNT

Letter dated 19 November 1994 from Radiological Affaris Support office (RASO), Naval Sea Syst4ems Command Detachment, Yorktown, VA (804) 887-4692, signed by D. E. Farrand, that after an extensive records search for information on known and potential uses of radioactive materials at the Naval Medical Center, Oakland by RASO and Navy Environmental Health Center (NEHC) there is no historical evidence indicating that radioactive materials were used or disposed of in parcels 101 or 119.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 101, 102, 105, 109, 110, 116

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Easement of 1.693 acres for road access along the northwest boundary of the facility from Bldg 85 to Mountain Blvd. This easement is continued on the other side of the PG&E parcel parallel to the northwest boundary.

TRANSFER INFORMATION AND DATE

Condition of acquisition - Granted to East Bay Water Co. BK 766, Page 472.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 101, 102, 105, 109, 110, 116

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Easement of 1.693 acres for road access along the northwest boundary of the facility from Bldg 85 to Mountain Blvd. This easement is continued on the other side of the PG&E parcel parallel to the northwest boundary.

TRANSFER INFORMATION AND DATE

Condition of acquisition - Granted to East Bay Water Co. BK 766, Page 472.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 101,102

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility easement - 1.148 acres granted along the northwest fence line approximately 200 feet from Mountain Blvd. corner up to Bldg 216.

TRANSFER INFORMATION AND DATE

Condition of acquisition - City of Oakland Bk 2047, Page 181.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 101

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility easement - 0.23 acres granted - There are two parcels to this easement. One small parcel on the northwest fenceline just northwest of housing unit Q. The second larger parcel is northwest of bldg 63 bounded by the fenceline.

TRANSFER INFORMATION AND DATE

2-16-60 - Easement of 0.23 acres granted to East Bay Utility District - Reel 36, Imp 709 NOY (R) 57852.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 101

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Road easement - 1.314 acres granted - Road easement to provide for overpass across 580 Freeway from Fontaine Street to Mountain Blvd. Easement also includes intrusion of Mountain Blvd. along southern fenceline near Sequoyah Road.

TRANSFER INFORMATION AND DATE

9-21-62 - Road easement of 1.314 acres granted to State of Calif - Book 733, Page 210, NOY (R) 62350.

NAVHOSP OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 101,102,103,104,105,106,107,108,109,110,111,112,113,114,115,116,117,11

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5, ASC-6

ISSUE OF CONCERN/REMARKS

Original purchase indicated from Arthur D. King et al for 175.55 acres. Site was formerly Oak Knoll Golf Course. Fee Estate 2/26/31. Portions of the southwest corner of this estate encompass Mountain Blvd., a public road.

TRANSFER INFORMATION AND DATE

FEE ACQUISITION HISTORY OF NAVAL HOSPITAL
2-26-31 - Fee Estate 175.55 acres from Arthur D. King et al. Civil 22087 (Legislative Jurisdiction-Exclusive).
8-25-42 - Fee Estate 0.10 acres from Hutchinson Realty Co. et al. Civil 22276 (Legislative Jurisdiction-Partial).
6-11-48 - Fee Estate 6.98 acres from Housing & Home Finance Agency Civil 24608 (Legislative Jurisdiction-Proprietorial).
4-23-80 - Fee Estate 0.05 acres from Anmar Investment Inc. Quitclaim Deed (Legislative Jurisdiction-Proprietorial).

NAVHOSP OAKLAND

OIL/WATER SEPARATOR

LOCATION(S) General

PARCEL(S) 101,102,103,104,105,106,107,108,109,110,111,112,113,114,115,116,117,11

INFO TYPE OWS **REVIEWER INITIALS** DET **DATE OBTAINED** 11/27/93

REFERENCES DET-65

DETAILED LOCATION

APPLICABLE DATE All

DESCRIPTION (SIZE/FLOW/DISPOSITION) There are not, and were not, oil/water separators on site.

APPENDIX C

PARCEL 102 SPECIFIC INFORMATION

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107,108,109,110,111,112,113,114,115, 116, 117,118,119, 120,121,122, 123,124,125,126,127,128,129,130,131, 132,133, 134,135,136,137,138,139,140,141,142, 143,144,145,146,147,148,149,150,151, 152,153,154,155,156,157,158,159,160, 161,162,163		APPLICABLE DATE					Z-BLANK
102	59	Pre 1949 APPLICABLE DATE Demolished	Storehouse	1800	Wood frame		DET-88
102	68	Pre 1949 APPLICABLE DATE	Quarters	13000	Wood frame	H Building: Surplus buildings 26B, 35, 44, 64, 68, 81, 82, 127 ,and 135 were sold on "Purchase Removal" contracts, 1960.	DET-88, DET-122
102	81	Pre 1949 APPLICABLE DATE	Ward	13000	Wood frame	H Bldg: Surplus buildings 26B, 35, 44, 64, 68, 81, 82, 127, and 135 were sold on "Purchase Removal" contracts, 1960.	DET-88, DET-122

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
102	82	Pre 1949 APPLICABLE DATE	Ward	13000	Wood frame	H Bldg: Surplus buildings 26B, 35, 44, 64, 68, 81, 82, 127, and 135 were sold on "Purchase Removal" contracts, 1960.	DET-88
102	83	Pre 1949 APPLICABLE DATE	Ward	13000	Wood frame	H Bldg: This building was donated to Holy Redeemer College, 1960.	DET-88, DET-122

RADON

PARCEL(S)	LOCATION(S)	RADON SURVEY (Y/N)	RESULTS	ABOVE EPA LIMIT? (Y/N) (> 4 PICOCURIES/L)	REFERENCES
101, 102, 103, 104, 105, 106, 107,108,109,110 ,111,112,113,11 4,115,116, 117,118,119, 120,121,122, 123,124,125,126 ,127,128,129,13 0,131, 132,133, 134,135,136,137 ,138,139,140,14 1,142,143,144,1 45,146,147,148, 149,150,151,152 ,153,154,155,15 6,157,158,159,1 60,161,162,163					Z-BLANK
102	Housing	Yes	Not available until 1994.		ASC-2

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107,108,109,110 ,111,112,113,11 4,115,116, 117,118,119, 120,121,122, 123,124,125,126 ,127,128,129,13 0,131, 132,133, 134,135,136,137 ,138,139,140,14 1,142,143,144,1 45,146,147,148, 149,150,151,152 ,153,154,155,15 6,157,158,159,1 60,161,162,163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
102	Near Residences	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pad Mounted	DET-76
102	Near Residences	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pad Mounted	DET-76

APPENDIX C

PARCEL 103 SPECIFIC INFORMATION

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107,108,109,110,111,112,113,114,115, 116, 117,118,119, 120,121,122, 123,124,125,126,127,128,129,130,131, 132,133, 134,135,136,137,138,139,140,141,142, 143,144,145,146,147,148,149,150,151, 152,153,154,155,156,157,158,159,160, 161,162,163		APPLICABLE DATE					Z-BLANK
103	64	Pre 1949 APPLICABLE DATE	Ward	13000	Wood frame	H Bldg: Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951. Surplus buildings 26B, 35, 44, 64, 68, 81, 82, 127, and 135 were sold on "Purchase Removal" contracts, 1960.	DET-88, DET-122, DET-94

APPENDIX C

PARCEL 104 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 63

PARCEL(S) 104

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/1/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

H building - Asbestos siding on building
Facilities management and medical repair functions are located in this building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Nonchlorinated organics to support photocopy machine
Household cleaning products
Cleaning solvent tank
Three flammable storage cabinets, 63A
Flammable storage cabinet, 63B, room 20
Paint
Acid storage cabinet

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 63

PARCEL(S) 104, 123, 124, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Two hot water heating system purge valves and an over-pressure relief drain to the ground. After the discharge point, migration is via the gutter system into Parcels 123 and 124 and then via storm water piping to the creek in Parcel 135. The creek and contamination migration continues into Parcels 143 and 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is assumed to be to a gutter with potential contaminants being boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 104

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

ASBESTOS

PARCEL(S)	LOCATION(S)	SURVEY?	ASBESTOS?	LOCATION OF ASBESTOS?	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107,108,109,110,111,112, 113,114,115,116, 117,118,119, 120,121,122, 123,124,125,126,127,128, 129,130,131, 132,133, 134,135,136,137,138,139, 140,141,142,143,144,145, 146,147,148,149,150,151, 152,153,154,155,156,157, 158,159,160,161,162,163		**FRIABLE?**				Z-BLANK
104,107,110,112,114,116,117,122,123,124,130,131,133,134,142,147,157,158,159,163	8,9,10,11,13,14,20B,20C,22,36,38,62,63,65,66,67,69,70,73,75,85,89,101148,,154,1,102,103,107,110,111,112,114,115,131,133,138,	No **FRIABLE?**	Yes	Nonfriable asbestos shingle used as exterior siding for buildings.	Per Mike DeBol of PWCSF	ASC-1

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107,108,109,110,111,112,113,114,115, 116, 117,118,119, 120,121,122, 123,124,125,126,127,128,129,130,131, 132,133, 134,135,136,137,138,139,140,141,142, 143,144,145,146,147,148,149,150,151, 152,153,154,155,156,157,158,159,160, 161,162,163		APPLICABLE DATE					Z-BLANK
104	63	1942 APPLICABLE DATE Present	Facilities administration and medical equipment repair functions are located in this building	13230	Wood frame	H Bldg: Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951.	DET-59, DET-122

APPENDIX C

PARCEL 105 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 216

PARCEL(S) 105

INFO TYPE BDI REVIEWER INITIALS DET DATE OBTAINED 12/1/93

REFERENCES ASC-1,

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Wood framed open air storage shed with exterior walls made of cyclone fencing used for storage of hazardous materials.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Chlorine
Refrigent-12 (dichlorodifluoromethane)

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 101, 102, 105, 109, 110, 116

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Easement of 1.693 acres for road access along the northwest boundary of the facility from Bldg 85 to Mountain Blvd. This easement is continued on the other side of the PG&E parcel parallel to the northwest boundary.

TRANSFER INFORMATION AND DATE

Condition of acquisition - Granted to East Bay Water Co. BK 766, Page 472.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107,108,109,110,111,112,113,114,115, 116, 117,118,119, 120,121,122, 123,124,125,126,127,128,129,130,131, 132,133, 134,135,136,137,138,139,140,141,142, 143,144,145,146,147,148,149,150,151, 152,153,154,155,156,157,158,159,160, 161,162,163		APPLICABLE DATE					Z-BLANK
105	216	1976 APPLICABLE DATE Present	Hazardous Materials Storage	800	Wood framed open air shed with exterior walls made of cyclone fencing	Locked	DET-59

APPENDIX C

PARCEL 106 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 215

PARCEL(S) 106

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/1/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Wood framed open air storage shed with exterior walls made of cyclone fencing used to store hazardous materials.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Flammable storage cabinets
Sweeping compounds
Sheet rock jointing compound
Fluorescent lamps

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107,108,109,110,111,112,113,114,115, 116, 117,118,119, 120,121,122, 123,124,125,126,127,128,129,130,131, 132,133, 134,135,136,137,138,139,140,141,142, 143,144,145,146,147,148,149,150,151, 152,153,154,155,156,157,158,159,160, 161,162,163		APPLICABLE DATE					Z-BLANK
106	215	1976 APPLICABLE DATE Present	Hazardous Materials Storage	1056	Wood framed open air shed with exterior walls made of cyclone fencing	Locked	DET-59
106	59	≈1949 APPLICABLE DATE Demolished	Storehouse	1800	Wood frame		DET-88

APPENDIX C

PARCEL 107 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 62

PARCEL(S) 107

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/1/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

H building used for financial management. Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Toner and non-chlorinated organics to support photocopy equipment.
Household cleaning products.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 107

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Bldg 65 (drug screening) and Bldg 63 (medical equip repair) are potential upstream sources of contamination.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 107

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107,108,109,110,111,112,113,114,115, 116, 117,118,119, 120,121,122, 123,124,125,126,127,128,129,130,131, 132,133, 134,135,136,137,138,139,140,141,142, 143,144,145,146,147,148,149,150,151, 152,153,154,155,156,157,158,159,160, 161,162,163		APPLICABLE DATE					Z-BLANK
107	62	1942 APPLICABLE DATE Present	Financial management	13230	Wood frame	H Bldg: Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951.	DET-59, DET-122

APPENDIX C

PARCEL 108 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 510

PARCEL(S) 108

INFO TYPE BDI REVIEWER INITIALS DET DATE OBTAINED 12/2/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

The building was a service station and is currently empty and not in use. The four tanks supporting its use as a service station have been removed. According to PRC, closure has not been completed. Structure is a steel building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) 510

PARCEL(S) 108, 151

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/92

REFERENCES DET-32, DET-67, DET-68, DET-69

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 10,000

TYPE OF TANK Single wall, fiberglass

MATERIALS STORED Super unleaded gasoline

APPLICABLE DATES 1981 - 12/91

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Tank 510C.

This tank was removed 12/91, in a single excavation, along with tanks 510A and B. It had been tested and found to be tight, 1987. It cracked upon removal.

Initially, 6 soil samples were taken from the excavation with 22 additional being taken eventually. Detected contamination included TPH as gasoline & BTEX. The contaminated soil was removed to an onsite treatment location, a soil pile, parcel 151. A closure report for the soil pile has been written.

The Building 510 site has not been closed out.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) 510

PARCEL(S) 108, 151

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/92

REFERENCES DET32, DET67, DET68, DET-69

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 10,000

TYPE OF TANK Single wall, fiberglass

MATERIALS STORED Unleaded gasoline

APPLICABLE DATES 1981 - 12/91

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Tank 510A

This tank was removed 12/91, in single excavation, along with tanks 510B & 510 C. Upon removal, a 2-3 inch hole, below the fill pipe, was discovered. It had been tested and found to be tight, 1987. In addition, it leaked 7,000 gallons.

Initially, 6 soil samples were taken from the excavation with 22 being taken eventually. Detected contamination included TPH as gasoline & BTEX. The contaminated soil was removed to an onsite treatment location, a soil pile, parcel 151. A closure report for the soil pile has been written.

The Building 510 site has not been closed out.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) 510

PARCEL(S) 108, 151

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/92

REFERENCES DET32, DET67, DET68, DET-69

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 10,000

TYPE OF TANK Single wall, fiberglass

MATERIALS STORED Regular gasoline

APPLICABLE DATES 1981 - 12/91

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Tank 510B

This tank was removed 12/91, in a single excavation, along with tanks 510A and C. It had been tested and found to be tight, 1987.

Initially, 6 soil samples were taken from the excavation with 22 being taken eventually. Detected contamination included TPH as gasoline & BTEX. The contaminated soil was removed to an onsite treatment location, a soil pile, parcel 151. A closure report for the soil pile has been written.

The Building 510 site has not been closed out.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) 510

PARCEL(S) 108, 151

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/92

REFERENCES DET32, DET67, DET68

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 550 gal

TYPE OF TANK Single wall, fiberglass, unlined

MATERIALS STORED Waste oil

APPLICABLE DATES 1981 - 12/91

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Tank 510D

This tank, removed 12/91, was excavated separately from UST's 510A-C. It had been tested and found to be tight, 1987.

Detected contamination included SVOC's, TPH as motor oil and TRPH. The contaminated soil was removed to an onsite treatment location, a soil pile, Parcel 151. A closure report for the soil pile has been written.

No further study was recommended due to no visual observation or contamination and low levels of SVOC's.

The 510 site has not been closed out.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 108, 110, 151, 159

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 1/4/94

REFERENCES DET-127, DET-67, DET-68, DET-66

SUBJECT Groundwater monitoring

REMARKS There is neither groundwater monitoring at Oak Knoll Naval Hospital nor a Groundwater Monitoring Plan.

Parcels of special concern would be:

- 108: Building 510, service station not in use, UST's 510A-D have been removed
- 110: Building 12, demolished service station, UST disposition unknown
- 151: Building 214, demolished service station, UST's 214A-D have been removed
- 159: Building 117P, demolished service station, UST-111A has been removed

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 108

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Potential upsteam contamination from parcel 133 (Bldg 75 Dark Room).

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
108	510	1982 APPLICABLE DATE Present	Service station	2200		The service station is not in use as four tanks, 510A-D, have been removed.	DET-59
108	74	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg: This building was modified for Physiotherapy use, 1951.	DET-88, DET-122

APPENDIX C

PARCEL 109 SPECIFIC INFORMATION

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 11

PARCEL(S) 110, 109, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

A vehicle washing platform, a concrete pad located between Buildings 11 and 89, has a sump connected to the storm water sewer via a pipe. The sump is a source of potential contamination migration to Parcels 109, 135,143 and 160 via Rifle Range Creek.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is directly to the storm water sewer with contaminants consisting of surfactants and automotive materials such as grease, oil, gasoline, etc. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 101, 102, 105, 109, 110, 116

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Easement of 1.693 acres for road access along the northwest boundary of the facility from Bldg 85 to Mountain Blvd. This easement is continued on the other side of the PG&E parcel parallel to the northwest boundary.

TRANSFER INFORMATION AND DATE

Condition of acquisition - Granted to East Bay Water Co. BK 766, Page 472.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 109,135,136,143,151,157,156,158,160,159

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility (sewer) easement - 0.33 acres granted - Utility easement runs from approximately Gate house 506 at Keller Ave , along Crowley to Bldg 101. The easement goes east upon reaching Bldg 101, across the parking lot, and turns south parallel to Rail Street in the undeveloped area. The easement turns onto the road in front of Bldg 20B (Grounds Contractor's office) and intersects another City of Oakland easement (Book 7011, page 5) at the entrance to the Bldg 138 and Bldg 136 parking lot.

TRANSFER INFORMATION AND DATE

4-16-74 - Utility easement of 0.33 acres granted to City of Oakland - Reel 2676. Imp 741, NF (R) 23049.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 109

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Potential upstream contamination from Parcel 104 (Bldg 63 Medical equipment repair) and 123 (Bldg 65 Drug screening lab).

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 109, 135, 136, 144, 143, 160, 157, 156, 159

INFO TYPE UTL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

The City of Oakland sanitary sewer traverses the site via its easement. This data sheet was generated to document the affected parcels. See the database entries for easements.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Sewage from the City of Oakland represents a potential for contamination should line leakage exist.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
109	109	Pre 1949 APPLICABLE DATE Demolished	PWC Storehouse	2000	Wood frame		DET-88
109	139A	Pre 1949 APPLICABLE DATE Demolished	Outdoor stage & dressing rooms	1200	Wood frame		DET-88
109	139B	Pre 1949 APPLICABLE DATE Demolished	Projection Booth	1000	Wood frame		DET-88

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
109	508	1975 APPLICABLE DATE Present	Guard shack (Gatehouse). Keller Avenue entrance. 106 sq feet 1975	106	Metal frame with windows		ASC-1
109	59	Pre 1949 APPLICABLE DATE Demolished	Storehouse	1800	Wood frame		DET-88
109	60	Pre1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg- foundations visible; Fluorescent fixtures were installed in this building, 1965.	DET-88, DET-122
109	61	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg: A room under this building was fireproofed, 1952. Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951. Extended 3 phase power to this building, 1971.	DET-88, DET-122

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
124, 109	East of Bldg 66	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76
109	West of Bldg 108	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
109	West of Bldg 11	Unknown		Present	Pole Mounted	DET-76
		PCB (Y/N)				
		PCB CLASSIFICATION				

APPENDIX C

PARCEL 110 SPECIFIC INFORMATION

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) 108

PARCEL(S) 110

INFO TYPE AST REVIEWER INITIALS ASC DATE OBTAINED 12/3/93

REFERENCES ASC-1

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 360

TYPE OF TANK Steel

MATERIALS STORED Diesel

APPLICABLE DATES Present

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Two 360 gal ASTs are stored in this building. Sight gauges indicate 2/3 full.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 10

PARCEL(S) 110

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

1942, 5768 sq feet, 1 story. PWC Office/maintenance shops - carpenter, elect. P.F., machinist, sheetmetal. Building has slab floor and has always belonged to PWC.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Asbestos siding on bldg.
Asbestos insulation on piping in ceiling crawlspace.
Asbestos interior wall board.
Paint, varnish, tile adhesive, thinner, cutting oil, lubricants, etc.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 108

PARCEL(S) 110

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Boiler room for Bldg 8 (laundry). 1947 bldg, remodeled, 1064 sq feet, equipment tested & turned off. Never used to run laundry. Stucco or concrete building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Two 360 gal diesel AST - 2/3 full, inside building.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 11

PARCEL(S) 110

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

1942 2080 sq feet / Formerly sheet metal shop, formerly electrical shop. Now material storage, plumbing and electrical material storage. Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Asbestos siding, paint latex storage, adhesive storage
Asbestos interior wall board
Asbestos pipe cover in crawlspace
Former battery (lead/acid) storage & servicing room
Asbestos walls & ceilings
No chemicals observed in the interior of this building

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 8

PARCEL(S) 110

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

1 story, 1942, 9580 sq feet building and asbestos siding on exterior, storage of hospital equipment, e.g., beds, night stands, matresses, sheets, towels, furniture, paper.
Last 7 years as storage - prior it was a laundry. All equipment removed (LAPD new prison), slab floor. Active small engraving shop at front entrance to building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Storage of housekeeping cleaners - carpet cleaners, floor polish removers. Laundry had soap, detergents, bleach. Asbestos on pipes removed. Asbestos siding on exterior.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 89

PARCEL(S) 110

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

1953 / Asbestos siding, material storage, formerly upholstery shop, 990 sq feet.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Asbestos steam piping beneath building.
Stores paint, cleaner, glue, caulking compound, pesticides.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 9

PARCEL(S) 110

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

1942. 273 sq feet with asbestos siding on exterior. Former laundry maintenance workshop, adjacent to creek.
Storage room, files, empty liquid containers, instruments.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Asbestos siding on exterior.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 13

PARCEL(S) 110

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

PWC Bldg, storage, and former paint shop.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Paint spray both partially removed, stains in room.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 10

PARCEL(S) 110, 125, 135,142, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

Kitchen sink waste water was allowed to discharge onto the side walk and lawn on the southwest side of the Building 25 feet from Rifle Range Creek.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is to the creek and the primary contaminants were surfactants. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 11

PARCEL(S) 110, 109, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

A vehicle washing platform, a concrete pad located between Buildings 11 and 89, has a sump connected to the storm water sewer via a pipe. The sump is a source of potential contamination migration to Parcels 109, 135,143 and 160 via Rifle Range Creek.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is directly to the storm water sewer with contaminants consisting of surfactants and automotive materials such as grease, oil, gasoline, etc. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 101, 102, 105, 109, 110, 116

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Easement of 1.693 acres for road access along the northwest boundary of the facility from Bldg 85 to Mountain Blvd. This easement is continued on the other side of the PG&E parcel parallel to the northwest boundary.

TRANSFER INFORMATION AND DATE

Condition of acquisition - Granted to East Bay Water Co. BK 766, Page 472.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Between Buildings 11 & 13

PARCEL(S) 110

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) Unknown

TYPE OF TANK Unknown

MATERIALS STORED Petroleum products

APPLICABLE DATES ≈1949

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Two tanks were removed from old service station location, Building 12, a demolished building. Date unknown.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 108, 110, 151, 159

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 1/4/94

REFERENCES DET-127, DET-67, DET-68, DET-66

SUBJECT Groundwater monitoring

REMARKS There is neither groundwater monitoring at Oak Knoll Naval Hospital nor a Groundwater Monitoring Plan.

Parcels of special concern would be:

- 108: Building 510, service station not in use, UST's 510A-D have been removed
- 110: Building 12, demolished service station, UST disposition unknown
- 151: Building 214, demolished service station, UST's 214A-D have been removed
- 159: Building 117P, demolished service station, UST-111A has been removed

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 10,11,12,13

PARCEL(S) 110,125,136,144,143,151,156,158,160,159

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contributions from Bldg 10 (electric shop, carpenter shop), Bldg 11(shops & equipment spray operations), Bldg 12 (former service station and present vehicle wash), Bldg 13 (paint shop). Downstream flow appears to be 125, 136,144, 143, 157, 156, 158, 160, and 159 Possible contribution from parcel 125 (Demolished Bldg 1- former laboratory).

ASBESTOS

PARCEL(S)	LOCATION(S)	SURVEY?	ASBESTOS?	LOCATION OF ASBESTOS?	REMARKS	REFERENCES
110	10	Yes	Yes	Asbestos was contained in the floor tiles, thermal steam insulation, transite, and roof shingles.	"No major problems" was conclusion of survey.	DET-20
		FRIABLE?				
110	11	Yes	Yes	Asbestos was contained in the transite and roof shingles.	"No major problems" was conclusion of survey.	DET20
		FRIABLE?				
110	13	Yes	Yes	Asbestos was contained in the transite and the wall board.	Some wall panels require removal or encapsulation. "No major problems" was conclusion of survey.	DET20
		FRIABLE?				
110	89	Yes	Yes	Asbestos was contained in the insulation, transite, thermal system, and soil beneath the building.	Rated as "significantly damaged". "No major problems" was conclusion of survey.	DET20
		FRIABLE?				
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
		FRIABLE?				

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
110	10	1942 APPLICABLE DATE Pre 1948	Electric shop	5768	Wood frame	Building 10 historical uses are: electric shop, 1948; carpenter shop, 1950. A cyclone dust collector was installed, 1950	DET-122, ASC-7
110	108	1947 APPLICABLE DATE Present	Storage, boiler room for Building 8	1064	Wood frame		DET-59
110	11	1942 APPLICABLE DATE Present	Storage for plumbing and electrical material	2080	Wood frame	Documented historical uses of Building 11 are: electric shop , 1948; paint shop, 1948; equipment spray cleaning operation 1954; sheet metal shop, time period unknown.	DET -122, DET-59, ASC-1, ASC-7, DET-122

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
110	12	Pre 1949 APPLICABLE DATE Demolished	Service Station	400	Wood frame	The disposition of the tanks associated with this service station could not be verified. Service station activities have the adverse potential of release of contaminants into the adjoining creek. No information is available regarding investigation of below ground contamination.	DET-88
110	13	1942 APPLICABLE DATE Present	PAINT SHOP - 1942, 913 sq feet .A/C SHOP - repair A/C units, ice machines, refrigeration, etc. Storage for supply fan filters.	913	Wood frame	Paint, thinner, roof cement (wet patch), cleaner, asbestos wallboard. Formerly had a water curtain spray booth, closed about 1988, 1989. Asbestos siding on building exterior. Bldg has a water well in attached wooded shed (well #2), well is capped off, formerly used, stopped 1971, 1972, approx 200 feet deep, 4" pipe, compressor in small bldg on SW side of Bldg.	ASC-1
110	51	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg	DET-88
110	8	1942 APPLICABLE DATE Present	Medical storage	9580	Wood frame	This building housed a laundry, circa 1953; A sewing room was added, 1951. Building 8 was remodeled to provide adaquate room for storage and machinery, 1953.	DET-59, DET-122

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
110	89	1953 APPLICABLE DATE Present	Storage		Wood frame	This building was initially built for flammable gas storage.	DET-122
110	9	1942 APPLICABLE DATE Present	General storage shed	273	Wood frame		DET-59

HAZARDOUS WASTE

PARCEL(S)	LOCATION(S)	HAZ WASTE?	TYPE/QUANTITY	DESCRIPTION	APPLICABLE DATE	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
110	10	Yes	Paint - quantity unknown as this is documentation of a past practice.	Paint cans were rinsed with rinseate being disposed to the sanitary sewer.		DET-94

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
110	East of Bldg 13	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76
110	North of Bldg 10	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 111 SPECIFIC INFORMATION

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Housing

PARCEL(S) 111

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Fee transfer of 6.98 acres for housing. The purchase includes St. Andrews Road subject to the rights of the public. The southwest boundary of this parcel includes the former Oak Knoll Blvd., formerly Barcelona Street. Abandoned by the City of Oakland, Ordinance No. 7350, Recorded 2/28/66, Series No. AY26572.

TRANSFER INFORMATION AND DATE

6-11-46 - Transfer in fee of 6.98 acres from Housing & Home Finance Agency - Civil 24608 (Legislative Jurisdiction-Proprietorial).

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Housing

PARCEL(S) 111

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility easement - 0.077 acres granted - Utility easement cuts across Sequoyah Hills development to join utility lines on St. Andrews Road and utility lines on Sequoyah Road.

TRANSFER INFORMATION AND DATE

5-17-74 - Utility easement of 0.077 acres granted to Pacific Gas & Electric - Reel 3733. Imp 404, NOY (R) 22957.

CHEMICAL INVENTORY

PARCEL(S)	LOCATION	CHEMICALS	MAXIMUM QUANTITIES STORED	USES	APPLICABLE YEAR	REFERENCES
						Z-BLANK
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						
900, 145, 150, 152, 153, 111, 112	Sequoyah Country Club	Petroleum, acids, caustics, compressed gases and pool algacides	Unknown	Fuel, Pool maintenace	12/10/93	POY-46

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
111	Near residences	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pad Mounted	DET-76
111	Near residences	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pad Mounted	DET-76

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
111	Near residences	Unknown		Present	Pad Mounted	DET-76
		PCB (Y/N)				
		PCB CLASSIFICATION				
111	Near residences	Unknown		Present	Pad Mounted	DET-76
		PCB (Y/N)				
		PCB CLASSIFICATION				

APPENDIX C

PARCEL 112 SPECIFIC INFORMATION

NAVHOSP OAKLAND

RADIOACTIVE/MIXED MATERIALS

LOCATION(S) 107

PARCEL(S) 112

INFO TYPE RDM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/6/93

REFERENCES DET-90

RADIOACTIVE/MIXED MATERIALS PRESENT? (Y/N) Yes

PERIOD OF COVERAGE 10/88 - 8/93

DESCRIPTION OF MATERIALS/AMOUNT

During the period of coverage, this building was used for low level radioactive waste storage. It is currently empty and previously stored quantities and their sources are unknown.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 107

PARCEL(S) 112

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/2/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This building is to be demolished. A former use was radiation storage (in 55 gallon drums) awaiting disposal. The building is now empty. Built in 1942, 1800 sq feet. Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Empty

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 37

PARCEL(S) 112

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/2/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Stables, empty, acquired from Golf Course. 2000 sq feet , wood building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

The structure is empty. Sign on building indicates structure is a hazardous waste accumulation point.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 112, 136, 143, 144, 151

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility easement - acreage granted not available. The route of this easement does not appear to be complete on the drawings. The easement begins as a point 200 feet south of Bldg 500 and runs between Blackwood and Rail Streets. When the easement reaches a point in line with the north edge of Bldg 103, the easement continues south across Bldg 214 (the old gas station) and then turns parallel to the southern edge of Bldg 107 until it reaches the facility boundary at the edge of the " tot lot".

TRANSFER INFORMATION AND DATE

Condition of acquisition - Pac Gas & Electric . BK 1940, Page 157.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 112, 151, 152, 158, 159, 160

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility (sewer 12" line) easement - 0.42 acres granted - Utility route runs northeast and southwest in the roadway south of Bldg 88 and Bldg 22, between Bldg 214 and Bldg 107, between Bldg 138 and Bldg 136. When the easement reaches a point north of the tennis courts, it turns west and ends at the facility boundary. There is a short branch of this route near the southern edge of Bldg 107 and goes directly to the property line just north of the "tot lot".

TRANSFER INFORMATION AND DATE

3-17-53 - Easement of 0.42 acres granted to City of Oakland Bk 7011, Page 5.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
112	107	1942 APPLICABLE DATE	Storage	1800	Wood frame	This building has been use as an operational storage building and, most recently, for the storage of low level radioactive waste. It is currently empty.	DET-59
112	37	1943 APPLICABLE DATE Present	Storage	2000	Wood frame		DET-59

CHEMICAL INVENTORY

PARCEL(S)	LOCATION	CHEMICALS	MAXIMUM QUANTITIES STORED	USES	APPLICABLE YEAR	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
900, 145, 150, 152, 153, 111, 112	Sequoyah Country Club	Petroleum, acids, caustics, compressed gases and pool algacides	Unknown	Fuel, Pool maintenace	12/10/93	POY-46

APPENDIX C

PARCEL 113 SPECIFIC INFORMATION

NAVHOSP OAKLAND

RADIOACTIVE/MIXED MATERIALS

LOCATION(S) 17

PARCEL(S) 113

INFO TYPE RDM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/6/93

REFERENCES DET-90, DET-87

RADIOACTIVE/MIXED MATERIALS PRESENT? (Y/N) Yes

PERIOD OF COVERAGE Present

DESCRIPTION OF MATERIALS/AMOUNT

Low level radioactive waste is currently being stored in 150 - 200 fifty five gallon drums.

Locations identifying the source of the waste were not noted; however, by DET-90, since 11/93, authorized use of radioactive materials on site occurs at Buildings 500, 75 and 65 with radioactive wastes being generated primarily at Buildings 65 and 500 only.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 17

PARCEL(S) 113

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Brick building with two compartments and a doorway allowing access between compartments. Currently being used to store hazardous materials owned by the Drug Screening Laboratory and low level radioactive waste.

Building is constructed of concrete block.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Unused hazardous materials (flammables) were being stored on shelves. In addition, low level radioactive waste was being stored in 55 gal. drums.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
113	17	1949 APPLICABLE DATE Present	Hazardous waste storage	1450	Brick	The building currently is used for the storage of short lived low level radioactive waste (LLW) and excess hazardous materials owned by the Drug Screening Laboratory. The creation of mixed wastes is possible should the LLW and hazardous materials comingle. DET-89 identified two buildings as Building 17. They are 1) a storage building and 2) an unlisted building. The Building 17 designation has been retained for the storage building. The unlisted building is designated as Building 117 as identified in DET-88, a PWC service station.	DET-89, DET-88

APPENDIX C

PARCEL 114 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 115

PARCEL(S) 114

INFO TYPE BDI REVIEWER INITIALS ASC DATE OBTAINED 12/2/93

REFERENCES ASC-3

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Part of microvascular Surgery Teaching Facility, animal housing, lab laundry, cage washing machine, animal food storage, and office.
Incinerator, natural gas - carcass & medical waste, narcotics disposed (by DEA)
No longer in use - last used in 1970's (incinerator is located outdoors, adjacent to building).
2,460 sq feet, 1943, asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Drugs & medicines for animals - all types
Cabinet is 3'x3', narcotics storage - small locked cabinet
Household cleaning chemicals
Detergent for wash down in OR

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 14

PARCEL(S) 114

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/2/93

REFERENCES ASC-3, ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Operating Room, office, bathroom, microvascular surgery, teaching facility, medical instruments - all types, 1,148 sq ft, 1942, Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Drugs & medicines for animals - all types. Drug storage cabinet is 3'x3',
narcotics storage - small locked cabinet (many small vials)
Household cleaning chemicals
Detergent for wash down in OR

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 14,115

PARCEL(S) 114,125,136,144,143,157,156,158,160,159

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contributions from Bldg 14 (Operating room) and Bldg 115 (Animal care). Downstream flow to parcels 125, 136, 144, 143, 157, 156, 158, 160, and 159.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
114	115	1943 APPLICABLE DATE Present	Animal housing, surgery teaching, laboratory laundry	9580	Wood frame	An upholstery shop occupied this building, 1953.	DET-59, DET-122
114	14	1942 APPLICABLE DATE Present	Animal hospital/storage	1148	Wood frame		DET-59

APPENDIX C

PARCEL 115 SPECIFIC INFORMATION

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Housing

PARCEL(S) 115

INFO TYPE UST **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, ASC-9

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 50

TYPE OF TANK Unknown

MATERIALS STORED Heating Fuel

APPLICABLE DATES Present

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Spills occur at this tank due to over filling per discussions with Dan Yee, ASC-9.

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
115, 118	West boundary of parcel 115	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 116 SPECIFIC INFORMATION

NAVHOSP OAKLAND

RADIOACTIVE/MIXED MATERIALS

LOCATION(S) 85

PARCEL(S) 116

INFO TYPE RDM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/6/93

REFERENCES DET-90

RADIOACTIVE/MIXED MATERIALS PRESENT? (Y/N) Yes

PERIOD OF COVERAGE 1984-1988

DESCRIPTION OF MATERIALS/AMOUNT

Radioactive waste was stored at this location in unknown amounts. Information identifying the source of stored wastes was extensive, but not in a form which permited ready compilation, segregation or summarization.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 36

PARCEL(S) 116

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/2/93

REFERENCES ASC-4, ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Firestation - Firemen's Living Area (kitchen, sleeping, etc.) Park fire trucks. 1942 Bldg, 2020 sq feet, small tool & equipment bench. Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Asbestos siding - no chemicals observed.
Household cleaners.
Office supplies.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 85

PARCEL(S) 116

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/2/93

REFERENCES ASC-4

BUILDING DESCRIPTION, INCLUDING CURRENT USE

1943, 1600 sq feet. Asbestos siding on exterior. Office & storage.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Small quantities of various lubricants, oils, cleaners.
Fireproof cabinet, 4x3x1' deep
24 2.5 gallon containers of foam - Ansulite AFFF
Absorbant compound for spills
Latex paint (5 gal - 3)
Dry chemical extinguishers - refill units
Some gasoline storage - 5 gal containers - in locker.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 101, 102, 105, 109, 110, 116

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Easement of 1.693 acres for road access along the northwest boundary of the facility from Bldg 85 to Mountain Blvd. This easement is continued on the other side of the PG&E parcel parallel to the northwest boundary.

TRANSFER INFORMATION AND DATE

Condition of acquisition - Granted to East Bay Water Co. BK 766, Page 472.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 36

PARCEL(S) 116,110,125,136,144,143,151,156,158,160,159

INFO TYPE UTL **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1,DET-96,DET-133

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Potential contribution from Bldg 36 (fire station-truck storage, repair, etc). Downstream parcels affected are 110, 125, 136, 144, 143, 151, 156, 158, 160, and 159.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
116	36	1943 APPLICABLE DATE Present	Firestation	2020	Wood frame	Enlarged, 1950	DET-59, DET-122
116	85	1943 APPLICABLE DATE Present	Office and storage	1600	Wood frame		DET-59

APPENDIX C

PARCEL 117 SPECIFIC INFORMATION

NAVHOSP OAKLAND

RADIOACTIVE/MIXED MATERIALS

LOCATION(S) 110

PARCEL(S) 117

INFO TYPE RDM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/6/93

REFERENCES DET-90

RADIOACTIVE/MIXED MATERIALS PRESENT? (Y/N) Yes

PERIOD OF COVERAGE 1984-1987

DESCRIPTION OF MATERIALS/AMOUNT

Radio Immuno Assay (RIA) radioactive waste storage. Stored amounts and their sources are unknown.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 110

PARCEL(S) 117

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/2/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

1945, 3,528 sq feet
Storage - hardware & furniture, e.g., carpets, sinks, ceiling tile, fixture lenses, plumbing hardware, temporary storage.
Concrete slab - same use for at least 20 years.
Lake Chabot drain pipe - 48"

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

No chemicals seen - but 3 wet 6V batteries have liquids, four 1 gal cans of paint.
Asbestos siding on building.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
117	110	1945 APPLICABLE DATE Present	Storage	3528	Wood frame		DET-59

APPENDIX C

PARCEL 118 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) Booster Pump

PARCEL(S) 118

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Booster pump house for water flow control to commanding officer's residence. Building is a wooded frame structure with wire mesh walls, a pole supplied electric source for the pump.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

None

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 118

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility easement - acreage granted not available. This easement runs almost parallel to the northwest boundary of the facility from the PG&E parcel in a NE-SW direction. An examination of Water Company records may indicate the presence of a pipeline.

TRANSFER INFORMATION AND DATE

Condition of acquisition - Granted to East Bay Water Co. BK 766, Page 472.

NAVHOSP OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 118

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility easement of 0.043 acres along the northwest boundary of the facility from the PG&E parcel northeastward. This easement appears to be a continuation of the easement of 1.693 acres which is also recorded on the same entry.

TRANSFER INFORMATION AND DATE

Condition of acquisition - Granted to East Bay Water Co. BK 766, Page 472.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
118	130	Pre 1949 APPLICABLE DATE Demolished	Water chlorination plant	200	Wood frame		DET-88
118	West of CO's residence	Pre 1965 APPLICABLE DATE Demolished	Booster pump house	1000	Wood frame		DET-89

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
						Z-BLANK
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				
115, 118	West boundary of parcel 115	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 119 SPECIFIC INFORMATION

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Water tanks

PARCEL(S) 119

INFO TYPE AST **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES DET-88, DET-89

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 1,000,000 Gal aggregate

TYPE OF TANK Redwood

MATERIALS STORED Water

APPLICABLE DATES circa 1942

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

These tanks were filled from wells 1,2, and 3. - Redwood tanks have been removed, no evidence of tanks at site. This site has a large TV antenna with a mobile trailer (on jacks and wheels). No visual evidence of contamination was noted. The parcel is overgrown.

NAVHOSP OAKLAND

RADIOACTIVE/MIXED MATERIALS

LOCATION(S) Water Tanks

PARCEL(S) 119

INFO TYPE RAD **REVIEWER INITIALS** ASC **DATE OBTAINED** 11/19/94

REFERENCES ASC-11

RADIOACTIVE/MIXED MATERIALS PRESENT? (Y/N) No

PERIOD OF COVERAGE Facility Existence

DESCRIPTION OF MATERIALS/AMOUNT

Letter dated 19 November 1994 from Radiological Affaris Support office (RASO), Naval Sea Syst4ems Command Detachment, Yorktown, VA (804) 887-4692, signed by D. E. Farrand, that after an extensive records search for information on known and potential uses of radioactive materials at the Naval Medical Center, Oakland by RASO and Navy Environmental Health Center (NEHC) there is no historical evidence indicating that radioactive materials were used or disposed of in parcels 101 or 119.

APPENDIX C

PARCEL 120 SPECIFIC INFORMATION

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
120	106	Pre1949 APPLICABLE DATE Demolished	Subsistance Commissary	25000	Wood frame	The mess hall was reactivated and tiled, 1951.	DET-88, DET-122

APPENDIX C

PARCEL 121 SPECIFIC INFORMATION

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 121

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
121	71	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg, foundations visible; Asphalt tile was installed on the floors of Buildings 1-46, 50, 61-64, 69-73 and 74, 1951. Cement asbestos shingle siding was installed, 1967.	DET-88, DET-94, DET-122

APPENDIX C

PARCEL 122 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 69

PARCEL(S) 122

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Enlisted men's quarters, not in use. Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 122

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
122	69	1943 APPLICABLE DATE Present	Not in use	13230	Wood frame	H building: Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951.	DET-59, DET-122

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
122	Adjacent to SW corner of Bldg 69	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 123 SPECIFIC INFORMATION

NAVHOSP OAKLAND

RADIOACTIVE/MIXED MATERIALS

LOCATION(S) 65

PARCEL(S) 123

INFO TYPE RDM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/6/93

REFERENCES DET-90, DET-87

RADIOACTIVE/MIXED MATERIALS PRESENT? (Y/N) Yes

PERIOD OF COVERAGE Present

DESCRIPTION OF MATERIALS/AMOUNT

A Low level radioactive (LLW) waste compactor operation for the compaction of LLW is in the basement of this building. The LLW is characterized by Iodine 125.

In this building, the stored quantity of radioactive Iodine 125 <75 mCi and there are also sealed sources for detector calibration purposes. The number of the sealed sources was not provided.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 65

PARCEL(S) 123

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/1/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

The Drug Screening Labortory is located in this building. H building has asbestos siding on exterior.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Toner and non-chlorinated organics to support operation of a photocopy machine.
Standard household compounds
Radioactive check sources (I-125)
Three interior flammable material storage cabinets.
External hazardous waste storage containing cyclohexane, methanol, flammables, and compressed gas.
Low level radioactive waste compactor in basement.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 63

PARCEL(S) 104, 123, 124, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Two hot water heating system purge valves and an over-pressure relief drain to the ground. After the discharge point, migration is via the gutter system into Parcels 123 and 124 and then via storm water piping to the creek in Parcel 135. The creek and contamination migration continues into Parcels 143 and 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is assumed to be to a gutter with potential contaminants being boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) East of Bldg 65

PARCEL(S) 123

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/6/93

REFERENCES DET 94

SUBJECT There is a diesel generator that, at one time, was used to supply Bldg 65 with emergency power. A tank is attached and batteries are intact. Documentation of the last use of the generator was not found.

REMARKS

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) 65

PARCEL(S) 123

INFO TYPE MIS REVIEWER INITIALS POY DATE OBTAINED 12/6/93

REFERENCES POY-77

SUBJECT Air permit requirements for the fumehoods in Building 65.

REMARKS During a phone conversation with Dan Yee on 12/6/94, Mr. Yee stated that Bldg. 65 does not require an air permit per determination of Mr. John Chiladakaf of BAAQMD (415 -749-4647) This determination was based on the intremittent use of fume hoods at Bldg. 65.

Mr. Yee also stated that currently Oak Knoll is not preparing any air permit applications for any sources on the base including the Xylene Recovery Unit in Bldg 500.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 65

PARCEL(S) 123,107,109,131,135,142,147,146

INFO TYPE UTL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

This data entry concerns a widespread practice throughout this building.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

According to personnel working at the Drug Screening Laboratory, Building 65 was once a primary laboratory for the hospital;and, as such indiscriminate disposal of hazardous materials to sanitary sewer was a common practice. Downsteam parcels affected are 107, 109, 131,135,142,147, and 146.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 123

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
123	65	1942 APPLICABLE DATE Present	Drug screening laboratory	13230	Wood framed with partial basement.	H Bldg: There is a low level radioactive waste compactor in the basement. Modifications for a Special Care Unit, intensive care, were completed,1959. Cement asbestos shingle siding was installed on Buildings 65, 70, 72, 101, and 102, 1969.	DET-59, DET-122

CHEMICAL INVENTORY

PARCEL(S)	LOCATION	CHEMICALS	MAXIMUM QUANTITIES STORED	USES	APPLICABLE YEAR	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
123	65	Chlorinated organics, non-chlorinated organics; inorganics (e.g. salts & solutions); compressed gases; chemical test kits containing various reagents	Liquids: >14-5 gallon containers); Solids: <5 lbs; Gases: Not specified	Analytical chemistry - screening urine samples for illegal drugs. Reagent uses include sample preparation, reference standards & QA/QC standards.	6/3/93	POY-7
123	65	Chlorinated and non-chlorinated organic reagents	Chlorinated organics (liquid) - 354 L; Chlorinated oranics (solid) - 3.3 kg.; Non-chlorinated organics (liquid) - 1903.5 L; Non-chlorinated organics (solid) - 27.5 kg.	The reagents are used in Drug Screening analysis.	12/16/93	DET-110

APPENDIX C

PARCEL 124 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 66

PARCEL(S) 124

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

CPO quarters
- Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Household cleaning products

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 63

PARCEL(S) 104, 123, 124, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Two hot water heating system purge valves and an over-pressure relief drain to the ground. After the discharge point, migration is via the gutter system into Parcels 123 and 124 and then via storm water piping to the creek in Parcel 135. The creek and contamination migration continues into Parcels 143 and 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is assumed to be to a gutter with potential contaminants being boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
124	66	1942 APPLICABLE DATE Present	CPO quarters	13360	Wood frame		DET59

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
124, 109	East of Bldg 66	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 125 SPECIFIC INFORMATION

NAVHOSP OAKLAND

SPILLS AND INCIDENTS

LOCATION(S) Parking lot near Bldg. 500

PARCEL(S) 125

INFO TYPE SPL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES DET 105

TYPE OF INCIDENT Spill

DATE OF INCIDENT 5/12/92

CHEMICALS INVOLVED Motor fuel

AMOUNTS SPILL OR RELEASED Unknown, but at least several gallons.

CLEANUP Area was washed down.

Remarks: Emergency reports covering the time period 1987 - 1993, located at the firestation, Building 36, were reviewed. Many spill occurrences were recorded, with references DET105, DET106, DET107 & DET108 selected and copied, as representative of all spills recorded.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 10

PARCEL(S) 110, 125, 135,142, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

Kitchen sink waste water was allowed to discharge onto the side walk and lawn on the southwest side of the Building 25 feet from Rifle Range Creek.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is to the creek and the primary contaminants were surfactants. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 1,4,45,46

PARCEL(S) 125,110,136,144,143,157,156,158,160,159

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Sources from former Bldg 1 (lab), Bldg 4 (labs), Bldg 45 (surgery) and Bldg 46 (labs). Contributions from upstreams source parcel 110 and 114. Downsteam parcel contributions are 110, 136, 144, 143, 157, 156, 158, 160, and 159.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
125	1	Pre 1949 APPLICABLE DATE Demolished	Administration Bldg	7000	Wood frame	Historical usage of this building includes: archives and a blood bank, 1950; Central Supply Room, 1951; laboratory, pre 1951; Environmental Sanitation School, 1952. 660 feet of corrugated steel culvert was laid in the creek bed from a point south of Building 40 , running NW of Building1 to a point SW of Building 6. Dirt to fill the ditch was obtained by removing part of the hill west of Building 38, 1951; The foundations to Buildings 1 and 105 were repaired, 1955.	DET-88

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
125	4	≈1949 APPLICABLE DATE Demolished	Laboratories and central supply	4000	Wood frame	This building housed central supply, pre 1951. There was a Biochem laboratory in Building 4, 1954.	DET-88
125, 136	4	Unknown APPLICABLE DATE Demolished	Storage	60	Concrete	Location adjacent to demolished building 4.	DET-94
125, 137	45	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg: This building was used for surgery, circa 1955; Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951.	DET-88, DET-122
125	46	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg: Historical usage of this building includes: laboratory , 1950; isotopes laboratory, 1952; biochem laboratory pre 1954; Metabolic research, pre1955; Clinical Investigation Center, pre 1958. Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951.	DET-88, DET-122

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
125	5	Pre 1949 APPLICABLE DATE Demolished	Cast Room & Blood Bank	4000	Wood frame	Building 5 housed a blood bank, pre 1950. Air conditioning was installed, 1952.	DET-88, DET-122
125	50	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg: Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951.	DET-88, DET-122
125,136	Shed adjacent to Building 4	Unknown APPLICABLE DATE Demolished	Storage	Unknown	Wood frame		DET-94

APPENDIX C

PARCEL 126 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 519

PARCEL(S) 126

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Sheet metal storage building on a concrete slab.
There was a portion of a sidewalk, portions of asphalt & apparent building debris on the lot.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Storage of dry goods (uniforms mostly).

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 520

PARCEL(S) 126

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Sheet metal storage building on a concrete slab.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Storage of dry goods (medical supplies).

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 521

PARCEL(S) 126

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This is a chemical storage unit with 3 separate compartments - This is a moveable steel storage building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Each of the three compartments stored hazardous wastes. They were designated as follows:

Corrosives
Poisons (mercury, nonhalogenated organics)
Flammables (paint, formaldehyde)

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
126	519	1991 APPLICABLE DATE Present	Storage of dry goods	960	Metal skinned building on a concrete slab		DET-59
126	520	1991 APPLICABLE DATE Present	Storage of medical supplies - all dry goods	960	Metal skinned building on a concrete slab		DET-59
126	521	1990 (est) APPLICABLE DATE Present	Hazardous Waste Storage	288	Prefabricated building for waste/chemical storage	No fence around bldg.	DET-59

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
126	79	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg	DET-88
126	80	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg	DET-88

APPENDIX C

PARCEL 127 SPECIFIC INFORMATION

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 127

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
127	76	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg	DET-88
127	77	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg	DET-88

APPENDIX C

PARCEL 128 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 105

PARCEL(S) 128

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/2/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Demolished in 1990 / formerly operating room school.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

No building on site.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 511

PARCEL(S) 128

INFO TYPE BDI REVIEWER INITIALS DET DATE OBTAINED 12/1/93

REFERENCES ASC-5, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Building 511 is the Credit union. It is a 17 year old 2 story building with an addition which is 5 years old. Structure is made of concrete block.

The building is leased to the Alameda Coast Gruard Federal Credit Union for a duration of 25 years. The termination date is 11/30/2000.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

There is a photocopy machine on the premises and storage of household cleaning agents.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) 511

PARCEL(S) 128

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Lease to USCG Credit Union which terminates 11/30/2000.

TRANSFER INFORMATION AND DATE

12-1-75 Lease of 0.893 acres to Alameda Coast Guard Federal Credit Union NF(R) 32608.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 105

PARCEL(S) 128,135,142,147,148,146

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contribution from former Bldg 105 (surgery). Downstream contributions include parcels 135, 142, 147, 148, and 146.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 128

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
128	105	Pre 1949 APPLICABLE DATE Demolished	Surgery and out patient clinic	13000	Wood frame	Cement asbestos shingle siding was installed, 1969. In 1955, an addition was constructed to this building for post operative recovery. The foundations to Buildings 1 and 105 were repaired, 1955.	DET-122
128	511	1976 APPLICABLE DATE Present	Credit Union	6117			DET-59

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
128	72	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg: Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951. Installed air conditioning to the pediatrics ward, 1961. Cement asbestos shingle siding was installed on Buildings 65, 70, 72, 101, and 102, 1969.	DET-88, DET-94, DET-122

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
128	NW corner of parcel	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pad Mounted	DET-76
128	Southern portion of parcel near Credit Union	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 129 SPECIFIC INFORMATION

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

NEIGHBORHOOD DRIVE-BY

LOCATION(S) General

PARCEL(S) 129

INFO TYPE NDB **REVIEWER INITIALS** POY **DATE OBTAINED** 12/6/93

REFERENCES POY-78

ADDRESS & CROSS STREET

8750 Mountain Blvd, Oakland, CA 94627
Cross Streets: Sequoyah & Skyline

OBSERVATION

Residential and undeveloped land on a hilly terrain.

REMARKS

During neighborhood drive-by reconnaissance, there was no evidence of chemical contamination observed within 1/4 mile from Naval Hospital property boundary. Exxon station and Sequoyah Country Club are potential sources of groundwater contamination. No auto repair shops, dry cleaners, soil mounds, drums or industrial activities were observed.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 129

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
129	47	Pre 1949 APPLICABLE DATE Demolished 1970	Ward	13000	Wood frame	H Bldg: Approximately 3900 ft. of steam and condensate return line was replaced in the vicinity of Building 47 to Buildings A, B, and C; Building 73 to the steam pit near Building 101: Building 101, Building 35 to Building 127 and Building 131 to Building 133, 1955.	DET-88, DET-122
129	48	Pre 1949 APPLICABLE DATE Demolished 1970	Ward	13000	Wood frame	H Bldg	DET-88, DET-122

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
129	49	Pre 1949 APPLICABLE DATE Demolished, 1970	Ward	13000	Wood frame	H Bldg	DET-88, DET-122

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
129	N corner of parcel down hill from storage tanks	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 130 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 67

PARCEL(S) 130

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This is a wood frame building in the shape of an H with asbestos siding exterior. It is used as the dental annex and for computer servicing (Information System Department).

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Flammable storage locker
Stopped using amarcon with Hg early in 80's
X-ray developer & fixer
Cidex sterilization solution
Halogenated organics (wescodyne G)
Germicidal detergent
Household cleaning products
Photocopy machine and storatge of nonchlorinated organics used to support operation of the machine.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 67

PARCEL(S) 130, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Steam pipes discharged steam and water which flowed to a gutter, south wing of the building. Discharge enters the storm water system in Parcel 130 and discharges into the creek in Parcel 135. Contamination migration continues into Parcels 143 and 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is to a gutter. The potential contaminants are boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 130

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 67

PARCEL(S) 130,163,128,135,142,147,146

INFO TYPE UTL **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES DET-96,DET-133

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Potential contribution from Bldg 67 (Dental annex). Possible downstream parcels affected are 163, 128, 135, 142, 147, and 146.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
130	67	1942 APPLICABLE DATE Present	Dental annex	6680	Wood frame	H building: Allergy clinic relocated to this building, 1971. The dental clinic was extended to this building, 1971.	DET-59

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
130	East of Bldg 67	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 131 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 101

PARCEL(S) 131

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This is a 2-story wood frame structure housing the Naval School of Health Sciences, offices, and a post office. Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Photocopy machine and storage of nonchlorinated organics to support its operation
Dark room and storage of developer & fixer
Housekeeping cleaning products
Nonchlorinated organics
pH buffer
Acetate solvent
Flammable locker
Corrosive locker (acid)
On the east side of the building, in the loading area, there is a hazardous materials storage area.
Asbestos siding on building

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 101

PARCEL(S) 131,135,142,147,146

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contribution from Bldg 101 (labs). Downstream flow through parcels 135, 142, 147, and 146.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
131	101	1943 APPLICABLE DATE Present	Naval School of Health Sciences	13600	Wood frame, 2 stories	Approximately 3900 ft. of steam and condensate return line was replaced in the vicinity of Building 47 to Buildings A, B, and C; Building 73 to the steam pit near Building 101: Building 101, Building 35 to Building 127 and Building131 to Building 133. Cement asbestos shingle siding was installed, 1965. Cement asbestos shingle siding was installed on Buildings 65, 70, 72, 101, and 102, 1969.	DET-59, DET-122

CHEMICAL INVENTORY

PARCEL(S)	LOCATION	CHEMICALS	MAXIMUM QUANTITIES STORED	USES	APPLICABLE YEAR	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
131	101	Cleaning and construction supplies, which may fit in one of the ten chemical classes, were present. There were also nonhalogenated organics such as acetone and paint thinner, and mercury vapor absorbents.	Adhesives - 1 gal; Joint Compund - 1 gal.; Herbiclens Soap - 28 qts; Bacti-Stat - 11 bottles; Paints - 54 gal.; Vap cleaner - 4 pts; Non-chlorinated organics - 5.25 gal.; Mercury vapor absorbent - 6lbs.	Cleaning, Painting, and Mercury cleanup	12/2/93	DET-111

APPENDIX C

PARCEL 132 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 505

PARCEL(S) 132

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/1/93

REFERENCES DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Central warehouse - concrete structure on slab.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

4 photocopy machines and storage of nonchloinated organics to support its operation.

Household cleaning products

Electric forklifts

2 hazardous materials storage vaults. One is used for storage of paints and corrosives. The other is used for storage of xylene, formalin, rubbing alcohol, acetone and methanol.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Near Bldg 505

PARCEL(S) 132

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/93

REFERENCES DET-33, DET-35, POY-4

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 550

TYPE OF TANK Single wall, steel/iron, lining unknown

MATERIALS STORED Diesel

APPLICABLE DATES 1981

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Tank 505A.
Tested and found to be tight ,1987.
Tested and found to be tight 1993.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 78

PARCEL(S) 132,146

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contribution from former Bldg 78 (lab and surgery). Downstream flow through parcel 146.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 132

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
132	505	1976 APPLICABLE DATE Present	General Warehouse, Supplies	36900	Tilt up	Site main warehouse.	DET-59
132	78	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H building: Historic useage of this building includes: Chief's club, 1949, convertion to surgery, 1951.	DET-88, DET-122
132	79	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H building	DET-88

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
132	87	Pre 1965 APPLICABLE DATE Demolished	Oxygen storage building	100	Wood Frame	This building was designated for oxygen storage, 1952.	DET-122, DET-94, DET-89

HAZARDOUS WASTE

PARCEL(S)	LOCATION(S)	HAZ WASTE?	TYPE/QUANTITY	DESCRIPTION	APPLICABLE DATE	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
132	505	No	Unknown	The loading dock was used to accummulate hazardous waste prior to shipment for disposal.	Unknown	DET-113

APPENDIX C

PARCEL 133 SPECIFIC INFORMATION

NAVHOSP OAKLAND

RADIOACTIVE/MIXED MATERIALS

LOCATION(S) 75

PARCEL(S) 133

INFO TYPE RDM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/6/93

REFERENCES DET-87

RADIOACTIVE/MIXED MATERIALS PRESENT? (Y/N) Yes

PERIOD OF COVERAGE Present

DESCRIPTION OF MATERIALS/AMOUNT

Radiation Safety, occupying a portion of this building, was in possession of sealed sources. The number of sealed sources was not provided.

NAVHOSP OAKLAND

RADIOACTIVE/MIXED MATERIALS

LOCATION(S) 75

PARCEL(S) 133

INFO TYPE RDM REVIEWER INITIALS POY DATE OBTAINED 11/19/93

REFERENCES POY-79

RADIOACTIVE/MIXED MATERIALS PRESENT? (Y/N) Yes

PERIOD OF COVERAGE Present

DESCRIPTION OF MATERIALS/AMOUNT

The following radio nuclides are present in varying quantities at OKNMC: C-14, H-3, Cs-137, Sr-90, Co-60, I-131, I-125, B-32

Radioactive mixed waste consists of scintillation cocktails (toluene & radioactive constituents)

Additional sources of radioactive materials are:
1) sealed sources used in therapy
2) Linear accelerator
3) Scintillation units
There are 6 radioactive material use areas located at Building 500.

The following buildings may be contaminated: 17, 85, 107, 110.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 75

PARCEL(S) 133,127

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This is a wood frame building in the shape of an H with asbestos siding on the exterior. It houses education, training, and radiation safety functions. The empty lot, north of the building in parcel 127, had parked cars on it and evidence of demolished structures including pieces of asphalt, and a bunker like slab, ID 55-19.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Photocopy machine and storage of nonchlorinated organics to support its operation.
X-ray dark room
Housekeeping cleaning products

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 75

PARCEL(S) 133,108,142,147,146

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contribution from Bldg 75 (dark room). Downstream flow through parcels 108, 142, 147, and 146.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 133

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
133	75	1943 APPLICABLE DATE Present	Education, Training, Radiation Safety	9923	Wood frame	H building: Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951. Conductive flooring was provided to Cystoscopic rooms, 1955.	DET-59, DET-122

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
						Z-BLANK
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				
133	Adjacent to SW portion of Building 75	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 134 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 73

PARCEL(S) 134

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This is a multi story, multi winged structure of wood frame construction (asbestos siding on exterior) and houses the following functions:

Public Affairs Office
Surgical technology school
Mobilization
Administration
Command Education Deptartment

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Photocopy machine and storage of nonchlorinated organics supporting its operation.
Isopropyl alcohol
Housekeeping cleaning products

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 73

PARCEL(S) 134, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

The Building 73 heating system equipment is located in a shed between the southeast extensions of the building. The system purge valve and over pressure relief are connected to a gutter through the northeast wall of the shed. Discharge enters the storm water system in Parcel 134 and discharges into the creek in Parcel 143. Contamination migration continues into Parcel 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage would be into the storm water system via the gutter. The potential contaminants are boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 134

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 73

PARCEL(S) 134,142,147,146

INFO TYPE UTL **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES DET-96,DET-133

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Potential contribution from Bldg 73 (Dark room). Potential downstream parcels affected are 142, 147, and 146.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
134	73	1943 APPLICABLE DATE Present	Administration building	21522	Wood frame	Historical usage of this building includes: a darkroom, circa 1951; newborn nursery, 1952. A new formula room was added, 1955. Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951. Approximately 3900 ft. of steam and condensate return line was replaced in the vicinity of Building 47 to Buildings A, B, and C; Building 73 to the steam pit near Building 101: Building 101, Building 35 to Building 127 and Building131 to Building 133, 1955.	DET-122, DET-59

APPENDIX C

PARCEL 135 SPECIFIC INFORMATION

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 10

PARCEL(S) 110, 125, 135,142, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

Kitchen sink waste water was allowed to discharge onto the side walk and lawn on the southwest side of the Building 25 feet from Rifle Range Creek.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is to the creek and the primary contaminants were surfactants. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 11

PARCEL(S) 110, 109, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

A vehicle washing platform, a concrete pad located between Buildings 11 and 89, has a sump connected to the storm water sewer via a pipe. The sump is a source of potential contamination migration to Parcels 109, 135,143 and 160 via Rifle Range Creek.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is directly to the storm water sewer with contaminants consisting of surfactants and automotive materials such as grease, oil, gasoline, etc. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 63

PARCEL(S) 104, 123, 124, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Two hot water heating system purge valves and an over-pressure relief drain to the ground. After the discharge point, migration is via the gutter system into Parcels 123 and 124 and then via storm water piping to the creek in Parcel 135. The creek and contamination migration continues into Parcels 143 and 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is assumed to be to a gutter with potential contaminants being boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 67

PARCEL(S) 130, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Steam pipes discharged steam and water which flowed to a gutter, south wing of the building. Discharge enters the storm water system in Parcel 130 and discharges into the creek in Parcel 135. Contamination migration continues into Parcels 143 and 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is to a gutter. The potential contaminants are boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 135

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Upsteam contributions from parcel 104, 123, 128, 130, and 131.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 135

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 109, 135, 136, 144, 143, 160, 157, 156, 159

INFO TYPE UTL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

The City of Oakland sanitary sewer traverses the site via its easement. This data sheet was generated to document the affected parcels. See the database entries for easements.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Sewage from the City of Oakland represents a potential for contamination should line leakage exist.

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
135	Between Buildings 73 & 75	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 136 SPECIFIC INFORMATION

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 112, 136, 143, 144, 151

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility easement - acreage granted not available. The route of this easement does not appear to be complete on the drawings. The easement begins as a point 200 feet south of Bldg 500 and runs between Blackwood and Rail Streets. When the easement reaches a point in line with the north edge of Bldg 103, the easement continues south across Bldg 214 (the old gas station) and then turns parallel to the southern edge of Bldg 107 until it reaches the facility boundary at the edge of the " tot lot".

TRANSFER INFORMATION AND DATE

Condition of acquisition - Pac Gas & Electric . BK 1940, Page 157.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 34

PARCEL(S) 136,144,143,151,156,158,160,159

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contribution from former Bldg 34 (dental bldg). Downstream flow includes parcels 144, 143, 157, 156, 158, 160, and 159. Contributions from upstream parcels include 125, 110, 137, and 114.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 512

PARCEL(S) 139,137, 136,143,148,146

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contribution from hospital boiler system plant bldg 512. Downstream flow is 137, 136, 143, 148, and 146

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 109, 135, 136, 144, 143, 160, 157, 156, 159

INFO TYPE UTL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

The City of Oakland sanitary sewer traverses the site via its easement. This data sheet was generated to document the affected parcels. See the database entries for easements.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Sewage from the City of Oakland represents a potential for contamination should line leakage exist.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
136	2	Pre 1949 APPLICABLE DATE Demolished	Physical Therapy	7000	Wood frame		DET-88
136	3	Pre 1949 APPLICABLE DATE Demolished	X-Ray building	4000	Wood frame	An x-ray machine was located in Bldg 3, 1951. Deep therapy unit was added to this building, 1955.	DET-88, DET-122
136	34	Pre 1949 APPLICABLE DATE Demolished	Dental Bldg	4000	Wood frame	Historical uses of this building includes: Marine Detachment Office,1951; Dental offices, 1951.	DET-88, DET-122

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
125, 136	4	Unknown APPLICABLE DATE Demolished	Storage	60	Concrete	Location adjacent to demolished building 4.	DET-94
136	4	Pre 1949 APPLICABLE DATE Demolished	Laboratories and central supply	4000	Wood frame		DET-88
136	40	Pre 1949 APPLICABLE DATE Demolished	Quarters	13000	Wood frame	H building: 660 feet of corrugated steel culvert was laid in the creek bed from a point south of Building 40 , running NW of Building1 to a point SW of Building 6. Dirt to fill the ditch was obtained by removing part of the hill west of Building 38, 1951.	DET-88, DET-122
136	41	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H building: Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951.	DET-88, DET-122
136	5	Pre 1949 APPLICABLE DATE Demolished	Cast Room & Blood Bank	4000	Wood frame		DET-88

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
136	91	Pre 1952 APPLICABLE DATE 1952	Flammable	Unkown	Wood frame	There was storage of flammables, 1952.	DET-122, DET-89

APPENDIX C

PARCEL 137 SPECIFIC INFORMATION

NAVHOSP OAKLAND

RADIOACTIVE/MIXED MATERIALS

LOCATION(S) 500

PARCEL(S) 137

INFO TYPE RDM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/6/93

REFERENCES DET-62, DET -87, DET-91, DET-90

RADIOACTIVE/MIXED MATERIALS PRESENT? (Y/N) Yes

PERIOD OF COVERAGE 1974-Present.

DESCRIPTION OF MATERIALS/AMOUNT

Current Storage Levels of Radioactive Materials

Nuclide	Amount	t1/2
P-32	<500m Ci	14d
Tc-99m	1 Ci	6h
Ga-67	.1m Ci	3d
I-31	2m Ci	8d
Tl-201	.1m Ci	73h
I-123	.6m Ci	13h
In-111	.7m Ci	3d
Co-60	.0005 Ci	5.26yr

PAGE 1 - CONTINUE ON NEXT PAGE

NAVHOSP OAKLAND

RADIOACTIVE/MIXED MATERIALS

LOCATION(S) 500

PARCEL(S) 137

INFO TYPE RDM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/6/93

REFERENCES DET-62, DET -87, DET-91, DET-90

RADIOACTIVE/MIXED MATERIALS PRESENT? (Y/N) Yes

PERIOD OF COVERAGE CONTINUATION OF FIRST PAGE

DESCRIPTION OF MATERIALS/AMOUNT

CONTINUE FROM PAGE 1

Radioactive waste is stored at the Nuclear Medicine Dept. and at the Radiation Therapy Dept.

Depleted uranium for shielding of the nuclear accelerator is also stored in this building.

By DET-91, a historical summary of license/permit sources was provided. A review of the summary indicated that the only sources of potential continueing consequence are Ra-226(T1/2 1620y), Co 60(T1/2 5.27y) and Cs-137(T1/2 33y).

The use of radium needles was from 1975-1985. For Co-60, as recently as 1982, the regulatory limit for a single sealed source was 5963 Ci. For CS-137 , as recently as 1981, that limit was 2100 Ci.

NAVHOSP OAKLAND

SPILLS AND INCIDENTS

LOCATION(S) 500

PARCEL(S) 137

INFO TYPE SPL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES DET 106

TYPE OF INCIDENT Spill

DATE OF INCIDENT 4/2/92

CHEMICALS INVOLVED Mercury

AMOUNTS SPILL OR RELEASED Unknown

CLEANUP Crew used a Med-Fact to remove the mercury.

Remarks: Emergency reports covering the time period 1987 - 1993, located at the firestation (Building 36) were reviewed. Many spill occurrences were recorded, with references DET105, DET106, DET107 & DET108 selected and copied, as representative of all spills recorded.

NAVHOSP OAKLAND

SPILLS AND INCIDENTS

LOCATION(S) 500

PARCEL(S) 137

INFO TYPE SPL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES DET 107

TYPE OF INCIDENT Spill

DATE OF INCIDENT 4/2/92

CHEMICALS INVOLVED Formaldehyde

AMOUNTS SPILL OR RELEASED Unknown

CLEANUP The chemical was not cleaned up because the spill could not be found. Only odor was present.

Remarks: Emergency reports covering the time period 1987 - 1993, located at the firestation (Building 36) were reviewed. Many spill occurrences were recorded, with references DET105, DET106, DET107 & DET108 selected and copied, as representative of all spills recorded.

NAVHOSP OAKLAND

SPILLS AND INCIDENTS

LOCATION(S) 500 Big Circle

PARCEL(S) 137

INFO TYPE SPL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES DET 108

TYPE OF INCIDENT Fuel Spill

DATE OF INCIDENT 12/9/92

CHEMICALS INVOLVED Motor fuel

AMOUNTS SPILL OR RELEASED 1 pint

CLEANUP Due to heavy rains, this spill was not cleaned up.

Remarks: Emergency reports covering the time period 1987 - 1993, located at the firestation (Building 36) were reviewed. Many spill occurrences were recorded, with references DET105, DET106, DET107 & DET108 selected and copied, as representative of all spills recorded.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 217

PARCEL(S) 137

INFO TYPE BDI REVIEWER INITIALS ASC DATE OBTAINED 12/2/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Household vacuum system, covers hopper & blower system. Wood frame building 13 ft x 8 ft = 104 sq feet.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

No evidence of chemical storage.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 218

PARCEL(S) 137

INFO TYPE BDI REVIEWER INITIALS ASC DATE OBTAINED 12/2/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

NPRL (Navy lab which makes artificial limbs). Vacuum system, houses hopper and blower system. Wood frame building - 14 ft x 10 ft = 140 sq ft.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

No evidence of chemical storage.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 223

PARCEL(S) 137

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/1/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Open liquid oxygen structure with exterior walls of cyclone fencing.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Liquid oxygen tanks

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 500

PARCEL(S) 137

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/1/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Multi storied concrete structure which is a hospital with the full spectrum of medical services.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Photocopy machine and storage of nonchlorinated organics to support its operation
X-ray development
Oncology (chemo therapy)
Xylene
Methanol
Isopropyl alcohol
Biohazardous waste (storage and accumulation)
ETO
Nuclear Medicine
Large quantity of household cleaning supplies

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) Champus service center near north corner of Hospital in middle of Circle

PARCEL(S) 137

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/8/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

1,680 sq feet, portable building. Provides information and services regarding veterans medical insurance rights and benefits.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Nonhalogenated organics in support of photocopy machine operation.
Household cleaning products.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) MRI Bldg

PARCEL(S) 137

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

MRI building-wood frame and portable, 1,372 sq feet.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Photocopy machine
Photodeveloping
Household chemicals

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 500

PARCEL(S) 137, 144, 143, 160,

INFO TYPE STM REVIEWER INITIALS DET DATE OBTAINED 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

The emergency cooling water overflow, located on the southeast side of the building, could discharge water to floor drains which are connected to the storm water drainage system. In addition, cooling system water was discharged, through a pipe, to a storm drain inlet on the northeast side of the building.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

The cooling water was reported to have contained biocide, silt and mud remover additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 500

PARCEL(S) 137, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Condensate from the heating system holding tanks has been allowed to discharge into Rifle Range Creek. According to Mike Debol, PWC, the discharge point into Rifle Range Creek is via a pipe from the hospital into the creek, Parcel 143, directly. No information is available addressing pipe leakage.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

The potential contaminants are boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) South side of Building 500

PARCEL(S) 137

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/93

REFERENCES DET-33

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 5,000

TYPE OF TANK Single wall, steel/iron, lining unknown, tar & asphalt

MATERIALS STORED Diesel, vehicle motor fuel

APPLICABLE DATES 1968

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Documentation of tightness testing, etc. was not found.

NAVHOSP OAKLAND

MEDICAL/BIOHAZARDOUS WASTE

LOCATION(S) 500

PARCEL(S) 137

INFO TYPE MED **REVIEWER INITIALS** DET **DATE OBTAINED** 11/27/93

REFERENCES DET-63, DET-126

MEDICAL FACILITY IN BUILDING (Y/N) Yes

INFECTIOUS/MEDICAL WASTE EVER STORED OR DISPOSED AT THIS LOCATION (Y/N) Yes

REMARKS ON TYPES/AMOUNTS/DISPOSAL

The 1991 & 1992 yearly totals for the shipment of biohazardous waste are:
1991 - 140,032 lbs - 1992 - 90,284 lbs

NAVHOSP OAKLAND

MEDICAL/BIOHAZARDOUS WASTE

LOCATION(S) 500

PARCEL(S) 137

INFO TYPE MED REVIEWER INITIALS POY DATE OBTAINED 11/19/93

REFERENCES POY-76

MEDICAL FACILITY IN BUILDING (Y/N) Yes

INFECTIOUS/MEDICAL WASTE EVER STORED OR DISPOSED AT THIS LOCATION (Y/N) Yes

REMARKS ON TYPES/AMOUNTS/DISPOSAL

Approximately 500 lbs of medical / biohazardous waste are shipped to the Integrated Environmental System in Oakland for disposal. Reviewed records of destruction and Medical Waste Tracking Documents for the 1991-1992 period. Waste types include; tissue, fluids, sharps, slides, petri dishes.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 500

PARCEL(S) 137,136,143,160,148

INFO TYPE UTL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

This data entry concerns a widespread practice throughout this building.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Main hospital - There was extensive indiscriminate disposal of hazardous materials to the sanitary sewer. This is confirmation of statements made by personnel working in Building 500. Downsteam parcels affected are 136, 143, 160,148.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 45,500

PARCEL(S) 137,136,144,142,143,157,156,158,160,159

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contribution from former Bldg 45 (surgery) and Bldg 500. Downstream flow is through 136, 144, 143, 157, 156, 158, 160, and 159.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 137

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
137	217	1972 APPLICABLE DATE Present	Hospital Plant Utility Bldg	104	Brick (concrete)		DET-59
137	218	1972 APPLICABLE DATE Present	Hospital Auxiliary Plant Utility Bldg	104	Brick (concrete)		DET-59
137	223	1968 APPLICABLE DATE Present	Liquid oxygen storage	540	Open air structure with exterior walls constructed of cyclone fencing		DET-59

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
137	41	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H building	DET-88
137	42	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H building: Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951.	DET-88, DET-122
137	43	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H building: Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951.	DET-88, DET-122
137	44	Pre 1949 APPLICABLE DATE	Ward	13000	Wood frame	H building: This building housed a biochem laboratory, circa 1954; Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951. Surplus buildings 26B, 35, 44, 64, 68, 81, 82, 127, and 135 were sold on "Purchase Removal" contracts, 1960.	DET-88, DET-122
125, 137	45	Pre 1949 APPLICABLE DATE Demolished	Ward	13000	Wood frame	H Bldg: This building was used for surgery, circa 1955; Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951.	DET-88, DET-122

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
137	500	1968 APPLICABLE DATE Present	Hospital	459576	Multi storied concrete structure		DET-59
137	6	Pre 1949 APPLICABLE DATE Demolished	Subsistence Commissary	30,000	Wood frame	A refrigerated garbage room was constructed in Buildings 6,18, and 23, 1952. 660 feet of corrugated steel culvert was laid in the creek bed from a point south of Building 40, running NW of Building1 to a point SW of Building 6. Dirt to fill the ditch was obtained by removing part of the hill west of Building 38. Pneumatic doors were installed in this building, 1955.	DET-88, DET-122
137	7	Pre 1949 APPLICABLE DATE Demolished	Subsistance commissary	15000	Wood frame	This building housed Property and Accounting, pre 1948 and the Mainatenance Office beginning 1948.	DET88, DET-122
137	96	Pre 1952 APPLICABLE DATE 1952, demolished	Flammable stores	700	Wood frame	There was storage of flammables, 1952.	DET-122
137	Champus service center	Pre 1980 APPLICABLE DATE Present	Champus Service Center	5000	Trailer		N/A

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
137	MRI Bldg	1986 (est) APPLICABLE DATE Present	MRI Bldg	1500	Wood frame portable building		DET-59

CHEMICAL INVENTORY

PARCEL(S)	LOCATION	CHEMICALS	MAXIMUM QUANTITIES STORED	USES	APPLICABLE YEAR	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
137	500	Metals and metallic compounds, radioactive compounds, chlorinated and non-chlorinated organics including alcohols, medicines, enzymes and co-enzymes, stains and dyes, vitamins, hormones, nucleotides, ureas, peroxides, and other reagents	Most of these compounds are kept in very small quantities (1 g or 1 ml). An estimate of quantities are as follows: Chlorinated organics (solid) >1.0 kg; Chlorinated organics (liquid) >90.0 mL; Non-chlorinated organics (solid) >3.0 kg; Non-chlorinated organics (liquid) >36.5 L; Metal and metallic compounds >30.7 kg; Liquid corrosives >8.0 L; Solid corrosives >23.0 kg	Medical applications: diagnosis, treatment, and related activities including sample preparation and equipment operation.	12/16/93	POY-63

HAZARDOUS WASTE

PARCEL(S)	LOCATION(S)	HAZ WASTE?	TYPE/QUANTITY	DESCRIPTION	APPLICABLE DATE	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
137	500	Yes	A silver recovery operation associated with photographic fix solutions is in this building. The recovery process is merely the retrieval of a filter used in the filtration of silver precipitates from the fix solution with the retrieved filter shipped to another Naval facility for silver recovery. Formal records of the quantity of silver recovery were not found.	Silver precipitate filters, filtering Silver No3 solution, are packaged and shipped to another Naval facility for silver recovery.	1/30/92	DET-2
137	500	Yes	16 automotive lead/acid batteries	Room 3-48-10 had been used to store battery operated scrubber units. Each unit contained 8 automotive lead/acid storage batteries.	Unknown	DET-113

HAZARDOUS WASTE

PARCEL(S)	LOCATION(S)	HAZ WASTE?	TYPE/QUANTITY	DESCRIPTION	APPLICABLE DATE	REFERENCES
137, 139, 90	512, 500, 111	Yes	Air emissions: Particulate (.11 t/yr, .62 lb/d), Organics (2.03 tns/yr, .37 lb/d) Precursor (.37 t/yr, 2.03 lb/d), Non Precursor (0.00 t/yr, .70 lb/d) Nitrogen oxide (4.89 T/yr, 26.81lb/d), Sulfur dioxide (.02 t/yr, .12 lb/d), Carbon monoxide (1.14 tns/y, 6.26 lbs/d)	See data source DET-128 for complete description of sources.	12/12/92	DET-97, DET-128

APPENDIX C

PARCEL 138 SPECIFIC INFORMATION

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 138

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
138, 139	52	Pre 1949 APPLICABLE DATE Donated	Ward	7000	Wood frame	A parking lot was built between Buildings 51 and 52, 1948. Buildings 52 and 55 were donated to Alameda County, 1960.	DET-88, DET-122
138	53	Pre 1949 APPLICABLE DATE Demolished 1970	Quarters	7000	Wood frame	This building was converted to house neuropsychiatric patients in 1950.	DET-88, DET-122
138	54	Pre 1949 APPLICABLE DATE Demolished 1970	Quarters	7000	Wood frame	This building was converted to house neuropsychiatric patients in 1950.	DET-88, DET-122

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
138	55	Pre 1949 APPLICABLE DATE Donated	Quarters	7000	Wood frame	This building was converted to house neuropsychiatric patients in 1950. Buildings 52 and 55 were donated to Alameda County, 1960.	DET-88, DET-122
138	56	Pre 1949 APPLICABLE DATE Demolished 1970	Quarters	7000	Wood frame	This building was converted to house neuropsychiatric patients in 1950.	DET-88, DET-122
138	57	Pre 1949 APPLICABLE DATE Demolished	Steam regulating unit	200	Wood frame	Adjacent and connected to south side of 52.	DET-88
138, 140	58	Pre 1949 APPLICABLE DATE Demolished	Storehouse	1800	Wood frame	Building 58 was moved from NW of Building 54, Parcel 140 to east of Building C, Parcel 140, 1951.	DET-88, DET-122

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138,139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
138	Southwest corner of parcel near Building 512	Unavailable PCB (Y/N) PCB CLASSIFICATION		Present	Pole mounted	

APPENDIX C

PARCEL 139 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 512

PARCEL(S) 139

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/2/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Boiler bldg for Hospital, 200 KW generator, 25KVA indoor dry transformer, 5200 sq feet, 1990, concrete structure.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

The following chemicals, for conditioning and testing of the boiler water, were noted:

Barium chloride, 10 qts.
Acetic acid, 6 qts.
Isopropyl, 21 qts
0.1 N sulfuric acid=31-1 gallon containers
Formula 151N-Chemical treatment for boiler
Formula 12L - Oxygen scavenger for hot water boiler - 1-55 gallon drum
1159 - Sulfite - 55 gallon drum
1156 - Caustic - 55 gallon drum
1154 - Phosphate - 55 gallon drum

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 512

PARCEL(S) 139,137, 136,143,148,146

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contribution from hospital boiler system plant bldg 512. Downstream flow is 137, 136, 143, 148, and 146

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
139	512	1990 APPLICABLE DATE Present	Hospital boiler building	5200	Concrete		ASC-8
138, 139	52	Pre 1949 APPLICABLE DATE Donated	Ward	7000	Wood frame	A parking lot was built between Buildings 51 and 52, 1948. Buildings 52 and 55 were donated to Alameda County, 1960.	DET-88, DET-122
139	53	Pre 1949 APPLICABLE DATE Demolished	Quarters	7000	Wood frame		DET-88

HAZARDOUS WASTE

PARCEL(S)	LOCATION(S)	HAZ WASTE?	TYPE/QUANTITY	DESCRIPTION	APPLICABLE DATE	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
137, 139, 90	512, 500, 111	Yes	Air emissions: Particulate (.11 t/yr, .62 lb/d), Organics (2.03 tns/yr, .37 lb/d) Precursor (.37 t/yr, 2.03 lb/d), Non Precursor (0.00 t/yr, .70 lb/d) Nitrogen oxide (4.89 T/yr, 26.81lb/d), Sulfur dioxide (.02 t/yr, .12 lb/d), Carbon monoxide (1.14 tns/y, 6.26 lbs/d)	See data source DET-128 for complete description of sources.	12/12/92	DET-97, DET-128

APPENDIX C

PARCEL 140 SPECIFIC INFORMATION

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
138, 140	58	Pre 1949 APPLICABLE DATE Demolished	Storehouse	1800	Wood frame	Building 58 was moved from NW of Building 54, Parcel 140 to east of Building C, Parcel 140, 1951.	DET-88, DET-122
140	A,B,C residences	Pre 1949 APPLICABLE DATE Present	Quarters	5000	Wood frame	Building A was structurally reinforced and more storage was provided. .Approximately 3900 ft. of steam and condensate return line was replaced in the vicinity of Building 47 to Buildings A,B,and C; Building 73 to the steam pit near Building 101: Building 101, Building 35 to Building 127 and Building131 to Building 133, 1955. Central gas heating was installed in Buildings A, B and C, 1968.	DET-88, DET-122

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
140	D, E, F, G, H, I, J, K, L, M, N, O residences	Pre 1965 APPLICABLE DATE Present	Quarters	5000 each	Wood frame		DET-88, DET-122

RADON

PARCEL(S)	LOCATION(S)	RADON SURVEY (Y/N)	RESULTS	ABOVE EPA LIMIT? (Y/N) (> 4 PICOCURIES/L)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163					Z-BLANK
140	Housing	Yes	Not avail until 1994.		ASC-2

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140,141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
140	NW corner of parcel	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76
140	South central part of parcel	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 141 SPECIFIC INFORMATION

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 141

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
141	On Tatum Street	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pad Mounted	DET-76

APPENDIX C

PARCEL 142 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 103

PARCEL(S) 142

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This is a wood frame structrure housing bowling alley. Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Nonhalogenated organics
Cabinet marked flammable - empty
Machinery (pin setting)

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 38

PARCEL(S) 142

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This is a 2 story wood frame structure known as the Community Service Building. The lower level houses the NEX (Navy Exchange), a cafeteria, an optical shop and a gymnasium. The upper level houses communications, MWR and a barber shop. Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Boiler room
Photocopy machine
Sodium hypochlorite (in a gymnasium storage room)
Household chemicals were on sale in the NEX.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 38

PARCEL(S) 142, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

A sump in the floor of the boiler room located under the porch, east side of the building.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

The sump collects seepage from boiler room equipment and was reported to have been discharged onto the lawn through a fire hose. Drainage is downslope across the surface of Parcels 142 and 143 and into the creek. The potential contaminants are boiler additives. Sampling results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
142	103	1944 APPLICABLE DATE	Bowling alley	7700	Wood frame	Cement asbestos siding was installed on Buildings 103 and 131,1965.	DET-59, DET-122
142	38	1944 APPLICABLE DATE Present	Navy exchange, cafeteria, optical shop, barbershop, communications, MWR, communications	35438	2 story wood frame	660 feet of corrugated steel culvert was laid in the creek bed from a point south of Building 40 , running NW of Building 1 to a point SW of Building 6. Dirt to fill the ditch was obtained by removing part of the hill west of Building 38.	DET-59, DET-122

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
142	South of Bldg 38	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76
142	West of Bldg 103 near Ringness Street	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 143 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) Well No. 1 building

PARCEL(S) 143

INFO TYPE BDI REVIEWER INITIALS ASC DATE OBTAINED 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Wood structure that covers the well and well equipment.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

None observed

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 10

PARCEL(S) 110, 125, 135,142, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

Kitchen sink waste water was allowed to discharge onto the side walk and lawn on the southwest side of the Building 25 feet from Rifle Range Creek.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is to the creek and the primary contaminants were surfactants. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 11

PARCEL(S) 110, 109, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

A vehicle washing platform, a concrete pad located between Buildings 11 and 89, has a sump connected to the storm water sewer via a pipe. The sump is a source of potential contamination migration to Parcels 109, 135,143 and 160 via Rifle Range Creek.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is directly to the storm water sewer with contaminants consisting of surfactants and automotive materials such as grease, oil, gasoline, etc. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 38

PARCEL(S) 142, 143, 160

INFO TYPE STM REVIEWER INITIALS DET DATE OBTAINED 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

A sump in the floor of the boiler room located under the porch, east side of the building.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

The sump collects seepage from boiler room equipment and was reported to have been discharged onto the lawn through a fire hose. Drainage is downslope across the surface of Parcels 142 and 143 and into the creek. The potential contaminants are boiler additives. Sampling results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 500

PARCEL(S) 137, 144, 143, 160,

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

The emergency cooling water overflow, located on the southeast side of the building, could discharge water to floor drains which are connected to the storm water drainage system. In addition, cooling system water was discharged, through a pipe, to a storm drain inlet on the northeast side of the building.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

The cooling water was reported to have contained biocide, silt and mud remover additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 500

PARCEL(S) 137, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Condensate from the heating system holding tanks has been allowed to discharge into Rifle Range Creek. According to Mike Debol, PWC, the discharge point into Rifle Range Creek is via a pipe from the hospital into the creek, Parcel 143, directly. No information is available addressing pipe leakage.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

The potential contaminants are boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 63

PARCEL(S) 104, 123, 124, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Two hot water heating system purge valves and an over-pressure relief drain to the ground. After the discharge point, migration is via the gutter system into Parcels 123 and 124 and then via storm water piping to the creek in Parcel 135. The creek and contamination migration continues into Parcels 143 and 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is assumed to be to a gutter with potential contaminants being boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 67

PARCEL(S) 130, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Steam pipes discharged steam and water which flowed to a gutter, south wing of the building. Discharge enters the storm water system in Parcel 130 and discharges into the creek in Parcel 135. Contamination migration continues into Parcels 143 and 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is to a gutter. The potential contaminants are boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 73

PARCEL(S) 134, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

The Building 73 heating system equipment is located in a shed between the southeast extensions of the building. The system purge valve and over pressure relief are connected to a gutter through the northeast wall of the shed. Discharge enters the storm water system in Parcel 134 and discharges into the creek in Parcel 143. Contamination migration continues into Parcel 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage would be into the storm water system via the gutter. The potential contaminants are boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 112, 136, 143, 144, 151

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility easement - acreage granted not available. The route of this easement does not appear to be complete on the drawings. The easement begins as a point 200 feet south of Bldg 500 and runs between Blackwood and Rail Streets. When the easement reaches a point in line with the north edge of Bldg 103, the easement continues south across Bldg 214 (the old gas station) and then turns parallel to the southern edge of Bldg 107 until it reaches the facility boundary at the edge of the " tot lot".

TRANSFER INFORMATION AND DATE

Condition of acquisition - Pac Gas & Electric . BK 1940, Page 157.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 143

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contributions from upstream parcels 125, 136, 110, 114, 116, 137, and 139.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 143

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 109, 135, 136, 144, 143, 160, 157, 156, 159

INFO TYPE UTL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

The City of Oakland sanitary sewer traverses the site via its easement. This data sheet was generated to document the affected parcels. See the database entries for easements.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Sewage from the City of Oakland represents a potential for contamination should line leakage exist.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
143	125A	Pre 1965 APPLICABLE DATE Demolished	Hotwell	100	Wood frame		DET-89
143	125C	Pre 1965 APPLICABLE DATE Demolished	Pumphouse	200	Wood frame		DET -89

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
143	Across Blackwood Street from southern portion of Bldg 38	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76
143	Across Blackwood Street from southern portion of Building 38	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 144 SPECIFIC INFORMATION

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 500

PARCEL(S) 137, 144, 143, 160,

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

The emergency cooling water overflow, located on the southeast side of the building, could discharge water to floor drains which are connected to the storm water drainage system. In addition, cooling system water was discharged, through a pipe, to a storm drain inlet on the northeast side of the building.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

The cooling water was reported to have contained biocide, silt and mud remover additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 112, 136, 143, 144, 151

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility easement - acreage granted not available. The route of this easement does not appear to be complete on the drawings. The easement begins as a point 200 feet south of Bldg 500 and runs between Blackwood and Rail Streets. When the easement reaches a point in line with the north edge of Bldg 103, the easement continues south across Bldg 214 (the old gas station) and then turns parallel to the southern edge of Bldg 107 until it reaches the facility boundary at the edge of the " tot lot".

TRANSFER INFORMATION AND DATE

Condition of acquisition - Pac Gas & Electric . BK 1940, Page 157.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 109, 135, 136, 144, 143, 160, 157, 156, 159

INFO TYPE UTL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

The City of Oakland sanitary sewer traverses the site via its easement. This data sheet was generated to document the affected parcels. See the database entries for easements.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Sewage from the City of Oakland represents a potential for contamination should line leakage exist.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 26B, 27, 31

PARCEL(S) 144

INFO TYPE UTL **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES DET-96,DET-133

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contributions from former Bldgs 26B (hobby shop), Bldg 27 (Occupational therapy wood shop), and Bldg 31 (hobby shop). Downstream route not ascertainable.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
144	123	Pre 1949 APPLICABLE DATE Demolished	Quarters	4000	Wood frame		DET-88
144	124	Pre 1949 APPLICABLE DATE Demolished	Quarters	7000	Wood frame		DET-88

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
144	127	Pre 1949 APPLICABLE DATE	Quarters	7000	Wood frame	Reactivated this building as a Waves Quarters, 1950. Approximately 3900 ft. of steam and condensate return line was replaced in the vicinity of Building 47 to Buildings A,B,and C; Building 73 to the steam pit near Building 101: Building 101, Building 35 to Building 127 and Building131 to Building 133, 1955; Building 127 lounge restored after a fire. Surplus buildings 26B, 35, 44, 64, 68, 81, 82, 127, and 135 were sold on "Purchase Removal" contracts, 1960.	DET-88, DET-122, DET-94
144	129	Pre 1949 APPLICABLE DATE Demolished	Quarters	7000	Wood frame		DET-88
144	132	Pre 1949 APPLICABLE DATE Demolished	Animal house, cold storage, class rooms	7000	Wood frame	Historical useage of this building includes: rat colony, 1948; archives, pre 1950; clothing and small stores, 1950; Marine Detachment Office, 1951. Environmental Sanitation Laboratory and School, 1954. Installed a new air conditioning system for mouse colony, 1954.	DET-88, DET-122

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
144	135	Pre 1949 APPLICABLE DATE	Quarters	13000	Wood frame	H Bldg - Old drawing indicates that this building was situated off site of what is now the present facility boundary. Surplus buildings 26B, 35, 44, 64,68, 81, 82,127, and 135 were sold on "Purchase Removal" contracts, 1960.	DET-88
144	25	Pre 1949 APPLICABLE DATE Demolished	Quarters	13000	Wood frame	H Bldg: This building was made into the Enlisted Men's Recreation Center, 1550.	DET-88
144	26A	Pre 1949 APPLICABLE DATE	Quarters	7000	Wood frame	Surplus buildings 26A and 28 were sold under a "Purchase and Removal" contract, 1961.	DET-88, DET-122
144	26B	Pre 1949 APPLICABLE DATE	Quarters	7000	Wood frame	A hobby shop was installed, 1955; Surplus buildings 26B, 35, 44, 64, 68, 81, 82, 127, and 135 were sold on "Purchase Removal" contracts, 1960.	DET-88, DET-122
144	27	Pre 1949 APPLICABLE DATE Demolished	Occupational Therapy & Quarters	7000	Wood frame	A saw dust collector was installed in the occupational therapy wood shop, 1955.	DET-88

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
144	28	Pre 1949 APPLICABLE DATE	Quarters	13000	Wood frame	H building: Forty joints of the 6" main water line between buildings 29, 35 and 28 was re-leaded, 1952. Surplus buildings 26A and 28 were sold under a "Purchase and Removal" contract, 1961.	DET-88, DET-122
144	31	Pre 1949 APPLICABLE DATE Demolished	Recreation building	5000	Wood frame	This building was converted into a Red Cross Hobby Shop, 1950.	DET-88, DET-122
144	32	Pre 1949 APPLICABLE DATE Demolished	Bag Storage	8000	Wood frame	This building was made into a Red Cross lounge, 1950.	DET-88, DET-122
144	39	Pre 1949 APPLICABLE DATE Demolished	Library	2500	Wood frame		DET-88

APPENDIX C

PARCEL 145 SPECIFIC INFORMATION

CHEMICAL INVENTORY

PARCEL(S)	LOCATION	CHEMICALS	MAXIMUM QUANTITIES STORED	USES	APPLICABLE YEAR	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
900, 145, 150, 152, 153, 111, 112	Sequoyah Country Club	Petroleum, acids, caustics, compressed gases and pool algacides	Unknown	Fuel, Pool maintenace	12/10/93	POY-46

APPENDIX C

PARCEL 146 SPECIFIC INFORMATION

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 146

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contributions for upstream source parcels - 137, 104, 123, 130, 134, 133, 132, 131, 147, 128, and 139.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
146	16A	Pre 1949 APPLICABLE DATE Demolished	Water distribution pump house	1000	Wood frame		DET-89
146	16B	Pre 1949 APPLICABLE DATE Demolished	Sentry house, main gate	100	Wood frame		DET-88
146	16C	Pre 1949 APPLICABLE DATE Demolished	Marine Detachment	2500	Wood frame		DET-89

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
146	16D	1965 APPLICABLE DATE Demolished	Liberty & Visitor's Pass Office	1000	Wood frame		DET-89

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
146	East of Bldg 131	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 147 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 102

PARCEL(S) 147

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/1/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This is wood frame structure with a basement. It houses security and has a machine shop in the basement. Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Photocopy machine / nonchlorinated organics
Housekeeping cleaning products

- Machine shop -

Super acitene (trade name)
Compressed gas cylinders
Non halogenated organic (darken, DPM)
There is a storage shed and 3 empty flammable chemical storage cabinets on the NE side of the building. The storage shed was locked and could not be inspected.

NAVHOSP OAKLAND

ORDNANCE

LOCATION(S) 102

PARCEL(S) 147

INFO TYPE ORD **REVIEWER INITIALS** DET **DATE OBTAINED** 12/9/93

REFERENCES DET-132

ORDNANCE PRESENT? (Y/N) Yes

APPLICABLE DATE Present

ORDNANCE TYPE(S) & USE(S) Ammunition is the only type of ordnance on site. Types include:
45 cal. ACP
shotgun 00 buck
7.62 mm NATO

REMARKS Quantities could not be released as that information is restricted.

NAVHOSP OAKLAND

ORDNANCE

LOCATION(S) 102

PARCEL(S) 147

INFO TYPE ORD **REVIEWER INITIALS** DET **DATE OBTAINED** 1/7/94

REFERENCES DET-132

ORDNANCE PRESENT? (Y/N) Yes

APPLICABLE DATE

ORDNANCE TYPE(S) & USE(S) All ordnance on site is used for security purposes and is stored in Building 102. The ordnance on site is ammuntion and consists of 45 cal. ACP, 12 ga. shotgun 00 buckshot, and 7.62 mm NATO.

REMARKS Small arms storage of base security only. This site has always been utilized as a medical service center.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 102

PARCEL(S) 147,146

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contributions from Bldg 102 (machine shop) and would affect downstream parcel 146. Contributions from upstream parcels - 104, 123, 130, 134, 133, 131, and 128.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 147

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
147	102	1945 APPLICABLE DATE Present	Security, machine shop	7650	Wood frame	This building was converted to an Artificial Limb Department, 1950. Alterations were completed to provide for a clinical laboratory, 1955. Cement asbestos shingle siding was installed on Buildings 65, 70, 72, 101, and 102, 1969.	DET-59, DET-122

APPENDIX C

PARCEL 148 SPECIFIC INFORMATION

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Transportation Road

PARCEL(S) 148

INFO TYPE AST **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 500

TYPE OF TANK Steel, free standing

MATERIALS STORED N/A

APPLICABLE DATES N/A

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Never put into service.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 131

PARCEL(S) 148

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Military personnel manpower; human resources office; customer service detachment, asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Truck trailer used for hazardous material storage parked next to this building. It contained:

non hazardous paper products;
flammables; and
corrosives

Inside the building were household cleaning products; photocopy machine chemicals (nonhalogenated organics).

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 133

PARCEL(S) 148

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES DET-59, ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This is a 2 story wood frame structure with a basement. It houses:
- Command Education
- Archives
- Excess Property

Used to be a bar.
Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

- Photocopy machine and storage of nonchlorinated organics to support its operation
- Bleach
- Household cleaning products
- "Old Narcotics Vault" was here
- Flammable cabinet
- Old x-ray unit with batteries temporarily stored in basement
- Silver slug stored

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 148

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contributions from higher elev parcels-137 and 139.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 148

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
148	131	1945 APPLICABLE DATE Present	Military personnel manpower, human resources office, customer service detachment	9690	Wood frame	Approximately 3900 ft. of steam and condensate return line was replaced in the vicinity of Building 47 to Buildings A, B, and C; Building 73 to the steam pit near Building 101: Building 101, Building 35 to Building 127 and Building131 to Building 133, 1956. Cement asbestos siding was installed on Buildings 103 and 131, 1968.	DET-59, DET-122

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
148	133	1945 APPLICABLE DATE Present	Command Education & Archives / Excess Property	24500	Wood frame 2 story structure with a basement	Historical usage of this building includes: An alcohol and narcotic vault, 1950; Property and Accounting, (Excess Property), 1948; second floor was reactivated and the Physical Evaluation Board occupied it, 1950; film storage vault, 1952; medical repair room, 1952; storage, 1952. Approximately 3900 ft. of steam and condensate return line was replaced in the vicinity of Building 47 to Buildings A, B, and C; Building 73 to the steam pit near Building 101: Building 101, Building 35 to Building 127 and Building131 to Building 133, 1955. A punch card machine was installed, 1960.	DET-59, DET-88, DET-122
148	86	Pre 1949 APPLICABLE DATE Demolished 1970	Storehouse	2000	Wood frame		DET-88, DET-122

APPENDIX C

PARCEL 149 SPECIFIC INFORMATION

NAVHOSP OAKLAND

SPILLS AND INCIDENTS

LOCATION(S) Near Bldg 501

PARCEL(S) 149

INFO TYPE SPL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET 94

TYPE OF INCIDENT Spill

DATE OF INCIDENT 1991

CHEMICALS INVOLVED Hydraulic Fluid

AMOUNTS SPILL OR RELEASED 5 gallons

CLEANUP Clean up was accomodated by washing the chemicals down the storm sewer.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 501

PARCEL(S) 149

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/2/93

REFERENCES ASC-4

BUILDING DESCRIPTION, INCLUDING CURRENT USE

BEQ - 100 units / Male & female, laundry, kitchen, office, 70,000 sq feet in two story-two wing concrete structure, 1950.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Household cleaners, office supplies.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 149

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
149	23	Pre 1949 APPLICABLE DATE Demolished	Quarters	13000	Wood frame	H building: A refrigerated garbage room was constructed in Buildings 6, 18, and 23, 1952.	DET-88, DET-122
149	24	Pre 1949 APPLICABLE DATE Demolished	Quarters	13000	Wood frame	H building	DET-88
149	501	1970 APPLICABLE DATE Present	Quarters	4793	Concrete		DET-59

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
149	Southwest corner of Parcel 149	Unknown PCB (Y/N) PCB CLASSIFICATION		Present		DET-76
149	West of Bldg 501	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pad Mounted	DET-76

APPENDIX C

PARCEL 150 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 502

PARCEL(S) 150

INFO TYPE BDI REVIEWER INITIALS ASC DATE OBTAINED 12/2/93

REFERENCES ASC-4

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Heliopad - looks abandoned 20' x 30'
Overgrown, debris, restricted area.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

No observed evidence of contamination.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
150	29	Pre 1949 APPLICABLE DATE Demolished	Quarters	13000	Wood frame	H Bldg: Forty joints of the 6" main water line between buildings 29, 35 and 28 was re-leaded, 1952.	DET-88, DET-122

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
150	35	Pre 1949 APPLICABLE DATE	Quarters	13000	Wood frame	H Bldg - this building appears to be located partially on site and off site to the South. Forty joints of the 6" main water line between buildings 29, 35 and 28 was re-leaded, 1952. Approximately 3900 ft. of steam and condensate return line was replaced in the vicinity of Building 47 to Buildings A, B, and C; Building 73 to the steam pit near Building 101: Building 101, Building 35 to Building 127 and Building131 to Building 133, 1955. Surplus buildings 26B, 35, 44, 64, 68, 81, 82, 127,and 135 were sold on "Purchase Removal" contracts, 1960.	DET-88, DET-122

CHEMICAL INVENTORY

PARCEL(S)	LOCATION	CHEMICALS	MAXIMUM QUANTITIES STORED	USES	APPLICABLE YEAR	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
900, 145, 150, 152, 153, 111, 112	Sequoyah Country Club	Petroleum, acids, caustics, compressed gases and pool algacides	Unknown	Fuel, Pool maintenace	12/10/93	POY-46

APPENDIX C

PARCEL 151 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 214

PARCEL(S) 151

INFO TYPE BDI REVIEWER INITIALS ASC DATE OBTAINED 12/2/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Former gas station - civilians - demolished in 1983/1984.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

No building on site.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 112, 136, 143, 144, 151

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility easement - acreage granted not available. The route of this easement does not appear to be complete on the drawings. The easement begins as a point 200 feet south of Bldg 500 and runs between Blackwood and Rail Streets. When the easement reaches a point in line with the north edge of Bldg 103, the easement continues south across Bldg 214 (the old gas station) and then turns parallel to the southern edge of Bldg 107 until it reaches the facility boundary at the edge of the " tot lot".

TRANSFER INFORMATION AND DATE

Condition of acquisition - Pac Gas & Electric . BK 1940, Page 157.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 112, 151, 152, 158, 159, 160

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility (sewer 12" line) easement - 0.42 acres granted - Utility route runs northeast and southwest in the roadway south of Bldg 88 and Bldg 22, between Bldg 214 and Bldg 107, between Bldg 138 and Bldg 136. When the easement reaches a point north of the tennis courts, it turns west and ends at the facility boundary. There is a short branch of this route near the southern edge of Bldg 107 and goes directly to the property line just north of the "tot lot".

TRANSFER INFORMATION AND DATE

3-17-53 - Easement of 0.42 acres granted to City of Oakland Bk 7011, Page 5.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) 510

PARCEL(S) 108, 151

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/92

REFERENCES DET-32, DET-67, DET-68, DET-69

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 10,000

TYPE OF TANK Single wall, fiberglass

MATERIALS STORED Super unleaded gasoline

APPLICABLE DATES 1981 - 12/91

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Tank 510C.

This tank was removed 12/91, in a single excavation, along with tanks 510A and B. It had been tested and found to be tight, 1987. It cracked upon removal.

Initially, 6 soil samples were taken from the excavation with 22 additional being taken eventually. Detected contamination included TPH as gasoline & BTEX. The contaminated soil was removed to an onsite treatment location, a soil pile, parcel 151. A closure report for the soil pile has been written.

The Building 510 site has not been closed out.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) 510

PARCEL(S) 108, 151

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/92

REFERENCES DET32, DET67, DET68, DET-69

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 10,000

TYPE OF TANK Single wall, fiberglass

MATERIALS STORED Unleaded gasoline

APPLICABLE DATES 1981 - 12/91

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Tank 510A

This tank was removed 12/91, in single excavation, along with tanks 510B & 510 C. Upon removal, a 2-3 inch hole, below the fill pipe, was discovered. It had been tested and found to be tight, 1987. In addition, it leaked 7,000 gallons.

Initially, 6 soil samples were taken from the excavation with 22 being taken eventually. Detected contamination included TPH as gasoline & BTEX. The contaminated soil was removed to an onsite treatment location, a soil pile, parcel 151. A closure report for the soil pile has been written.

The Building 510 site has not been closed out.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) 510

PARCEL(S) 108, 151

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/92

REFERENCES DET32, DET67, DET68, DET-69

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 10,000

TYPE OF TANK Single wall, fiberglass

MATERIALS STORED Regular gasoline

APPLICABLE DATES 1981 - 12/91

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Tank 510B

This tank was removed 12/91, in a single excavation, along with tanks 510A and C. It had been tested and found to be tight, 1987.

Initially, 6 soil samples were taken from the excavation with 22 being taken eventually. Detected contamination included TPH as gasoline & BTEX. The contaminated soil was removed to an onsite treatment location, a soil pile, parcel 151. A closure report for the soil pile has been written.

The Building 510 site has not been closed out.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) 510

PARCEL(S) 108, 151

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/92

REFERENCES DET32, DET67, DET68

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 550 gal

TYPE OF TANK Single wall, fiberglass, unlined

MATERIALS STORED Waste oil

APPLICABLE DATES 1981 - 12/91

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Tank 510D

This tank, removed 12/91, was excavated separately from UST's 510A-C. It had been tested and found to be tight, 1987.

Detected contamination included SVOC's, TPH as motor oil and TRPH. The contaminated soil was removed to an onsite treatment location, a soil pile, Parcel 151. A closure report for the soil pile has been written.

No further study was recommended due to no visual observation or contamination and low levels of SVOC's.

The 510 site has not been closed out.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Near Bldg 107

PARCEL(S) 151

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/93

REFERENCES DET-33

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 6000

TYPE OF TANK Unknown, carbon steel

MATERIALS STORED Product

APPLICABLE DATES 1952-1986

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

This tank was designated as tank 214A and was removed 5/14/86. Evidence of a UST investigation was not available.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Near Bldg 107

PARCEL(S) 151

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/93

REFERENCES DET-33

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 6000

TYPE OF TANK Non-vaulted, carbon steel

MATERIALS STORED Product

APPLICABLE DATES 1952-1986

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

This tank was designated as tank 214B and was removed 5/14/86. Evidence of a UST investigation was not available.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Near Bldg 107

PARCEL(S) 151

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/93

REFERENCES DET-33

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 8000

TYPE OF TANK Unknown, carbon steel

MATERIALS STORED Product

APPLICABLE DATES 1952-1986

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

This tank was designated as tank 214C and was removed 5/14/86. Evidence of a UST investigation was not available.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Near Bldg 107

PARCEL(S) 151

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/93

REFERENCES DET-33

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) Unknown

TYPE OF TANK Non-vaulted, carbon steel

MATERIALS STORED Waste

APPLICABLE DATES 1952-1986

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

This tank was designated as tank 214D and was removed 5/14/86. Evidence of a UST investigation was not available.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 108, 110, 151, 159

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 1/4/94

REFERENCES DET-127, DET-67, DET-68, DET-66

SUBJECT Groundwater monitoring

REMARKS There is neither groundwater monitoring at Oak Knoll Naval Hospital nor a Groundwater Monitoring Plan.

Parcels of special concern would be:

- 108: Building 510, service station not in use, UST's 510A-D have been removed
- 110: Building 12, demolished service station, UST disposition unknown
- 151: Building 214, demolished service station, UST's 214A-D have been removed
- 159: Building 117P, demolished service station, UST-111A has been removed

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 214

PARCEL(S) 151,158,160,159

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contribution from former service station (Bldg 214), downstream flow may affect parcels 158, 160, and 159.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 151

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
151	104	Pre 1949 APPLICABLE DATE Demolished	Storage	3000	Wood frame		DET-88
151	125B	≈1965 APPLICABLE DATE Demolished	Hotwell & Pumphouse	200	Wood frame		DET- 89

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
151	214	1951 APPLICABLE DATE Demolished	Navy Exchange Gas Station	2500	Wood frame	At the location of demolished building 214, DET 89 shows an 1100 sq ft structure of rectangular shape. DET 77 shows a building of different shape oriented differently with respect to the road. Service station activities have the adverse potential of release of contaminants into the adjoining creek. No information is available regarding investigation of below ground contamination.Service station activities have the adverse potential of release of contaminants into the nearby creek. No information is available regarding investigation of below ground contamination.	DET-89, DET-77, DET-122
151	33	Pre 1949 APPLICABLE DATE Demolished	Medical Storehouse	13,000	Wood frame	This building was modified into a storeroom, 1951.	DET-88, DET-122
151	Shed, same site as 214	≈1965 APPLICABLE DATE Demolished	Temporary storage	1000	Wood frame		DET-88

HAZARDOUS WASTE

PARCEL(S)	LOCATION(S)	HAZ WASTE?	TYPE/QUANTITY	DESCRIPTION	APPLICABLE DATE	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
151	214	Yes	4 USTs were stored on this site for approximately 1 year. The storage occurred at the site of demolished Building 214.	USTs contained residual petroleum products. They were steam cleaned as well as stored at the location.	1985-1986	DET-94

APPENDIX C

PARCEL 152 SPECIFIC INFORMATION

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 152

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility (sewer) easement - 0.014 acres granted - The utility easement starts in the street just north of Bldg 22 (the old boiler house) where it joins with another City of Oakland easement (Book 7011, Page 5, running down the street between Bldg 22 and the two tanks) and travels east to the property line.

TRANSFER INFORMATION AND DATE

3-5-80 - Utility easement of 0.014 acres granted to City of Oakland - no recording information available.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 112, 151, 152, 158, 159, 160

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility (sewer 12" line) easement - 0.42 acres granted - Utility route runs northeast and southwest in the roadway south of Bldg 88 and Bldg 22, between Bldg 214 and Bldg 107, between Bldg 138 and Bldg 136. When the easement reaches a point north of the tennis courts, it turns west and ends at the facility boundary. There is a short branch of this route near the southern edge of Bldg 107 and goes directly to the property line just north of the "tot lot".

TRANSFER INFORMATION AND DATE

3-17-53 - Easement of 0.42 acres granted to City of Oakland Bk 7011, Page 5.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) Adjacent to Parcel 152

PARCEL(S) 900, 152

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94, ASC-10

SUBJECT Waste disposal site

REMARKS A refuse/disposal area is at the end of the road, behind Building 22, and is presently used for refuse / waste collection. The land has an easement which provides access to the refuse area which is also in the easement and off the Oak Knoll Naval Hospital property.

In the past, the area past the easement had been used as a solid waste disposal site.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 152

INFO TYPE UTL REVIEWER INITIALS DET/AC DATE OBTAINED 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
152	Guard shack south of Building 88	Unknown APPLICABLE DATE Demolishd	Guard shack	100	Wood frame		ASC-1, DET-76
152	Shed on right side of road going toward Building 88	Pre 1949 APPLICABLE DATE Demolished	Paint & Oil Shed	200	Wood frame		DET-88

CHEMICAL INVENTORY

PARCEL(S)	LOCATION	CHEMICALS	MAXIMUM QUANTITIES STORED	USES	APPLICABLE YEAR	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
900, 145, 150, 152, 153, 111, 112	Sequoyah Country Club	Petroleum, acids, caustics, compressed gases and pool algacides	Unknown	Fuel, Pool maintenace	12/10/93	POY-46

APPENDIX C

PARCEL 153 SPECIFIC INFORMATION

NAVAL HOSPITAL-OAKLAND

STORAGE TANK

LOCATION(S) 504

PARCEL(S) 153

INFO TYPE AST **REVIEWER INITIALS** ASC **DATE OBTAINED** 12-3-93

REFERENCES ASC-1

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 6,700

TYPE OF TANK Steel

MATERIALS STORED Diesel fuel

APPLICABLE DATES Present

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Fuel tank for boiler in Building 22. 6 ft dia x 32 ft long = 904 CF = 6,700 Gals
Stains at bottom of secondary containment indicates possible overfills or past leaks.

NAVAL HOSPITAL-OAKLAND

STORAGE TANK

LOCATION(S) South of Building 22

PARCEL(S) 153

INFO TYPE AST **REVIEWER INITIALS** ASC **DATE OBTAINED** 12-3-93

REFERENCES ASC-1

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 163,000

TYPE OF TANK Steel

MATERIALS STORED Never used

APPLICABLE DATES Present

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Steel tanks holds 3,880 barrels (42 gal barrels). This tank was built as a backup to tanks 503 and 504 (each 6,700 gal). After completion the tank was never filled. The tank was constructed on property partially outside the the facility boundary and a subsequent easement was acquired from the adjacent landowner.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) 503, 504

PARCEL(S) 153

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Easement for 0.01 acres adjacent to the two above ground diesel storage tanks (property items 503 and 504), Legislative Jurisdiction is proprietorial 8/25/42.

TRANSFER INFORMATION AND DATE

4-23-80 - Easement 0.01 acres from Anmar Investments, Inc. Record Document N6247479-RPOOP-60 (Legislative Jurisdiction-Proprietorial).

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Adjacent AST nr Bldg 22

PARCEL(S) 153

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Fee transfer of 0.05 acres - tank originally built on neighboring property. It was the intent to use this tank as a back up source to the two smaller fuel tanks (property items 503 and 504) suppying the boiler in Bldg 22. With the closure of Bldg 22, this tank became surplus. This tank has never been filled.

TRANSFER INFORMATION AND DATE

4-23-80 - Easement 0.05 acres from Anmar Investments, Inc. Record Document Quitclaim Deed (Legislative Jurisdiction-Proprietorial).

CHEMICAL INVENTORY

PARCEL(S)	LOCATION	CHEMICALS	MAXIMUM QUANTITIES STORED	USES	APPLICABLE YEAR	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163						Z-BLANK
900, 145, 150, 152, 153, 111, 112	Sequoyah Country Club	Petroleum, acids, caustics, compressed gases and pool algacides	Unknown	Fuel, Pool maintenace	12/10/93	POY-46

APPENDIX C

PARCEL 154 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 22

PARCEL(S) 154

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/2/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

No longer in use. Former facility boiler plant, natural gas with diesel back-up. Tanks used to provide fuel are outside bldg. Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Asbestos throughout. 2 tanks (diesel) outside. Chemically treated water for blow down, discharged to creek. Stains on floor indicate past releases of chemicals.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 154

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
154	22	1942 APPLICABLE DATE Present	Heating plant	6780	Wood frame	Heating Plant used fuel oil prior to 1965. A water treatment unit was built as an addition, 1950.	DET-122, ASC-7

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
154	Adjacent to Building 22	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pad Mounted	DET-76

APPENDIX C

PARCEL 155 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 88

PARCEL(S) 155

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/2/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Quonset hut, contains office furniture, junk storage - formerly electrical distribution center - many transformer hookups - 4" conduits.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Paint,
1 Isobutane cylinder.
Stains on concrete floor

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
155	88	1951 APPLICABLE DATE Present	Storage of furniture and junk	960	Quantsit hut	Building 88 contained transformers, 1952.	DET-122, ASC-7

APPENDIX C

PARCEL 156 SPECIFIC INFORMATION

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 156

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 109, 135, 136, 144, 143, 160, 157, 156, 159

INFO TYPE UTL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

The City of Oakland sanitary sewer traverses the site via its easement. This data sheet was generated to document the affected parcels. See the database entries for easements.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Sewage from the City of Oakland represents a potential for contamination should line leakage exist.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
156	20A	Pre 1949 APPLICABLE DATE Demolished	Gardeners' Group	2000	Glass House		DET-88

APPENDIX C

PARCEL 157 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 20B

PARCEL(S) 157

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Landscape contractor's office, asbestos exterior siding.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

None

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 20C

PARCEL(S) 157

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

2 levels - upper lunch room - lower vehicle & storage areas
asbestos exterior siding. Asbestos covered heating pipes observed at entry to building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Gasoline
Pesticides
Motor oil
Battery
Fertilizer
Nonhalogenated organics

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 157

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 109, 135, 136, 144, 143, 160, 157, 156, 159

INFO TYPE UTL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

The City of Oakland sanitary sewer traverses the site via its easement. This data sheet was generated to document the affected parcels. See the database entries for easements.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Sewage from the City of Oakland represents a potential for contamination should line leakage exist.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
157	20B	1942 APPLICABLE DATE Present	Office (landscape contractor)	196	Wood frame		DET-59
157	20C	1945 APPLICABLE DATE	Storage	960	Wood frame		DET-59
157	21	Pre 1949 APPLICABLE DATE Demolished	Gardeners' Group - Lath House	2800	Wood frame		DET-88

APPENDIX C

PARCEL 158 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 136

PARCEL(S) 158

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/2/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Demolished in 1991, 1992 / formerly liquor store (for at least 20 years).
1940's vintage building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

No building on site.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 137

PARCEL(S) 158

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Chlorine & pump building for swimming pool. 775 sq feet concrete building, built 1944.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Chlorine cylinders were formerly stored inside, presently the cylinders are stored in a grill structure outdoors.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 138

PARCEL(S) 158

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Swimming pool, sauna, dressing room, small laundry with dryer. Separate boiler room bldg and small shed which stores detergent, lounge chairs, umbrellas, etc. Pump and chlorine is in Bldg 137. The building looks remodeled, asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Household chemicals, detergent for laundry.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 137, 138

PARCEL(S) 158, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

A culvert on the northwest side of Building 137. Discharge of liquids from the pool and the boiler for the pool flow into the creek.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Swimming pool scuppers discharge pool water into the creek through a culvert . The potential contaminant is chlorine. Sampling results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 112, 151, 152, 158, 159, 160

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility (sewer 12" line) easement - 0.42 acres granted - Utility route runs northeast and southwest in the roadway south of Bldg 88 and Bldg 22, between Bldg 214 and Bldg 107, between Bldg 138 and Bldg 136. When the easement reaches a point north of the tennis courts, it turns west and ends at the facility boundary. There is a short branch of this route near the southern edge of Bldg 107 and goes directly to the property line just north of the "tot lot".

TRANSFER INFORMATION AND DATE

3-17-53 - Easement of 0.42 acres granted to City of Oakland Bk 7011, Page 5.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 137,138

PARCEL(S) 158,160,159

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contributions from Bldg 137 (chlorine plant) and Bldg 138 (swimming pool). Downstream contributions to parcels 160 and 159. Upstream contributions from parcels 125, 136, 110, 114, 116, and 151.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 158

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
158	136	≈1949 APPLICABLE DATE Demolished	Storehouse	3000	Wood frame		DET-88
158	137	1944 APPLICABLE DATE Present	Water treatment facility for the swimming pool.	775	Concrete		DET-59
158	138	1944 APPLICABLE DATE	Swimming Pool	Unknown	Wood frame	The swimming pool was enclosed, 1950	DET-59, DET-122

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
158/162	Near site of demolished Building 136	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76
158	SW corner of parcel near tennis courts	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 159 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 111

PARCEL(S) 159

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Transportation office, Asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Photocopy machine - nonchlorinated organics

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 112

PARCEL(S) 159

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Auto repair shop, asbestos siding on building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

No solvents at this time
Petroleum products
Nonchlorinated organics

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 113

PARCEL(S) 159

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Open vehicle storage, wood structure or framework.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

None

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 116

PARCEL(S) 159

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Open vehicle storage, structure is made of wood.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

None

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 90

PARCEL(S) 159

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/2/93

REFERENCES DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Oil room - a small concrete building which held drums of oil products.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Lube oil storage

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) Compressor shed

PARCEL(S) 159

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This building is a small wood building of approximately 30 square feet. It houses an air compressor. Building is on the backside of bldg 112.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Evidence of chemical storage/use was not observed.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) Service station

PARCEL(S) 159

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This data entry documents the existence of a service station in this parcel. There are two USTs and above ground pumps. The building does not exist.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Gasoline pumps

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 112, 151, 152, 158, 159, 160

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility (sewer 12" line) easement - 0.42 acres granted - Utility route runs northeast and southwest in the roadway south of Bldg 88 and Bldg 22, between Bldg 214 and Bldg 107, between Bldg 138 and Bldg 136. When the easement reaches a point north of the tennis courts, it turns west and ends at the facility boundary. There is a short branch of this route near the southern edge of Bldg 107 and goes directly to the property line just north of the "tot lot".

TRANSFER INFORMATION AND DATE

3-17-53 - Easement of 0.42 acres granted to City of Oakland Bk 7011, Page 5.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) In transportation area next to Bldg 111, 50 ft west of creek

PARCEL(S) 159

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/24/93

REFERENCES DET-66, DET-33, POY-17

Note: Include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 8000

TYPE OF TANK Steel

MATERIALS STORED SVOC, TPH as gasoline, BTEX, TRPH

APPLICABLE DATES 1943-12/91

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Tank 111A

This tank was removed 12/91. Pin holes were found in the tank and no groundwater was encountered. Sampling included one sample from the liquid in the UST, one from pea gravel contained in the UST, two from the spoils pile and two soil samples. SVOCs N-Nitrosodiphenylamine, 51 ug/kg, and Pyrene, 12 ug/kg, were found in the north floor soil sample and SVOC N-Nitrosodiphenylamine, 35 ug/kg, was found in the south floor soil sample.

This tank sie has not been closed out.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Near Bldg 90

PARCEL(S) 159

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/93

REFERENCES DET-33, DET-35

Note: Include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 10,000

TYPE OF TANK Doubled wall, fiberglass

MATERIALS STORED Motor vehicle fuel - unleaded

APPLICABLE DATES 1985-present

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Tank 141A, tested and found to be tight, 1987.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Near Bldg 90

PARCEL(S) 159

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 11/16/93

REFERENCES DET-33, DET-35

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 6,000

TYPE OF TANK Doubled walled, fiberglass, lining unknown

MATERIALS STORED Motor vehicle fuel - diesel

APPLICABLE DATES 1985-present

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

Tank 141B, tested and found to be tight, 1987

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) West edge of property adjacent to (or fronting) Mountain Blvd.

PARCEL(S) 159

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 10/29/93

REFERENCES DET3, DET4, DET5, DET6, DET7, DET8, DET9, DET10, DET13

Note: Include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) Unknown

TYPE OF TANK Unknown

MATERIALS STORED Gasoline

APPLICABLE DATES 6/84

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

A complaint of leaking tank was made 6/18/84. It may have been leaking for several years. Soil samples taken. There may have been more than one tank at this location. DET-13 documents that more than one tank was excavated.

Although there is no information clearly defining the tank(s) in question, the reviewer has concluded that one tank is involved and it is tank 111A.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 108, 110, 151, 159

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 1/4/94

REFERENCES DET-127, DET-67, DET-68, DET-66

SUBJECT Groundwater monitoring

REMARKS There is neither groundwater monitoring at Oak Knoll Naval Hospital nor a Groundwater Monitoring Plan.

Parcels of special concern would be:

- 108: Building 510, service station not in use, UST's 510A-D have been removed
- 110: Building 12, demolished service station, UST disposition unknown
- 151: Building 214, demolished service station, UST's 214A-D have been removed
- 159: Building 117P, demolished service station, UST-111A has been removed

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) 112,117

PARCEL(S) 159

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contributions from former service stations 117 and 117P, and Bldg 112. (type writer repair shop now vehicle repair shop). Upstream contributions from parcels 136, 125, 110, 114, 116, 158, and 151.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 159

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-122, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

The steam lines were run to the transportation area in 1949.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 109, 135, 136, 144, 143, 160, 157, 156, 159

INFO TYPE UTL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

The City of Oakland sanitary sewer traverses the site via its easement. This data sheet was generated to document the affected parcels. See the database entries for easements.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Sewage from the City of Oakland represents a potential for contamination should line leakage exist.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
159	111	1945 APPLICABLE DATE Present	Transportation office	1130	Wood frame		DET-59
159	112	1945 APPLICABLE DATE Present	Vehicle repair shop	1790	Wood frame	A typewriter repair shop was established in this building, 1950.	DET-59
159	113	1945 APPLICABLE DATE Present	Open vehicle storage	5600	Wooden carport like building		DET-59

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
159	114	1945 APPLICABLE DATE Present	Storage - conservation corp	800	Wood frame	No chemicals observed in storage area. Hand tools and other non-chemical, dry items. A laboratory occupied this building, pre 1954.	DET-88, DET-89, DET-59, ASC-1, DET-122
159	116	1943 APPLICABLE DATE Present	Open vehicle storage	1680	Wooden carport like building		DET-59
159	117	≈1949 APPLICABLE DATE Demolished	PWC Gas Station	500	Wood frame	DET-89 identified two buildings as Building 17 including Building 117, the subject of this data sheet. The Building 117 designation has been retained as identified DET-88.	DET-88
159	117P	Pre 1965 APPLICABLE DATE Demolished	Service station	600	Wood frame	DET-89 identified this building as Building 117. The 117P designation in this data sheet is to distinguish this building from that designated as Building 117 in DET-88.	DET-89, DET-88
159	90	1954 APPLICABLE DATE Present	In the transportation area, this building is used for oil storage.	124	Wood frame	Oil storage was initiated in 1954.	DET-59

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
159	Shed adjacent to north side of 116	Unknown APPLICABLE DATE Present	This structure is a small shed used to house an air compressor and is located on the north side of Building 116 in the transportation area.	30	Wood frame	The shed looks like it was built in the 1940's but is not shown in DET-88 nor on any more recent map.	N/A

APPENDIX C

PARCEL 160 SPECIFIC INFORMATION

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 10

PARCEL(S) 110, 125, 135,142, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

Kitchen sink waste water was allowed to discharge onto the side walk and lawn on the southwest side of the Building 25 feet from Rifle Range Creek.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is to the creek and the primary contaminants were surfactants. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 11

PARCEL(S) 110, 109, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

A vehicle washing platform, a concrete pad located between Buildings 11 and 89, has a sump connected to the storm water sewer via a pipe. The sump is a source of potential contamination migration to Parcels 109, 135,143 and 160 via Rifle Range Creek.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is directly to the storm water sewer with contaminants consisting of surfactants and automotive materials such as grease, oil, gasoline, etc. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 137, 138

PARCEL(S) 158, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

A culvert on the northwest side of Building 137. Discharge of liquids from the pool and the boiler for the pool flow into the creek.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Swimming pool scuppers discharge pool water into the creek through a culvert . The potential contaminant is chlorine. Sampling results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 38

PARCEL(S) 142, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124

STORMWATER DISCHARGE POINT

A sump in the floor of the boiler room located under the porch, east side of the building.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

The sump collects seepage from boiler room equipment and was reported to have been discharged onto the lawn through a fire hose. Drainage is downslope across the surface of Parcels 142 and 143 and into the creek. The potential contaminants are boiler additives. Sampling results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 500

PARCEL(S) 137, 144, 143, 160,

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

The emergency cooling water overflow, located on the southeast side of the building, could discharge water to floor drains which are connected to the storm water drainage system. In addition, cooling system water was discharged, through a pipe, to a storm drain inlet on the northeast side of the building.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

The cooling water was reported to have contained biocide, silt and mud remover additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 500

PARCEL(S) 137, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Condensate from the heating system holding tanks has been allowed to discharge into Rifle Range Creek. According to Mike Debol, PWC, the discharge point into Rifle Range Creek is via a pipe from the hospital into the creek, Parcel 143, directly. No information is available addressing pipe leakage.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

The potential contaminants are boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 63

PARCEL(S) 104, 123, 124, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Two hot water heating system purge valves and an over-pressure relief drain to the ground. After the discharge point, migration is via the gutter system into Parcels 123 and 124 and then via storm water piping to the creek in Parcel 135. The creek and contamination migration continues into Parcels 143 and 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is assumed to be to a gutter with potential contaminants being boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 67

PARCEL(S) 130, 135, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

Steam pipes discharged steam and water which flowed to a gutter, south wing of the building. Discharge enters the storm water system in Parcel 130 and discharges into the creek in Parcel 135. Contamination migration continues into Parcels 143 and 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage is to a gutter. The potential contaminants are boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVHOSP OAKLAND

STORM WATER

LOCATION(S) 73

PARCEL(S) 134, 143, 160

INFO TYPE STM **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

STORMWATER DISCHARGE POINT

The Building 73 heating system equipment is located in a shed between the southeast extensions of the building. The system purge valve and over pressure relief are connected to a gutter through the northeast wall of the shed. Discharge enters the storm water system in Parcel 134 and discharges into the creek in Parcel 143. Contamination migration continues into Parcel 160.

DESCRIBE DRAINAGE AREA & SAMPLING RESULTS

Drainage would be into the storm water system via the gutter. The potential contaminants are boiler additives. Test results were not available.

Note: DET-43 summarizes illicit discharges, nonstorm water discharges to a storm drain, only. It does not address storm water associated with industrial activities. Appendix B to the Storm Water Pollution Prevention Plan contains that information and was not available for review.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Fenceline

PARCEL(S) 160

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility easement of 0.01 acres at the Mountain Blvd. boundary to the City of Oakland, Book 3662, Page 209, condition of aquisition.

TRANSFER INFORMATION AND DATE

Condition of acquisition - City of Oakland, BK 3662, Page 209.

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) General

PARCEL(S) 112, 151, 152, 158, 159, 160

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Utility (sewer 12" line) easement - 0.42 acres granted - Utility route runs northeast and southwest in the roadway south of Bldg 88 and Bldg 22, between Bldg 214 and Bldg 107, between Bldg 138 and Bldg 136. When the easement reaches a point north of the tennis courts, it turns west and ends at the facility boundary. There is a short branch of this route near the southern edge of Bldg 107 and goes directly to the property line just north of the "tot lot".

TRANSFER INFORMATION AND DATE

3-17-53 - Easement of 0.42 acres granted to City of Oakland Bk 7011, Page 5.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 160

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Potential contamination from upstream sources on parcels 125, 110, 114, 116, 158, and 151.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 160

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 109, 135, 136, 144, 143, 160, 157, 156, 159

INFO TYPE UTL **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES DET-43, DET-124, DET-125

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

The City of Oakland sanitary sewer traverses the site via its easement. This data sheet was generated to document the affected parcels. See the database entries for easements.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Sewage from the City of Oakland represents a potential for contamination should line leakage exist.

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
160	Creek area near Building 111	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 161 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 147

PARCEL(S) 161

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Raquetball courts (indoors), Concrete block building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

None

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 150

PARCEL(S) 161

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Covered picnic area, open wood structure.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

None

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 507

PARCEL(S) 161

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/3/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Restrooms - concrete block construction

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

None

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) Dugout equipment sheds

PARCEL(S) 161

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Wooden structures - two (one for each dug out). Appears to hold equipment for each team using the ball field.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

None

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Recreation area

PARCEL(S) 161

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Fee transfer of 0.10 acres at the corner of Mountain Blvd. and Sequoyah Road. A portion of this estate encompasses Mountain Blvd., a public road.

TRANSFER INFORMATION AND DATE

4-25-42 - In fee 0.10 acres from Hutchinson Realty Co. et al. Civil 22276 (Legislative Jurisdiction - Partial).

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) Recreation area

PARCEL(S) 161

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Land use

REMARKS The recreation area had no other use than a recreation area.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
161	134	≈1949	Storehouse	2000	Wood frame		DET-88, DET-122
		APPLICABLE DATE Demolished 1970					
161	147	1945	Raquetball Courts	1500 (est)	Brick		DET-59
		APPLICABLE DATE					
161	150	1976	Covered Picnic Area	600 (est)	Wood		DET-59
		APPLICABLE DATE					

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
161	507	1979 APPLICABLE DATE Present	Restrooms	413	Concrete		DET-59
161	84	Pre 1949 APPLICABLE DATE Demolished	Storehouse	2000	Wood frame	Toilet facilities were provided, 1955.	DET-88, DET-122

APPENDIX C

PARCEL 162 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 18

PARCEL(S) 162

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/1/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

Officers and enlisted personnel open mess, original golf course club house, wood frame, stucco, spanish style, built 1924, 43,500 sf, two living suites above main level, entertainment area below main level, main level contained dining area, offices, kitchen & storage.

Stucco building

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Dishwasher detergents, soaps and other cleaning agents, 55 gal drum of degreaser, drums of window cleaner.

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 19

PARCEL(S) 162

INFO TYPE BDI **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/3/93

REFERENCES ASC-1

BUILDING DESCRIPTION, INCLUDING CURRENT USE

2 car garage adjacent to Clubhouse (Bldg 18). Used to store surplus equipment. Remodeled. Stucco on wood frame building.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

None

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) General

PARCEL(S) 102, 106, 108, 109, 110, 118, 120, 121, 125, 126, 127, 128, 129, 130, 132,

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94

SUBJECT Demolition of buildings

REMARKS A cat with a front end loader was used to demolish buildings. Refuse was placed in trucks for off-site disposal. Locations were graded. All demolished buildings were wood frame.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
162	118	Pre 1949 APPLICABLE DATE Demolished	Quarters	7000	Wood frame		DET-88
162	18	1924 APPLICABLE DATE Present	Officer's and enlisted personnel open mess	43476	Wood frame/stucco	A refrigerated garbage room was constructed in Buildings 6,18, and 23, 1952.	DET-59, DET-122
162	19	1942 APPLICABLE DATE Present	Garage	844	Wood frame/stucco		DET-59

TRANSFORMERS

PARCEL(S)	LOCATION(S)	TRANSFORMER #	SIZE	DATE APPLICABLE	REMARKS (INCLUDING SPILL/REMOVAL INFO)	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		PCB (Y/N) PCB CLASSIFICATION				Z-BLANK
162	Adjacent to Building 18	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pad Mounted	DET-76
162	South end of parking lot near Building 18	Unknown PCB (Y/N) PCB CLASSIFICATION		Present	Pole Mounted	DET-76

APPENDIX C

PARCEL 163 SPECIFIC INFORMATION

NAVHOSP OAKLAND

BUILDING VISUAL INSPECTIONS

LOCATION(S) 70

PARCEL(S) 163

INFO TYPE BDI **REVIEWER INITIALS** DET **DATE OBTAINED** 12/1/93

REFERENCES ASC-1, DET-136

BUILDING DESCRIPTION, INCLUDING CURRENT USE

This is a building of wood frame construction in the shape of an H with asbestos siding on exterior. It is used for alcohol rehabilitation.

EVIDENCE OF CHEMICAL STORAGE/USE AND LOCATION WITHIN BUILDING

Boiler room
Photocopy machine and the storage of nonchlorinated organics supporting the operation of that maching.
Unicide 128 (germicide)
Housekeeping chemicals

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 163

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-94, DET-96

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Sanitary sewer

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

All main sanitary sewer lines were relined with tubing.

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

Contribution from upstream parcel 130.

NAVHOSP OAKLAND

UTILITIES

LOCATION(S) General

PARCEL(S) 163

INFO TYPE UTL **REVIEWER INITIALS** DET/AC **DATE OBTAINED** 12/15/93

REFERENCES DET-81, DET-138

UTILITY TYPE (SANITARY SEWER, ELECTRICAL, INDUSTRIAL SEWER, GAS LINE, ETC.)

Steam line

DESCRIPTION (LOCATION, DETAILS CONCERNING UTILITY)

POTENTIAL FOR CONTAMINATION (INCLUDES POTENTIAL FOR UPSTREAM SOURCE)

By this data sheet, the steam lines in this parcel are being identified as a potential source of friable asbestos contamination.

BUILDING INFORMATION

PARCEL(S)	LOCATION(S)	DATE CONSTRUCTED	USE	SQUARE FOOTAGE	TYPE OF CONSTRUCTION (WOOD FRAME, ETC.)	REMARKS	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163		APPLICABLE DATE					Z-BLANK
163	70	1943 APPLICABLE DATE Present	Alcohol rehabilitation	13230	Wood frame	H building: Asphalt tile was installed on the floors of Buildings 41-46, 50, 61-64, 69-73 and 74, 1951. Cement asbestos shingle siding was installed on Buildings 65, 70, 72, 101, and 102, 1969.	DET-59, DET-122

APPENDIX C

PARCEL 900 SPECIFIC INFORMATION OFFSITE PARCEL

NAVAL HOSPITAL-OAKLAND

TITLE SEARCH

LOCATION(S) Offsite

PARCEL(S) 900

INFO TYPE TIT **REVIEWER INITIALS** ASC **DATE OBTAINED** 12/15/93

REFERENCES ASC-5

ISSUE OF CONCERN/REMARKS

Easement of 0.31 acres for access by facility - this easement permits the use of road to the solid waste accumulation area at the end of road and included within the easement is the turn which joins up with Beeman Street near Bldg 501.

TRANSFER INFORMATION AND DATE

5-20-82 - Easement granted to facility 0.31 acres from Anmar Investments Inc. (Hardenstine) (Legislative Jurisdiction - Proprietorial).

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Sequoyah Country Club

PARCEL(S) 900

INFO TYPE UST **REVIEWER INITIALS** DET **DATE OBTAINED** 12/11/92

REFERENCES POY-28

Note: include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) 5000

TYPE OF TANK Unknown

MATERIALS STORED Gasoline

APPLICABLE DATES ? to 8/91

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

This tank was removed 8/7/91

Analysis of soil samples indicated up to 11,000 ppm TPH as gasoline

A soil and ground water investigation was requested by Alameda County 4/92. The work plan was approved 9/22/92. Work has been conducted and monitoring wells installed; however, documentation of that activity and any results have yet to be submitted to the County.

NAVHOSP OAKLAND

STORAGE TANK

LOCATION(S) Exxon Station

PARCEL(S) 900,101

INFO TYPE UST **REVIEWER INITIALS** POY **DATE OBTAINED** 12/10/93

REFERENCES POY-34

Note: Include past and current uses of the tank using, if necessary, multiple forms

STORAGE TANK SIZE (GALLONS) Unavailable

TYPE OF TANK Unavailable

MATERIALS STORED Gasoline

APPLICABLE DATES 4/13/88

REMARKS (TIGHTNESS TESTING, REMOVAL, SOIL SAMPLING, ETC.)

This station is on off-site parcel 900, the nearest on site parcel is 101. Petro-Check, Inc. performed a tank fitness test on three tanks containing Premium, Unleaded, and Regular gasoline. All three tanks were tight.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) Adjacent to Parcel 152

PARCEL(S) 900, 152

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/15/93

REFERENCES DET-94, ASC-10

SUBJECT Waste disposal site

REMARKS A refuse/disposal area is at the end of the road, behind Building 22, and is presently used for refuse / waste collection. The land has an easement which provides access to the refuse area which is also in the easement and off the Oak Knoll Naval Hospital property.

In the past, the area past the easement had been used as a solid waste disposal site.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) Exxon service station

PARCEL(S) 900

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/1/93

REFERENCES DET-117

SUBJECT Exxon Service Station, 8008 Mountain Blvd, Oakland

REMARKS It was estimated that there were 200 sq yds (sic) of gasoline contaminated soil with a concentration less than 1000 ppm. The reference letter identified permit, as well as other regulatory requirements, asociated with the soil aeration activity. Circa 3/26/90.

NAVHOSP OAKLAND

MISCELLANEOUS INFORMATION

LOCATION(S) Neighborhood

PARCEL(S) 900

INFO TYPE MIS **REVIEWER INITIALS** DET **DATE OBTAINED** 12/16/93

REFERENCES POY-30, DET-117

SUBJECT UST's-Exxon Service Station, 8808 Mountain Blvd., Oakland, CA

REMARKS Analysis of native soil samples beneath the tanks do not identify contaminants above detection limits; however, analyses of excavated soil samples identified TPH as gasoline @ 1670 ppm and 390 ppm.

DET-117 is notification of a soil aeration project at Exxon Service station #8907, 8808 Mountain Blvd., Oakland, circa 5/2/90

NAVHOSP OAKLAND

OIL/WATER SEPARATOR

LOCATION(S) General

PARCEL(S) 101,102,103,104,105,106,107,108,109,110,111,112,113,114,115,116,117,11

INFO TYPE OWS **REVIEWER INITIALS** DET **DATE OBTAINED** 11/27/93

REFERENCES DET-65

DETAILED LOCATION

APPLICABLE DATE All

DESCRIPTION (SIZE/FLOW/DISPOSITION) There are not, and were not, oil/water separators on site.

CHEMICAL INVENTORY

PARCEL(S)	LOCATION	CHEMICALS	MAXIMUM QUANTITIES STORED	USES	APPLICABLE YEAR	REFERENCES
101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 900						Z-BLANK
900, 145, 150, 152, 153, 111, 112	Sequoyah Country Club	Petroleum, acids, caustics, compressed gases and pool algacides	Unknown	Fuel, Pool maintenace	12/10/93	POY-46

Agency Information Consultants, Inc.
1708 Guadalupe, Austin, TX 78701 Tel (512) 478-8991 Fax (512)478-5215

GRID Map *PREMIUM*

Environmental Site Information Research Data

Subject Facility:

AIC #01-0020485

PROJECT # 2121.022

OAK KNOLL, CA

Submitted

10/13/93

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10/13/93

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EXPLANATION OF REPORT ELEMENTS

10/13/93

Agency Information Consultants, Inc.(AIC) is pleased to present the **GRID Map *PREMIUM*** report that you have requested. In order to facilitate your use of this report, please review the following features:

SUMMARY OF FINDINGS: An overview of the information found for the area of review.

This includes a list of the requested databases and summary information such as: the requested radius or search method, the date the information was received from the agency, the actual search method, and the number of sites found segmented by distance from the subject site.

The **'Actual Search Method'** identifies the way in which the data is provided. For example: 'County/HardCopy' means that the data is being provided for the entire county and is a copy of a printout acquired directly from the state or federal agency. 'Zip/City' means that all the data was provided for the selected zip code(s), and all records that have no zip code are provided for the city of the subject site. AIC conducts research to determine all the zip codes, cities, and/or counties within the area of review.

GRID Map *PREMIUM*: A computer generated map produced with the aid of Geographic Information System (GIS) technology. AIC employs an automated geocoding technique in conjunction with a hands-on technique where our staff will manually research all ungeocoded records by calling the sites and local resources, as well as triangulate from other map resources.

Plotted on the map are the facilities found within the requested radius. The subject site and each database are represented by different symbols which are defined in a legend. A scale indicator, the address of the subject site, a north arrow, and the radii searched are all items displayed on the map. Each facility is given a Map ID# which corresponds to information presented in the **Executive Summary** and the **detailed database reports.**

EXECUTIVE SUMMARY: A list of all facilities shown on the map.

This list is numerically ordered by Map ID# and includes information such as: Facility name, address and zip code, facility identification number, type of database, and a 'Flag' field. The 'Flag' field indicates the accuracy of the geocode as detailed below.
Three types of location indicators will appear in the 'Flag' field:

(1) When the facility address matches an address on the U.S. Census Bureau's TIGER Files, the **'Flag' field will be blank.** These facilities are considered to be 'Geocoded by GIS'. Over 90% of these records will geocode within 200 feet of the correct location.

(2) When AIC has verified the facility location through map and/or phone research, the record will have a **'V' in the 'Flag' field.** AIC has used various resources to determine the correct physical location based on the facility's address. Ninety-eight percent of these records will be placed within a block of their actual physical location.

(3) Those facilities whose physical location could not be determined through AIC's map and phone research. These facilities are designated with a **'?' in the 'MAP ID' field.**

EXPLANATION OF REPORT ELEMENTS

10/13/93

APPENDIX: In the Appendix, each record is **sorted alphabetically by the street name and number.** The street sort enables our clients to quickly find all the facilities located on a single street. The facilities presented on this list are **those facilities that have been determined to be outside the requested radius** after AIC staff has conducted map and phone research.

When the Zip Code column contains letters instead of a zip code, the letters represent the first five letters of the city or county name and designate that the record does not contain a zip code. AIC provides this information to reduce the possibility of missing facilities with blank 99999, or 00000 zip codes.

AIC provides the Appendix to further protect our clients liability. This information enables clients to:

(1) Verify that the facilities outside the radius do not have the potential to affect the subject site.

(2) Examine all data that AIC reviewed during the mapping and phone research process.

(3) Provide proof of due diligence. AIC has provided and reviewed all requested information.

DETAILED DATABASE REPORTS: Various reports detailing database information on each of the facilities found.

Each report is preceded by a cover sheet which includes a description of the database as well as citation information such as: Agency, Subdivision of the Agency, AIC's standard name for the database, and the Agency's name for the database in quotes.

Following the cover sheet are the **Report Element Dictionaries** which describe each field of information provided in the database reports.

Should you need assistance interpreting your report, please do not hesitate to contact AIC's Customer Service Department or your Account Manager at (512) 478-8991.

DISCLAIMER

10/13/93

Scope. The following conditions apply to the services that Agency Information Consultants(AIC) provide to a urchaser. By placing an order with AIC, the purchaser agrees to the following:

AIC Services. AIC provides reports from various state and federal files and records regarding real property and facilities. AIC will utilize its resources, consistent with the level of care expected in standard business practice, to provide quality information services, to consistently maintain and update its databases and to deliver reports in a timely manner. AIC, however, is not responsible for any delays, inaccuracies, costs or damages due to software or equipment malfunction, or any errors, incorrect, out-of-date, and/or incomplete information received from AIC's resources, including, but not limited to: Maps, Zip Codes(old & new), State Databases, Federal Databases, Postal Codes, and information received from a variety of public and private resources.

Limitation of Liability. The liability, if any, of AIC for direct damages, whether arising from AIC's negligence, strict liability or other tort, or otherwise with respect to services, or other items, is limited to an amount which shall not exceed the price of the particular services or items giving rise to the liability. In no event shall AIC be liable for any incidental, consequential, or special damages, including without limitation, lost revenue or lost profits, even if AIC has been advised of the possibility that lost revenues or lost profits may occur.

Limitations and Acknowledgements. The purchaser should be aware that government information sources and/or AIC may not include information on **all** environmental hazards, or on **all** sites which include environmental hazards, and that government sources may be inaccurate or incomplete. These government sources include both the base map and the environmental databases. AIC researches and corrects both sources listed above in order to provide an improved product but in so doing, AIC is not liable for any errors, omissions, or damages incurred. Purchaser also recognizes that AIC's services are not a substitute for a thorough environmental risk audit performed by a qualified environmental professional.

All data obtained from AIC shall be furnished for the exclusive use of the original purchaser in investigating the subject company and/or property as identified in the inquiry or order form. Purchaser may deliver an AIC report to an additional user who is identified as a client of the purchaser it being agreed, however, that:

(i) Only the **complete** AIC report may be so delivered to the additional user;
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(v) All copyright rights are reserved to AIC.
(vi) The use of the AIC report and the information contained within is restricted to a one-time use for the project specified on the order form; any unauthorized secondary use is strictly prohibited without prior written consent of AIC.

GRID Map - *PREMIUM*

Production of this map utilizes GIS in conjunction with manual research to provide the most complete map available nationwide. AIC conducts map and phone research to locate those facilities which are not mapped using the GIS geocoding technique.

GIS Geocoding - The digital base maps used by the GIS software were created by the U.S. Census Bureau and are known as the TIGER/Line Files (Topologically Integrated Geographic Encoding and Referencing system). The address ranges plotted by the Census Bureau have not been site verified or physically inspected by AIC. Unavoidable inaccuracies may result in addresses being placed one or several blocks from their actual physical location. AIC plots all sites as correctly as possible within the limitations of available resources and technology. Phone interviews are conducted to verify as many addresses as possible; the accuracy of the resulting plots depends on the quality of information derived from our sources. Therefore, AIC cannot re-plot sites after a corrected location is determined by our clients' actual site visits.

10/13/93

SUMMARY OF FINDINGS

for

PROJECT # 2121.022
OAK KNOLL, CA

The following was/were searched for your area of review:

1/4 Mile Radius: 94605, 94619

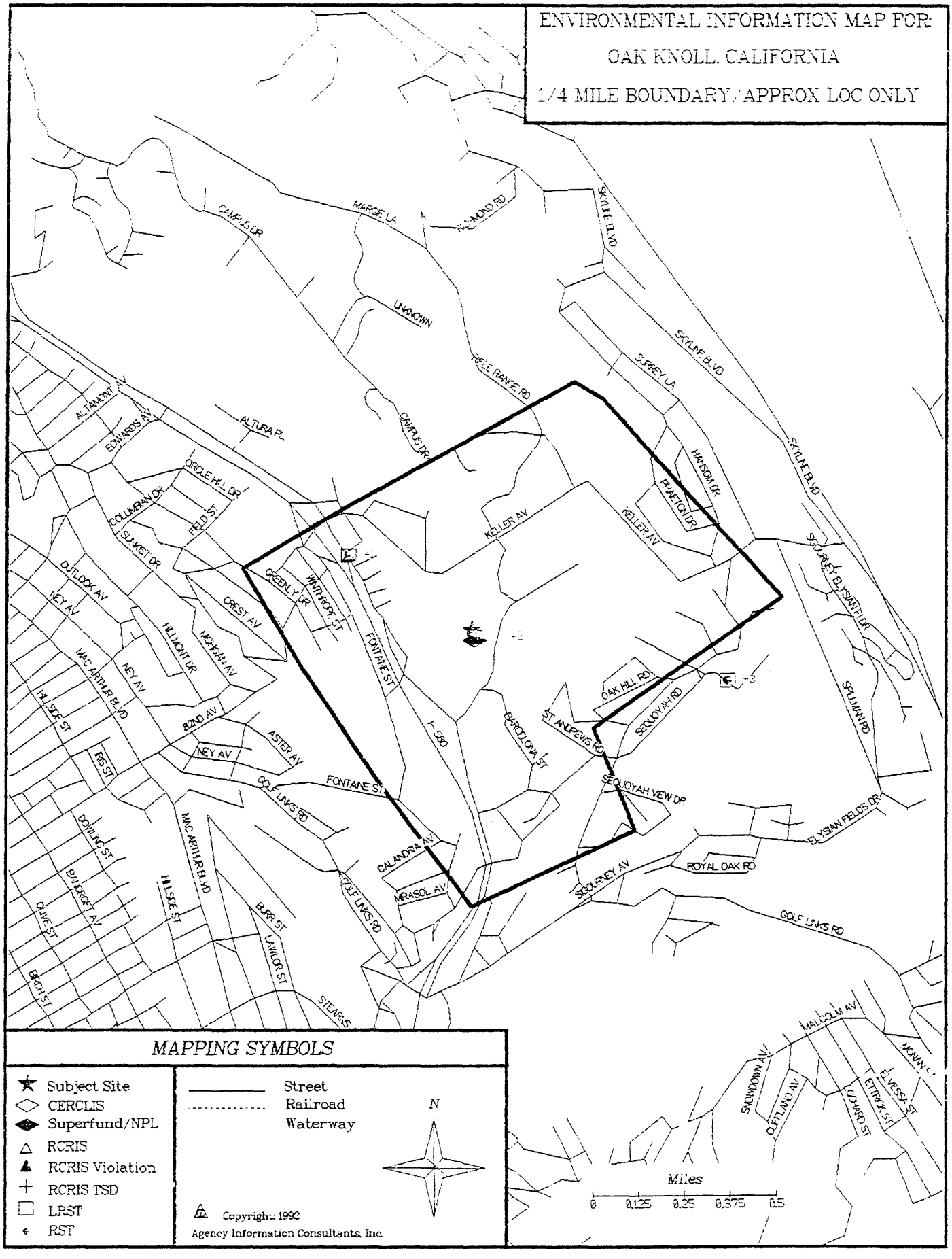
DATABASE	RADIUS REQUESTED	RECEIVED DATE OF DATA BY AIC*	ACTUAL SEARCH METHOD	# SITES FOUND	APPROX. DIST. FROM SITE, MILES 0-1/8	1/8-1/4	1/4-1/2	1/2-1	>1
CERCLIS	1/4	06/17/93	MAP	1	0	0	1	0	0
SUPERFUND	1/4	04/29/93	MAP	1	0	0	1	0	0
NPL	1/4	06/03/93	MAP	0	0	0	0	0	0
RCRIS	1/4	09/02/92	MAP	2	0	0	2	0	0
TSD	1/4	09/02/92	MAP	0	0	0	0	0	0
RCEVAL	1/4	09/02/92	MAP	0					
RCVIOL	1/4	09/02/92	MAP	0					
RST	1/4	/ /	MAP	3	0	0	2	1	0
LRST	1/4	07/09/93	MAP	3	0	0	2	1	0
ERNS	1/4	01/01/93	ZIP/CITY	367					
LANDFILLS	1/4	03/12/93	CITY/COUNTY	1					

*** AIC believes that it performs all appropriate inquiries to obtain the most current information from each of the applicable databases consistent with or exceeding good customary or commercial practice.**

EXECUTIVE SUMMARY

Facilities Found Within The Area of Review

MAP ID	FACILITY ID	TYPE	FACILITY NAME	FACILITY ADDRESS	ZIP CD	FLAG
1	CA01-0601 (R2)	LRST	EXXON	8008 MOUNTAIN BLVD	94605	
1	CAD981411564	RCRIS	EXXON SVC STA #7 8907	8008 MOUNTAIN BLVD SHONE	94605	
1	CAEXXON8008 OAK0	RST	EXXON SERVICE STATION	8008 MOUNTAIN BLVD	94605	
2	CA0170027254	CERCLIS	OAKLAND NAVAL REGIONAL MEDICAL	8750 MOUNTAIN BLVD	94605	
2	CA01-1034 (R2)	LRST	NAVAL HOSPITAL	8750 MOUNTAIN BLVD	94605	
2	CA0170027254	RCRIS	OAKLAND NAVAL REGIONAL MEDICAL	8750 MOUNTAIN BLVD	94605	
2	CANAVAL8750 OAK6	RST	NAVAL HOSPITAL	8750 MOUNTAIN BLVD	94605	
2	CA01970003	SSF	NAVAL REGIONAL MEDICAL CENTER,	8750 MOUNTAIN BLVD	94605	
3	CA01-1320 (R2)	LRST	SEQUOYAH COUNTRY CLUB	4550 HEAFEY RD	94605	
3	CASEQUO4550 OAK2	RST	SEQUOYAH COUNTRY CLUB	4550 HEAFEY RD	94605	
?	CA01-1405 (R2)	LRST	SOUTHERN PACIFIC	PRIVATE RD	OAKLA	


ENVIRONMENTAL INFORMATION MAP FOR:
OAK KNOLL, CALIFORNIA
1/4 MILE BOUNDARY/APPROX LOC ONLY
MAPPING SYMBOLS
Subject Site
CERCLIS
Superfund/NPL
RCRIS
RCRIS Violation
RCRIS TSD
LRST
RST
Street
Railroad
Waterway
N
Copyright: 1992
Agency Information Consultants, Inc.
Miles
0
0.125
0.25
0.375
0.5
MARGIE LA
RICHMOND RD
CAMPUS DR
SKYLINE BLVD
UNKNOWN
RIFLE RANGE RD
SURREY LA
ALTAMONT AV
EDWARDS AV
ALTURA PL
CIRCLE HILL DR
COLUMBIAN DR
FIELD ST
SUNKIST DR
HANSOM DR
PHAETON DR
KELLER AV
SIGOURNEY ELYSIAN FI DR
OUTLOOK AV
NEY AV
GREENLY DR
WINTHROPE ST
CREST AV
HILLMONT DR
MICHIGAN AV
FONTANE ST
MAC ARTHUR BLVD
HILLSIDE ST
82ND AV
ASTER AV
IRIS ST
I-580
BARCELONA ST
OAK HILL RD
SEQUOYAH RD
ST ANDREWS RD
SPILLMAN RD
SEQUOYAH VIEW DR
GOLF LINKS RD
ELYSIAN FIELDS DR
DOWLING ST
CALANDRA AV
MIRASOL AV
ROYAL OAK RD
SIGOURNEY AV
BANCROFT AV
OLIVE ST
BURR ST
LAWLOR ST
BIRCH ST
STEARNS
MALCOLM AV
SNOWDOWN AV
CLIFTLAND AV
LOCHARD ST
ETTRICK ST
ELVESSA ST
MONAN ST

ESA PHONE LOG

AIC#: 20485
Initials: MD
Date: 10/13/93

FACILITY NAME	PHONE NUMBER	COMMENT	DBASE
Southern Pacific	(510) 891-7688	Could not locate w/out additional information to insure which company this refers to. (Southern Pacific Rail? Southern Pacific Transportation?)	LRST

10/13/93

U.S. ENVIRONMENTAL PROTECTION AGENCY

CERCLIS Facilities

The Comprehensive Environmental Response, Compensation and Liability Information System(CERCLIS) is a compilation of records regarding those facilities which the EPA has identified as having actual or suspected uncontrolled releases of hazardous substances, contaminants, or pollutants as reported by states, municipalities, private companies, and private citizens. Each incident undergoes a series of events that determine the severity of the contamination from discovery and preliminary assessment to site inspection and possibly the hazard ranking system which will determine whether or not the site will be considered for inclusion on the NPL(National Priorities List).

CERCLIS

REPORT ELEMENT DICTIONARY

NOTE: Blank fields may be interpreted in three different ways.

1. No information is available
2. The field has no application to the particular site
3. No definite attribute has been determined to date

DESCRIPTION

A textual description of the site or incident characteristics not captured in other data elements.

PHYSICAL CLASSIFICATION

Also known as the site incident category. The overall physical classification of the site or incident.

' ' = Blank
'A' = Abandoned
'B' = Chemical Plant
'C' = City Contamination
'D' = Dioxin
'F' = Federal Facility
'G' = Groundwater
'H' = Housing Area/Farm
'I' = Industrial Waste Treatment
'J' = Inorganic Waste
'L' = Landfill
'M' = Manufacturing Plant
'N' = Military Related
'O' = Other
'P' = Pure Lagoons
'R' = Radioactive Site
'T' = Mines/Tailings
'V' = Waterways/Creeks/Rivers
'W' = Wells

FEDERAL FACILITY DOCKET INDICATOR

A flag that indicates whether or not the facility is one of the 836 sites that were contained on the original "Federal Facilities Hazardous Waste Compliance Docket".

T = This facility is on the Federal Facilities Docket
F = This facility is not on the Federal Facilities Docket

This field used to be called the "Further Action Flag", but has been changed by the EPA since the information would show that there was no further action at the facility when this had not been determined yet, it was just inactive. This was confusing and misleading causing incorrect decisions to be made.

NATIONAL PRIORITIES LIST INDICATOR

Code which categorizes a site's NPL status for statistical analysis and reporting purposes.

' ' = Blank
'D' = Deleted from the final NPL.
'F' = Currently on the Final NPL.
'N' = Not on the NPL.
'O' = Not a valid site or incident.
'P' = Proposed from proposed NPL.
'R' = Removed from the proposed NPL.
'S' = Pre-proposal site(has scap plan remedial activities).

INCIDENT TYPE

The classification of an incident (not previously identified as a CERCLIS site) requiring a removal action as either an oil spill or non-oil spill.

REPORT ELEMENT DICTIONARY

RCRA FACILITY FLAG

Designates whether a site or incident is associated with a RCRA facility.

Y	=	Yes this is a RCRA facility as well as a CERCLIS facility.
E	=	This facility is undergoing an assessment through the Environmental Priority Initiative. This process is for closing or closed facilities that require an assessment under RCRA regulations but to be funded under Superfund.

EVENT TYPE

A code for a specific response, non-response, or support event within the pre-remedial, remedial, removal, or community relations components of the Superfund program.

MAP ID#2

EPA ID: CA0170027254
City: OAKLAND
County: ALAMEDA
Name: OAKLAND NAVAL REGIONAL MEDICAL CTR
Address: 8750 MOUNTAIN BLVD
ZIP: 94605-4500

Description

Attribute Information	Code	Explanation of Code	Started	Completed	Status
Physical Classification of the Site					
Federal Facility Docket Indicator	T	On Federal Facilities Docket			
National Priorites List (Superfund) Indicator	N	Not on the NPL			
Incident Type (Oil or Non-Oil Spill)					
RCRIS Facility Indicator					
Events that have occurred at the Facility	DS	Discovery		08-01-80	
	PA	Preliminary Assessment		10-01-91	NFA

10/13/93

CALIFORNIA
Environmental Protection Agency
Department of Toxic Substance Control

State Superfund

"List of Active Annual Workplan Sites(CALSITES)"

FACILITY INFORMATION

Map ID# 2

EPA ID:
Site ID: CA01970003
Agency: STATE
HRS Score:
Location:

Site Name: NAVAL REGIONAL MEDICAL CENTER, BLDG 5
Address: 8750 MOUNTAIN BLVD
City, State, Zip: OAKLAND, CA 94605-4500
County, Region: ALAMEDA

Type of Facility:
Status: Ceritified (site Has Been Remediated)
Source Database: CALSITES

Years Operated:
Project Manager:

Owner Name:
Address:

City, State, Zip: ,
Contact Phone:

Contaminants:
Contaminated Media:
Source of Contamination:

10/13/93

U.S. ENVIRONMENTAL PROTECTION AGENCY

National Priority List

The NPL, or Federal Superfund as it is commonly known, is composed of the nation's most hazardous sites which require remediation. This list is created from the CERCLIS database and lists over 1150 sites nationwide. After a facility has been identified as a CERCLIS site, the EPA conducts and assessment of the property. The degree of contamination found determines whether the site is placed on the NPL or is referred to the state for further action under state programs(see State Superfund).

NO SITES FOUND WITHIN AREA OF REVIEW

10/13/93

U.S. ENVIRONMENTAL PROTECTION AGENCY

RCRIS Facilities

The Resource Conservation Recovery Information System(RCRIS) is a nationwide database created to maintain and regulate facilities that handle hazardous waste. The RCRIS database replaced the HWDMS (Hazardous Waste Data Management System) in September of 1992 as the major system supporting the implementation of RCRA(Resource Conservation and Recovery Act)

RCRIS Notifiers

REPORT ELEMENT DICTIONARY

GENERATOR FACILITY

Small Quantity Generator	Handlers which generate more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulate less than 6000 kg of hazardous waste at any time, or generate less than 100 kg of hazardous waste during any calendar month, and accumulate more than 1000 kg of hazardous waste at any one time.
Large Quantity Generator	Handlers which generate 1000 kg or more of hazardous waste during any calendar month, or generate more than 1 kg of acutely hazardous waste during any calendar month.
Conditionally Exempt Small Quantity Generator	Handlers which generate 100 or less kg of hazardous waste per calendar month, and accumulate less than 1000 kg of hazardous waste at any time.

TRANSPORTER FACILITY

Code which indicates the facility engages in off-site transportation of hazardous waste by air, rail, highway and/or water.

TREATMENT/STORAGE/DISPOSAL FACILITY (TSDF)

Code which indicates the facility engages in the treatment, storage, and/or disposal of hazardous waste.

UNDERGROUND INJECTION CONTROL FACILITY

Code which indicates the facility generates &/or treats, stores, or disposes of hazardous waste and has an injection well located at the installation.

BURNER/BLENDER INDICATOR

Code indicating that the handler is engaged in the burning &/or blending of hazardous waste.

OFF-SITE WASTE RECEIPT

Code indicating that the handler currently accepts hazardous waste from another site.

SIC CODE(S)

A code, or codes, that identifies the activities of a facility.

TYPE OF LAND

Code indicating current ownership status of the land on which the facility is located.

RECEIPT DATE

Date notification form was received from the facility by the appropriate authority.

EXISTENCE DATE

Date the facility commenced operation or construction, or date operation is expected to begin.

REGULATORY STATUS

Indicates whether a Generator, Transporter, TSD, &/or, a Burner/Blender is regulated under the authority of the federal RCRA program.

RCRA Regulated	**Pending**
Regulated under another ID Number	**Not regulated**

RCRIS Notifiers

REPORT ELEMENT DICTIONARY

NON-REGULATED STATUS

Indicates the reason that a Generator, Transporter, TSD, &/or a Burner/Blender is not subject to the controls under the federal RCRA program or is subject to such controls on a periodic basis.

WASTE DESCRIPTION

Identifies a hazardous waste or properties of a hazardous waste associated with the handler.

WASTE AMOUNT

The amount of a specific waste estimated to be handled annually by the handler.

WASTE PROCESS

Specifies the type of process used by the facility.

For Example:	Container	Tank	Waste Pile
	Surface Impoundment	Drip Pad	Injection Well
	Landfill	Ocean Disposal	Land Treatment
	Incinerator		

RCRIS Evaluations/Violations

REPORT ELEMENT DICTIONARY

SEQ. The specific sequence number of one, or several related events.

EVALUATIONS

TYPE OF EVALUATION

Compliance Evaluation Inspection(CEI)
: Primarily an on-site evaluation of the compliance status of the handler with regard to all applicable RCRA regulations and permits.

Compliance Evaluation Inspection Without Sampling(CES)
: Indicates that the CEI was conducted w/o sampling. (Used by implementers who conduct CEIs through two separate site visits; one to do sampling & the other to complete the remainder of the CEI).

Compliance(Groundwater) Monitoring Evaluation(CME)
: A detailed evaluation of the adequacy of the design and operation of a facility's groundwater monitoring system as per EPA's Final RCRA compliance Groundwater Monitoring Evaluation Guidance Document.

Compliance(Groundwater) Monitoring Evaluation Without Sampling(CMS)
: The CMS type of evaluation indicates that the CME was conducted w/o a substantial amount of sampling.

Financial Record Review(FRR)
: An extensive review of a handler's compliance with financial responsibility requirements.

Non-financial Record Review(NRR)
: An evaluation conducted in the Agency office involving a detailed review of non-financial records.

Operation and Maintenance Inspection(OAM)
: A periodic inspection of how well a groundwater monitoring system continues to function once it is considered well designed. The inspection focuses on the condition of wells and sampling devices.

Compliance Schedule Evaluation(CSE)
: An on-site inspection or other re-evaluation conducted to verify compliance with enforcement actions resulting from a previous evaluation, or to review deficiencies noted in previous inspections.

Case Development Inspection(CDI)
: An intensive investigation intended to gather sufficient information to support an enforcement action.

Sampling Inspection(SPL)
: This is an evaluation type in which samples are collected for laboratory analysis. A sampling inspection will frequently be conducted in conjunction with the CES or CMS but occurs at a different time or by different personnel to stand on its own as a separate inspection.

Land-Ban Inspection(LBN)
: An inspection of land disposal restriction requirements.

Corrective Action On-Site
: An on-site inspection of Corrective Action activities.

Other Evaluation(OTH)
: Any type of evaluation other than those listed above.

EVALUATING AGENCY

Agency responsible for conducting the evaluation identified by the Evaluation Control Number.

EPA Personnel	**EPA Contractor**	
State	**State Contractor**	**Oversight by EPA**

10/13/93

RCRIS Evaluations/Violations

REPORT ELEMENT DICTIONARY

VIOLATIONS

AREA OF VIOLATION

Indicates the specific monitoring requirements area of a handler which is evaluated, and found to be in violation with RCRA regulations/statutes.

SCHEDULED RESPONSE DATE

Date by which the handler is to submit to the agency its documentation that the violation has been brought into compliance.

ACTUAL DATE RESOLVED

The date the agency determines that the handler demonstrated physical compliance.

PRIORITY INDICATOR

An indicator of the relative priority assigned to a violation or pending violation.

ENFORCEMENTS

TYPE OF ENFORCEMENT ACTION

Identifies the type of action being taken against a handler.

For Example:	**3008(a) Compliance Order**	**Verbal Informal**
	Written Informal	**Imminent Hazard Order**
	Series Informal Administrative Actions	

DATE OF ACTION

The date a RCRA related enforcement action was initiated against a facility.

PENALTY ASSESSED

Dollar amount of any penalty assessed against the handler in a RCRA enforcement action by EPA or a state equivalent formal enforcement action.

PAYMENT AMOUNT

The dollar amount of any settlement agreed to between the responsible agency and the hazardous waste handler.

NOTE: When RCRIS Evaluations and Violations are presented on the Executive Summary(Mapped Reports Only), they will not have a 'Z' in the 'Flag' field. Only the associated RCRIS record will contain a 'Z'. Therefore, always check the associated RCRIC record to see if it has a 'Z' in the 'Flag' field.

NOTE: Blank fields may be interpreted in one of three ways.

1. No information is available
2. The field has no application to the particular site
3. No definite attribute has been determined to date

FACILITY INFORMATION

Map ID# 1

EPA ID: CAD981411564 **Name:** EXXON SVC STA #7 8907
City Zip: OAKLAND, 94605--3709 **Address:** 8008 MOUNTAIN BLVD SHONE
County: ALAMEDA **Contact:** ENVIRONMENTAL MANAGER / (415)945-1966

Activity Indicators	Definition of Activity
Generator Indicator	Conditionally Exempt Small Quantity Generator
Transporter Indicator	UNVERIFIED
TSD Indicator	Not a TSD facility, UNVERIFIED
UIC indicator	No activity
Burner/Blender Indicator	UNVERIFIED
Off-Site Waste Receipt	
SIC Code(s)	
Type of Land	Facility is not located on Indian Land. Additional information is not known

	Regulatory Status	Non-Regulated Status
Receipt Date	May 13, 1986	
Generator	RCRA Regulated	
Transporter		
TSD		
Burner/Blender		Undefined at this time.

Waste Description	Amount	Process	Waste Description	Amount	Process

Map ID# 2

EPA ID: CA0170027254 **Name:** OAKLAND NAVAL REGIONAL MEDICAL CENTER
City Zip: OAKLAND, 94605--4500 **Address:** 8750 MOUNTAIN BLVD
County: ALAMEDA **Contact:** ENVIRONMENTAL MANAGER / (415)639-2597

Activity Indicators	Definition of Activity
Generator Indicator	Large Quantity Generator
Transporter Indicator	UNVERIFIED
TSD Indicator	Not a TSD facility, UNVERIFIED
UIC Indicator	No activity
Burner/Blender Indicator	UNVERIFIED
Off-Site Waste Receipt	
SIC Code(s)	
Type of Land	Facility is not located on Indian Land. Additional information is not known

	Regulatory Status	Non-Regulated Status
Receipt Date	August 15, 1980	
Generator	RCRA Regulated	
Transporter		
TSD		
Burner/Blender		Undefined at this time.

Waste Description	Amount	Process	Waste Description	Amount	Process

10/13/93

CALIFORNIA
State Water Resources Control Board

Registered Storage Tanks

REGISTERED STORAGE TANKS

REPORT ELEMENT DICTIONARY

Registered Storage Tank (RST) databases vary considerably in content from state to state. In approximately one-fourth of the RST databases, no tank detail information (as listed below) is provided by the state agencies. Therefore, if the message "NO TANK INFORMATION" is displayed on the print-out, the information is not available in the state agency's database. Blank fields of information also indicate that the data is not available in the state agency's database.

TANK NUMBER
Each tank's specific identification number. (In a few states, no tank number is assigned, but the total number of tanks at the facility is provided. In these cases, AIC provides the total number of tanks at the facility in this field.)

INSTALL DATE
Date the tank was installed.

AGE
Number of years the tank has been in use.

CLOSE DATE
Date the tank was removed from use.

STATUS
Indicator of the current operational status of the facility. This can vary from "In Use" to "Permanently Out-of-Use".

CONTENTS
Type of substance stored within a tank. (Examples are: Diesel, Leaded Gasoline, Kerosene, Fuel Oil #1,2 or 4)

CAPACITY
Amount a tank will hold. (Unit indicators vary.)

MATERIAL OF CONSTRUCTION
Material used to construct the tank. (Examples are: Steel, FRP=Fiberglass, Concrete)

LOCATION
Location of the registered tank. (Examples are: Underground, 10% underground, resting on the ground, or aboveground)

NOTE: Information provided by a state agency is not always entirely accurate. For example, when a RST is found, its corresponding LRST (if there is one) may not be found or may have a different address and/or identification number.

Registered Storage Tanks

FACILITY INFORMATION

Map ID: 1
Facility ID: CAEXXON8008 OAK04|1
City: OAKLAND
County: ALAMEDA
Contact:

Name: EXXON SERVICE STATION
Address: 8008 MOUNTAIN BLVD
Zip: 94605-3709
Phone: (415) 636-0471

Owner ID:
City, State: ,
Zip:
Contact:

Owner Name: ** NOT AVAILABLE ***
Owner Address:
Phone:

Tank #	Install Date	Age	Close Date	Status	Contents	Capacity	Material of Construction	Location
NO TANK INFORMATION								

Map ID: 2
Facility ID: CANAVAL8750 OAK63|1
City: OAKLAND
County: ALAMEDA
Contact:

Name: NAVAL HOSPITAL
Address: 8750 MOUNTAIN BLVD
Zip: 94605-4500
Phone: (415) 633-6300

Owner ID:
City, State: ,
Zip:
Contact:

Owner Name: ** NOT AVAILABLE ***
Owner Address:
Phone:

Tank #	Install Date	Age	Close Date	Status	Contents	Capacity	Material of Construction	Location
NO TANK INFORMATION								

Map ID: 3
Facility ID: CASEQUO4550 OAK29|1
City: OAKLAND
County: ALAMEDA
Contact:

Name: SEQUOYAH COUNTRY CLUB
Address: 4550 HEAFEY RD
Zip: 94605-4627
Phone: (415) 632-2900

Owner ID:
City, State: ,
Zip:
Contact:

Owner Name: ** NOT AVAILABLE ***
Owner Address:
Phone:

Tank #	Install Date	Age	Close Date	Status	Contents	Capacity	Material of Construction	Location
NO TANK INFORMATION								

10/13/93

CALIFORNIA
Regional Water Resources Control Board

Leaking Registered Storage Tanks

LEAKING REGISTERED STORAGE TANKS

REPORT ELEMENT DICTIONARY

The Leaking Registered Storage Tank (LRST) databases vary considerably in content from state to state. Very often, a state will provide only the name and location of the facility; others will provide information for each of the fields below. Blank fields of information indicate that the data is not available in that state agency's database.

PRP (POTENTIALLY RESPONSIBLE PARTY) INFORMATION
Name, address, contact, and phone number of the party responsible.

DISCOVERY DATE
Date the leak was found or reported.

SCORE
Number assigned to the leak that classifies it according to degree of contamination.

RANK
Number assigned to the leak that ranks it among all other leaks in the state based on the degree of contamination.

STATUS
Current status of remediation; describes processes completed or scheduled to be completed.

PRIORITY
Extent of contamination; outlines media affected and required remedial procedure.

CAUSE
Reason for leakage.

AMOUNT
Leakage amount in gallons.

MATERIAL
Type of substance that leaked from the tank.

REMARKS
Varying information depending on state database used.

COMMON ACRONYMS

CAD	Corrective Action Directive
RAP	Remedial Action Plan
PRP	Potentially Responsible Party

NOTE: Not every LRST has an associated RST. Following are explanations of this inconsistency in the state data: 1) the RST may have been registered under a different name, address, city, county, or zip code; 2) the RST may not exist in the database, and/or 3) the RST may not have been registered.

FACILITY INFORMATION

MAP ID: 1

LRST ID: CA01-0601 (R2)
City: OAKLAND
County: ALAMEDA

Name: EXXON
Address: 8008 MOUNTAIN BLVD
ZIP: 94605-3709

PRP INFORMATION
Possible Responsible Party

Discovery Date: Score: Rank:
Status:
Priority:
Cause:
Amount:
Material:
Outcome:
Remarks:

MAP ID: 2

LRST ID: CA01-1034 (R2)
City: OAKLAND
County: ALAMEDA

Name: NAVAL HOSPITAL
Address: 8750 MOUNTAIN BLVD
ZIP: 94605-4500

PRP INFORMATION
Possible Responsible Party

Discovery Date: Score: Rank:
Status:
Priority:
Cause:
Amount:
Material:
Outcome:
Remarks:

MAP ID: 3

LRST ID: CA01-1320 (R2)
City: OAKLAND
County: ALAMEDA

Name: SEQUOYAH COUNTRY CLUB
Address: 4550 HEAFEY RD
ZIP: 94605-4627

PRP INFORMATION
Possible Responsible Party

Discovery Date: Score: Rank:
Status:
Priority:
Cause:
Amount:
Material:
Outcome:
Remarks:

APPENDIX C

SITE PHOTOGRAPHS



Photograph 1 – View of former Hospital Building 500-Parcel 137.



Photograph 2 – View of Parcel 136.



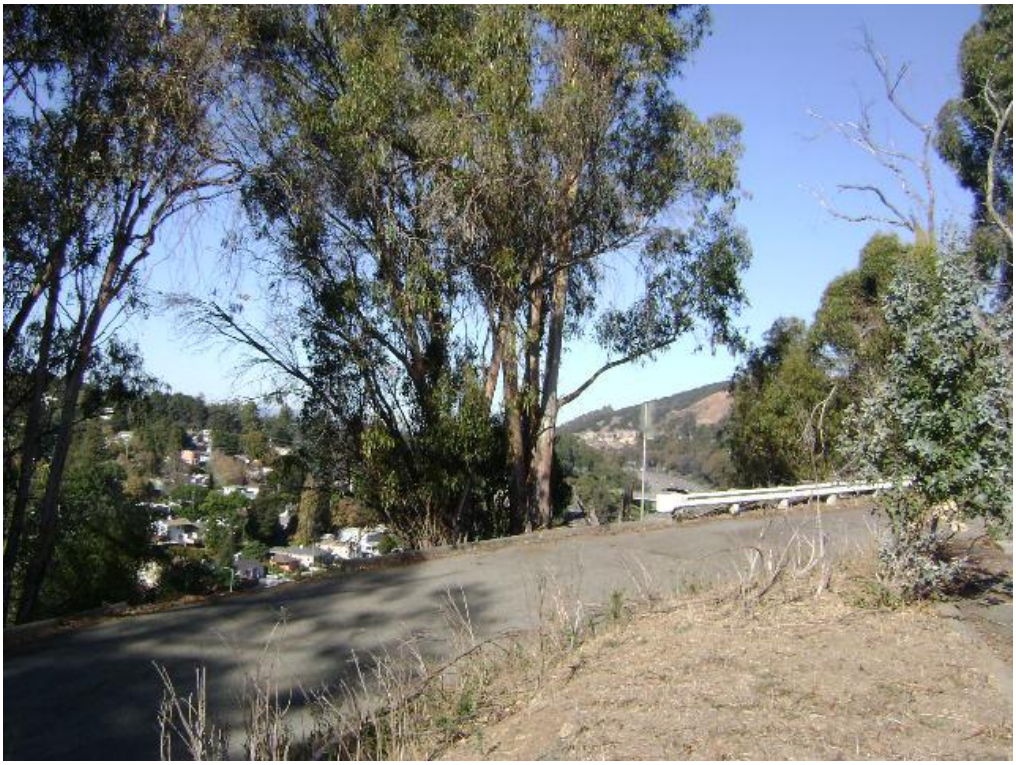
Photograph 3 – View of Rifle Range Creek near Parcels 135 and 136.



Photograph 4 – View of empty lot near Parcel 104.



Photograph 5 – View of Parcel 102.



Photograph 6 – View looking north at north edge of Site from Parcel 102.



Photograph 7 – View looking south from Parcel 102 at former helipad on the Seneca Property.



Photograph 8 – View looking south at Seneca Property (Parcel 122; Building 69).



Photograph 9 – View looking west at Seawest Credit Union (Parcel 128).



Photograph 10 – View of concrete pad (Parcel 105; Building 216).



Photograph 11 – View looking north at former Keller Avenue entrance.



Photograph 12 – View looking south from former Keller Avenue entrance.



Photograph 13 – View looking north at northern Site boundary and Rifle Range Creek.



Photograph 14 – View looking west across Parcel 114 (former incinerator; left) and Parcel 110.



Photograph 15 – View looking northeast from Parcel 114 toward Parcel 116.



Photograph 16– View looking east at San Leandro Tunnel (Parcel 118).



Photograph 17 – View looking west from Parcel 138 across Parcel 137 (former Hospital Building 500).



Photograph 18 – View of former building foundation (Parcel 140).



Photograph 19 – View looking west across the Site from the eastern Site boundary (Parcel 118).



Photograph 20 – View looking southwest across the Site from the eastern Site boundary (Parcel 118).



Photograph 21 – View looking northeast at adjacent residential neighborhoods from Parcel 118.



Photograph 22 – View of outdoor fireplace (Parcel 115).



Photograph 23 – View of former building foundation-Parcel 144.



Photograph 24 – View looking west across parcels 152, 154 and 155.



Photograph 25 – View of former service station area on Parcel 151 (Building 214).



Photograph 26 – View looking south at discarded 55-gallon drums and former Building 107 concrete pad.



Photograph 27 – View looking southeast along Barcelona Street residential foundations – City of Oakland Parcel.



Photograph 28 – View looking at Club Oak Knoll Building-Parcel 162.



Photograph 29 – View looking southwest across Parcel 161 meadow.



Photograph 30 – View looking southwest at southwest corner of Site and Parcel 113.



Photograph 31 – View looking south across Parcel 159.



Photograph 32 – View looking north across Parcel 159.



Photograph 33 – View of former fuel island (center) and USTs (left) on Parcel 159 (Building 141).



Photograph 34 - View of Parcel 132.



Photograph 35 – View of Site Entrance from Mountain Boulevard.

APPENDIX D

INTERVIEW DOCUMENTATION

WEST
Environmental Services & Technology
711 Grand Avenue, Suite 220
San Rafael, California 94901
415.460.6770 • Fax 415.460.6771
main@westenvironmental.com

Name/Title of Individual Completing Questionnaire:	Eric Higuchi
Phone No./Email Address:	949 260 4672
Property Name:	Oak Knoll
Property Address:	8750 Mountain Blvd, Oakland, CA 94605

PHASE I ESA INTERVIEW QUESTIONNAIRE

Owner/Occupant/Site Manager Inquiry	Response: Yes	No	Unk
1a. Is the property used for industrial purposes? Specify:		X	
1b. Is any adjoining property used for industrial purposes? Specify:		X	
2a. Did you observe evidence or do you have any prior knowledge that the property has been used for industrial purposes in the past? Specify:		X	
2b. Did you observe evidence or do you have any prior knowledge that any adjoining property has been used for industrial purposes in the past? Specify:			X
3a. Is the property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?			X
3b. Is any adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?		X	
4a. Did you observe evidence or do you have any prior knowledge that the property has been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?			X
4b. Did you observe evidence or do you have any prior knowledge that any adjoining property has been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?			X

PHASE I ESA INTERVIEW QUESTIONNAIRE

Owner/Occupant/Site Manager Inquiry	Response		
	Yes	No	Unk
5a. Are any damaged or discarded automotive or industrial batteries, pesticides, paints, or other chemicals in individual containers of greater than 5 gallons in volume or 50 gallons in the aggregate currently stored on or used at the property or at the facility?	X		X
5b. Did you observe evidence or do you have prior knowledge that any damaged or discarded automotive or industrial batteries, pesticides, paints, or other chemicals in individual containers of greater than 5 gallons in volume or 50 gallons in the aggregate have previously been stored on or used at the property or at the facility?			X
6a. Are any industrial drums (typically, 55 gallons) or sacks of chemicals currently located on the property or at the facility?			X
6b. Did you observe evidence or do you have prior knowledge that any industrial drums (typically, 55 gallons) or sacks of chemicals have previously been located on the property or at the facility?			X
7a. Did you observe evidence or do you have prior knowledge that fill dirt that originated from a contaminated site has been brought into the property?			X
7b. Did you observe evidence or do you have prior knowledge that fill dirt that is of an unknown origin has been brought into the property?			X
8a. Did you observe evidence or do you have prior knowledge that any pits, ponds, or lagoons in connection with waste treatment or waste disposal have previously been located on the property?		X	
8b. Are any pits, ponds, or lagoons in connection with waste treatment or waste disposal currently located on the property?		X	
9a. Is any stained soil currently on the property?			X
9b. Did you observe evidence or do you have prior knowledge that any stained soil has previously been on the property?		X	
10a. Are any registered or unregistered storage tanks (aboveground or underground) currently located on the property?			X
10b. Did you observe evidence or do you have prior knowledge that any registered or unregistered storage tanks (aboveground or underground) have previously been located on the property?			X

PHASE I ESA INTERVIEW QUESTIONNAIRE

Owner/Occupant/Site Manager Inquiry	Response		
	Yes	No	Unk
11a. Are any vent pipes, fill pipes or access ways indicating a fill pipe protruding from the ground currently located on the property or adjacent to any structure located on the property?			X
11b. Did you observe evidence or do you have prior knowledge that any vent pipes, fill pipes or access ways indicating a fill pipe protruding from the ground have previously been located on the property or adjacent to any structure located on the property?			X
12a. Are any flooring, drains, or walls that are stained by substances other than water or are emitting foul odors currently located within the facility?		X	
12b. Did you observe evidence or do you have prior knowledge that any flooring, drains, or walls that are stained by substances other than water or are emitting foul odors have previously been located within the facility?		X	
13a. If the property is served by a private well or nonpublic water system, is there evidence or do you have prior knowledge that contaminants have been identified in the well or system that exceed guidelines applicable to the water system?		X	
13b. If the property is served by a private well or nonpublic water system, is there evidence or do you have prior knowledge that that the well has been designated as contaminated by any government environmental or health agency?		X	
14. Does the owner or occupant of the property have any knowledge of environmental liens or governmental notification relating to past or recurrent violations of environmental laws with respect to the property or any facility located on the property?		X	
15a. Has the owner or occupant of the property been informed of the past existence of hazardous substances or petroleum products with respect to the property or any facility located on the property?	X		
15a. Has the owner or occupant of the property been informed of the current existence of hazardous substances or petroleum products with respect to the property or any facility located on the property?		X	
15c. Has the owner or occupant of the property been informed of the past existence of environmental violations with respect to the property or any facility located on the property?		?	X
15d. Has the owner of occupant of the property been informed of the current existence of environmental violations with respect to the property or any facility located on the property?		X	

PHASE I ESA INTERVIEW QUESTIONNAIRE

Owner/Occupant/Site Manager Inquiry	Response: Yes	No	Unk
16. Does the owner or occupant of the property have any knowledge of environmental site assessment of the property or facility that indicate the presence of hazardous substances or petroleum products on, or contamination of, the property or recommended further assessment of the property?	X		
17. Does the owner or occupant of the property know of any past, threatened or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substance or petroleum product involving the property?		X	
18a. Does the property discharge waste water on or adjacent to the property, other than stormwater into a stormwater system?		X	
18b. Does the property discharge waste water on or adjacent to the property, other than stormwater into a sanitary system?		X	
19. Did you observe evidence or do you have any prior knowledge that any hazardous substances or petroleum products, unidentified waste materials, tires, automotive or industrial batteries, or any other waste materials have been dumped above grade, buried, and/or buried on the property? Transformers	X		
20. Do any records exist indicating the presence of polychlorinated biphenyls (PCBs) for (a transformer,) capacitor, or any hydraulic equipment?	X		
21. Does the owner or occupant have any knowledge of any asbestos-containing materials or presumed asbestos-containing materials on any facility located on the property?	X		

Completed by (Signature)	Title	Date
[signature]	AVP	1/4/13

PHASE I
ENVIRONMENTAL SITE ASSESSMENT
Former Naval Medical Center Oakland
8750 Mountain Boulevard
Oakland, California

March 2014

Prepared for

LV Oak Knoll, LLC
c/o Lehman Brothers Holdings, Inc.
19800 MacArthur Boulevard, Suite 500
Irvine, California 92612

Prepared by

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SIGNATURE PAGE

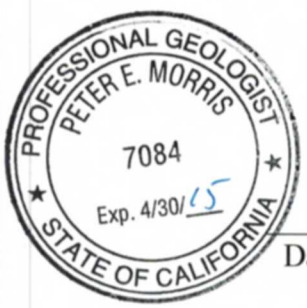
In conformance with 40 CFR 312, the undersigned "declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in § 312.10 of 40 CFR 312."

"We have the specific qualifications based on education, training and experience to assess a property of the nature, history and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312."



Peter M. Krasnoff
California Registered Civil Engineer (44031)

3/17/14
Date



Peter E. Morris
California Professional Geologist (7084)

3/17/14
Date

1.0 INTRODUCTION

West Environmental Services & Technology, Inc. (WEST), prepared this *Phase I Environmental Site Assessment* ("*Phase I ESA*") for the Former Department of the Navy's (DoN) Naval Medical Center Oakland (NMCO) located at 8750 Mountain Boulevard in Oakland, California ("the Site;" Figure 1-1). This *Phase I ESA* was conducted in accordance with: 1) the United States Environmental Protection Agency's (USEPA's) Chapter 40 Code of Federal (CFR) Regulations Part 312, S*tandards and Practices for All Appropriate Inquiry: Final Rule* (40 CFR 312); and 2) ASTM *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process E 1527-13* (ASTM E 1527).

1.1 PURPOSE

The objective of performing the *Phase I ESA* was to identify recognized environmental conditions (RECs) at the Site related to the previous ownership and uses of the Site and adjoining properties. RECs, as applied in the scope of this work, are the presence or likely presence of any hazardous substance or petroleum products in, on or at the Site: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.

1.2 DETAILED SCOPE-OF-SERVICES

The work followed the guidelines as outlined in 40 CFR 312 and ASTM E 1527, except as otherwise noted. Specifically, WEST performed the following activities:

- WEST obtained and reviewed reasonably ascertainable background data on the characteristics and previous uses of the Site. The work included reviewing selected historical aerial photographs, topographic maps, Sanborn Fire Insurance Maps and reasonably ascertainable data on the geology and hydrogeology of the Site and vicinity;

- WEST conducted a Site reconnaissance of accessible exterior portions of the grounds and performed a drive-by reconnaissance of the surrounding neighborhood;

- WEST conducted an interview with the Site owner representative to obtain information regarding the previous and current uses of the Site;

- WEST searched pertinent regulatory records concerning potential releases of hazardous materials at the Site and surrounding properties that may have impacted soil and/or groundwater quality. Representatives of appropriate regulatory agencies were contacted regarding regulatory records for the Site and surrounding area;

- The findings were evaluated to develop opinions regarding whether they represented recognized environmental conditions; and

- WEST performed a data gap analysis.

The scope of the *Phase I ESA* did include performing Phase II Environmental Site Assessment (Phase II ESA) sampling; however, did not include evaluations for possible natural hazards such as naturally occurring radon gas, methane gas or the potential for earthquake or flood damage.

1.3 LIMITATIONS AND EXCEPTIONS

The observations and conclusions presented in this report are professional opinions based on the activities conducted and the information obtained during the environmental assessment described herein. Opinions presented here apply only to the observed Site conditions existing at the time of the assessment and cannot necessarily apply to Site conditions or changes of which this office is not aware or has not had the opportunity to evaluate. Any conclusions drawn from this data rely on the integrity of the information available at the time of the investigation and an absolute determination of environmental risks cannot be made.

1.4 SPECIAL TERMS AND CONDITIONS

No special terms and conditions were indicated by the User for this *Phase I ESA*.

1.5 USER RELIANCE

The *Phase I ESA* report is for the exclusive use of the User and its designees. Use of this report by any other party shall be at such party's sole risk.

1.6 EXECUTIVE SUMMARY

We have prepared this *Phase I ESA* in conformance with the scope and limitations of ASTM E 1527. Any exceptions to, or deletions from, this practice are described in Section 8.0 of this report. This assessment revealed no evidence of current recognized environmental conditions in connection with the Site; except for those listed in Table 7-1. Consistent with 40 CFR 312 and ASTM E 1527, no data gaps of historical records were identified but additional investigations are recommended to evaluate the potential presence of petroleum products and/or hazardous substances. A summary of the *Phase I ESA* is presented below.

The approximately 167-acre sloping Site is located along Mountain Boulevard in Oakland, California. The Assessors Parcel Numbers (APNs) for the Site include: 043A-4675-003-21; 048-6865-002-03; and 048-6870-001-00.

In the 1920s, the Site was occupied by the Oak Knoll Golf and Country Club (Toxichem, 2007). In the 1940s, the DoN acquired the Site for construction and development of the NMCO for treatment of casualties during World War II. Following World War II, the NMCO expanded and decreased its footprint across the Site as a result of subsequent foreign wars. The NMCO was closed by the DoN in 1996 (Toxichem, 2007). Features at the Site during NMCO operation included: "H-shaped" wards; gasoline service stations; officer quarters; a 450,000-square-foot 500-plus bed hospital; incinerator; automobile repair facilities; helicopter pads; boiler plant;

underground fuel storage tanks (USTs); aboveground fuel storage tanks (ASTs); and storage areas for hazardous and radioactive materials and wastes. In the 1960s, several "H-shaped" wards were demolished for construction of the 500-plus bed hospital. Between 1970s and 1980s, additional "H-shaped buildings were demolished for construction of apartments. In 2007, the DoN auctioned the former NMCO for redevelopment. Between 2010 and 2011, the hospital and all remaining buildings; except for those associated with the Seneca Center, Seawest Credit Union and the former Club Oak Knoll; were demolished (EDR, 2013).

In the 1990s, several investigations were conducted at the Site by the DoN in preparation for closure. The Site was divided into approximately 63 parcels (Parcels 110 to 163). In 1994, the DoN completed their Environmental Baseline Study (EBS), which identified environmental conditions at the Site.

As part of the EBS, the DoN investigated 20 underground storage tanks (USTs) for potential releases of petroleum hydrocarbons. Based on the results of the DoN's investigations, the California Regional Water Quality Control Board – San Francisco Bay Region (Regional Water Board) and the Department of Toxic Substances Control (DTSC) provided closure of 18 USTs. Two of the USTs were not found (ERM-West, 1994).

The DoN also removed four aboveground storage tanks (ASTs). The Navy concluded that, "no notifications are required" and "no restrictions exist" with respect to the ASTs (FOST, 1999). However, soil sampling in the vicinity of an observed release near two of the ASTs revealed the presence of total petroleum hydrocarbons in soil below current regulatory screening criteria for commercial/industrial use, but above applicable screening criteria for residential use.

The DoN did not identify releases of volatile organics from hazardous materials storage and historical solvent use. However, the DoN also did not conduct sampling to confirm these Site conditions. In addition, changes in regulatory guidance since the DoN issued its *Finding of Suitability for Transfer* (FOST), indicates that soil gas sampling should be conducted to confirm the absence of volatile organic vapors in the subsurface (DTSC, 2004).

The DoN also investigated and conducted soil excavation to address lead in soil from historical use of lead-based paint (LBP). Based on the laboratory analysis of soil samples collected by the DoN, DTSC concluded that the presence of lead in soil on parcels designated for mixed-use did not pose an unacceptable risk to human health or the environment. However, the DoN has acknowledged that lead residues remain in soil at the Site and that soil sampling will be required following transfer. In addition, the USEPA noted that the LBP was an "unresolved agency comment" (FOST, 1999). In 2000, DTSC indicated to the DoN, that due to the change from the previous development plan to convey the property to the City of Oakland, DTSC required remedial actions and placed restrictions on the Site until the successor owner "fully investigates and remediates lead in soil pursuant to the NCP" (DTSC, 2000). In 2005, the DoN indicated to the DTSC, that "the property recipient will demolish all target housing structures, conduct soil sampling, and if necessary, remediation after demolition" (DoN, 2005).

The DoN conducted investigations to identify potential impacts to soil from: pesticide application; and storage of equipment containing polychlorinated biphenyls (PCBs). Based on the pesticide and PCB soil sampling, the DoN concluded that, "no notifications are required" and "no restrictions exist" with respect to pesticide application and PCBs (FOST, 1999). However, the DoN did not investigate soil beneath buildings where pesticides may have been applied and PCBs were detected in soil above current regulatory health-based screening criteria.

The DoN also conducted an evaluation of areas previously used for storage of radiological materials. Based on the results of the evaluation, the DoN concluded that, "no notifications are required" and "no restrictions exist" with respect to radiological materials (FOST, 1999).

In 1999, the DoN issued it *Finding of Suitability to Transfer* (FOST). The DoN concluded in the FOST, with concurrence from the Regional Water Board, DTSC and the United States Environmental Protection Agency (USEPA), that based on their evaluations the DoN has represented that "all remedial action necessary to protect human health and the environment with respect to any hazardous substance remaining on the Property has been taken before the date of transfer" (FOST, 1999).

A Phase I ESA conducted in 2007 identified 21 known and suspect RECs associated with historical Site operations (WEST, 2007). The known and suspect RECs included potential and historical releases associated with: former USTs and ASTs; lead in soil from lead-based paint; pesticides; hazardous waste and storage areas; former boiler house operations; former incinerator; former automobile repair facility; oil-filled electrical transformers; waste solvents from metal parts cleaning; diesel back-up generator; former laboratory facilities; motor oil spill; releases to Rifle Range and Power House Creeks; releases from the sanitary sewers; former water supply well operations; and observe discarded drums.

In January 2014, 18 soil samples were collected from 18 borings (W-1, W-2 and W-5 to W-20) as part of a Phase II ESA. The Phase II ESA was conducted to characterize current soil conditions near: the former ASTs (Parcels 110 and 153); former boiler house (Parcel 154); former incinerator (Parcel 114); motor oil spill (Parcel 125); an area of distressed vegetation (Parcel 145); and near observed discarded 55-gallon drums. The findings of the Phase II ESA characterized RECs associated with the presence of residual chemicals in soil above current applicable screening criteria near: the former ASTs (Parcel 153); boiler house (Parcel 154); former motor oil spill (Parcel 125); the area of distressed vegetation (Parcel 145); and near the discarded drums (Appendix E).

The Site development plan includes soil excavation and grading for construction of building pads, installation of and upgrades to Site infrastructure as well as geotechnical slope stability mitigation (Appendix A). Based on the identified known and suspect RECs and due to the potential to encounter soil, soil gas and groundwater containing residual chemicals above applicable screening criteria during Site development, actions should be taken to mitigate Site conditions (e.g., development of a Site Management Plan).

2.0 SITE DESCRIPTION

The approximately 167-acre Site is located east of Mountain Boulevard in Oakland, California and is composed of 63 DoN-designated parcels (Figure 2-1). The Site is located adjacent to a residential area east of Interstate 580 and Mountain Boulevard, south and west of Keller Avenue and north of Sequoyah Road in Oakland, California. Assessor's Parcel Numbers for the Site include: 043A-4675-003-21; 048-6865-002-03; and 048-6870-001-00.

The Site is currently a closed DoN facility. Since 2010, remaining structures on the Site have been demolished including the approximately 450,000-square-foot hospital and approximately 70 other residential and administrative buildings. The Site is currently unoccupied. The Seneca Center and Sea West Federal Credit Union are located on former portions of the Site (Figure 2-1).

Historical features at the Site during NMCO operation included: "H-shaped" wards; gasoline service stations; officer quarters; a 450,000-square-foot 500-plus bed hospital; incinerator; automobile repair facilities; helicopter pads; boiler plant; USTs; ASTs; and storage areas for hazardous and radioactive materials and wastes.

2.1 GEOLOGICAL AND HYDROGEOLOGICAL SETTING

The Site is located within the San Francisco Bay Region of the Coast Ranges Geomorphic Province. The Site subsurface geology consists of unconsolidated alluvial deposits and bedrock. The unconsolidated alluvium deposits are present as stream channel deposits composed of weathered bedrock, sands, silts and clays. Bedrock underlying the Site is composed of the Leona Rhyolite. The Leona Rhyolite is composed of a weathered zone containing loose rock fragments in a clay matrix (PRC, 1994). The weathered zone was observed in excavations at the Site up to approximately 30 feet thick. Underlying the weathered bedrock zone is competent bedrock composed of volcanic deposits of Rhyolite, volcanic glass and pyrite minerals (PRC, 1994).

The depth to groundwater measured in geotechnical borings advanced between 1957 and 1983 near the former Hospital building at the Site has ranged between 5-feet and 43 feet below ground surface (EIR, 1998). Groundwater flow direction has been estimated to the south-southeast following surface topography (PRC, 1994). Groundwater may be present within the unconsolidated alluvium and underlying bedrock, which are considered one hydrogeological unit.

2.2 SURFACE WATER

Rifle Range Creek transects the Site northeast to southwest and may intersect the groundwater table (Figure 2-1). Rifle Range Creek conveys surface water from the Site toward Mountain Boulevard. Power House Creek is located along the southern edge of the Site and is contained within a subsurface drainage structure. Power House Creek flows to Rifle Range Creek with the confluence near Parcel 160.

2.3 CURRENT USES OF ADJOINING PROPERTIES

The surrounding properties consist of residential neighborhoods to the north, east, south and west. Interstate Highway 580 is located approximately one-eighth of a mile to the west (Figure 2-1).

3.0 USER PROVIDED INFORMATION

WEST submitted a questionnaire to the User to assist in identifying the known recognized environmental conditions in connection with the Site.

3.1 TITLE RECORDS

At the time of this *Phase I ESA*, a preliminary title report was provided by the User for review as part of the *Phase I ESA*. A copy of the preliminary title report is included in Appendix A.

3.2 ENVIRONMENTAL LIENS OR ACTIVITY AND USE LIMITATIONS

The User provided a copy of the *Quitclaim Deed Former Naval Medical Center Oakland with Environmental Restrictions Pursuant to California Civil Code 1471* ("*Quitclaim Deed*") dated March 27, 2006 as part of the preliminary title report. The *Quitclaim Deed* provided notifications regarding environmental conditions at the Site including the presence of lead-based paint [LBP], asbestos and pesticides. The notifications identify that the property "may include improvements that are presumed to contain LBP [lead-based paint]" and that "interim use of these structures as residential real property or child occupied facilities prior to demolition is prohibited." The *Quitclaim Deed* indicates that the Grantee agrees to "conduct soil sampling and if, necessary remediation after demolition and removal of demolition debris and prior to occupancy."

The *Quitclaim Deed* identifies that "asbestos and asbestos containing material (ACM) have been found and are otherwise presumed to exist in buildings and structures located on the Property" and prohibits "occupancy and use of buildings and structures, or portions thereof, containing known asbestos or ACM hazardous prior to abatement."

Notification is also provided in the *Quitclaim Deed* that the Grantor "shall have no obligation under the covenants provided…for the removal or remediation of pesticides, either at the site of their application or if moved from that site for any purpose."

The *Quitclaim Deed* also identifies that "all remedial action necessary to protect human health and the environment with respect to any hazardous substance remaining on the Property has been taken before the date of transfer;" and that the "Grantor shall conduct any additional remedial actions found necessary after the date of the transfer for any hazardous substance existing on the Property prior to the date of this Deed."

An Environmental Lien Search Report was also obtained from Environmental Data Resources, Inc. (EDR) of Milford, Connecticut (EDR, 2013b). The Environmental Lien Search Report did not identify environmental liens or activity use limitations associated with the Site. Copies of the *Quitclaim Deed* and the EDR Environmental Lien Search Report are included in Appendix A.

3.3 SPECIALIZED KNOWLEDGE

The User indicated no specialized knowledge of the Site.

3.4 VALUATION REDUCTION FOR ENVIRONMENTAL ISSUES

The User indicated no environmental issues related to valuation reduction of the Site.

3.5 COMMONLY KNOWN OR REASONABLY ASCERTAINABLE SITE INFORMATION

The User indicated that there are past chemical uses, spills or environmental cleanups at the Site.

3.6 OWNER, PROPERTY MANAGER, AND OCCUPANT INFORMATION

The User did not identify Site Owner or Property Manager representatives.

3.7 REASON FOR PERFORMING PHASE I ESA

The User indicated the purposes for conducting the *Phase I ESA* is to understand potential environmental conditions impacting the Site. A copy of the User Questionnaire is included in Appendix A.

3.8 OTHER

The User indicated that the Site is proposed for residential use. A copy of the User Questionnaire is included in Appendix A.

4.0 RECORDS REVIEW

A records review was conducted to identify RECs at and near the Site. The records searched for this *Phase I ESA* consisted of standard federal and state environmental record sources as defined in ASTM E 1527. Historical records searched as part of the *Phase I ESA* included: aerial photographs; Sanborn Fire Insurance Maps; topographic maps; and city directories. Relevant historical uses associated with the Site and surrounding areas are depicted on Figure 2-1 and discussed in Table 7-1.

4.1 STANDARD ENVIRONMENTAL RECORD SOURCES

An environmental database report was prepared by EDR and consisted of a review of federal and state regulatory listings for sites within the search radii established under the ASTM E 1527 (EDR, 2013a). Sites listed in the EDR environmental database report located: greater than 1,000-feet distance from the Site; at topographically lower elevations; and/or hydraulically downgradient or cross-gradient from the Site, were reviewed but not considered relevant to the identification of recognized environmental conditions. Discussions of the relevant findings from the environmental database report, e.g., sites within approximately 1,000-feet and hydraulically upgradient of the Site have been included, as appropriate, in Table 7-1. A copy of the EDR environmental database report is included in Appendix A.

4.2 ADDITIONAL ENVIRONMENTAL RECORDS SOURCES

Additional environmental records including previous environmental reports, permits and correspondence were requested from the City of Oakland, Regional Water Board, DTSC and the DoN. Electronic databases were also accessed from the California State Water Resources Control Boards Geotracker database and DTSC's Envirostor database. Discussions of the relevant findings from the additional environmental record sources have been included in Table 7-1. Copies of the relevant documents have been included in Appendix B.

4.3 PHYSICAL SETTING SOURCES

The Oakland East California United States Geological Service (USGS) 7.5 Minute Quadrangle topographic maps were reviewed to identify geologic, hydrogeologic, hydrologic and topographic features of the Site and surrounding area. Copies of the USGS topographic maps are included in Appendix B.

4.4 HISTORICAL USE INFORMATION ON THE SITE

The objective for reviewing historical sources regarding past uses of the Site was to develop information regarding history of previous uses of the Site and surrounding area to identify the likelihood of past uses having led to RECs in connection with the Site. Reasonably ascertainable historical sources including aerial photographs, Sanborn Fire Insurance Maps and topographic maps were reviewed. Locations of relevant historical uses of the Site are identified on Figure 2-1. Copies of the historical aerial photographs, Sanborn Fire Insurance Maps and topographic maps are included in Appendix B.

4.5 HISTORICAL USE INFORMATION ON ADJOINING PROPERTIES

The information sources used for evaluating the historical use of the Site were reviewed to identify historical uses of adjoining properties. Locations of relevant historical uses of adjoining properties are identified on Figure 2-1.

5.0 SITE RECONNAISSANCE

A Site reconnaissance was performed by WEST on February 19, 2014. Mr. Peter Morris, a representative of WEST, conducted the reconnaissance. The objective of the reconnaissance was to obtain information indicating the likelihood of RECs in connection with the Site. The reconnaissance included a visual observation of the Site and adjoining properties. A summary of the relevant conditions observed during the Site reconnaissance is included in Table 7-1. Photographs of the Site are included in Appendix C.

5.1 METHODOLOGY AND LIMITING CONDITIONS

As part of the reconnaissance, accessible portions of the Site were observed visually. Accessible physical conditions included: pathways, access roads and walkways located on the perimeter of the Site as well. Adjoining properties were also visually observed, where possible.

5.2 GENERAL SITE SETTING

Observations were made during the Site reconnaissance of current and past uses of the Site and adjoining properties likely to involve the use, treatment, storage, disposal or generation of hazardous substances or petroleum hydrocarbons. A summary of the observations is included in Table 7-1.

6.0 INTERVIEWS

The objective of the interviews was to obtain information indicating recognized environmental conditions in connection with the Site.

6.1 INTERVIEW WITH OWNER

The Site Owner representative, Mr. Eric Higuchi of Signature Development Group, was contacted for an interview. A copy of the interview documentation is included in Appendix D. Other Site owner representatives were not identified for interviews.

6.2 INTERVIEW WITH PROPERTY MANAGER

Property manager representatives were not identified by the User for interviews; thus, property manager representatives were not interviewed.

6.3 INTERVIEW WITH OCCUPANTS

The Site was unoccupied; thus, Site occupant representatives were not interviewed.

6.4 INTERVIEWS WITH LOCAL GOVERNMENT OFFICIALS

File review requests were sent to representatives of City of Oakland, Regional Water Board, DTSC; and the Bay Area Air Quality Management District (BAAQMD). Discussions of the relevant findings from the local government agencies have been included in Table 7-1.

6.5 INTERVIEWS WITH OTHERS

Other knowledgeable individuals regarding the Site uses and conditions were not identified.

7.0 FINDINGS AND CONCLUSIONS

WEST has performed a *Phase I ESA* in conformance with the scope and limitations of ASTM E 1527 of the Site. Any exceptions to, or deletions from, this practice are described in Section 8.0 of this report. This assessment has revealed no evidence of RECs in connection with the Site; except for those listed in Table 7-1. The findings, opinions and conclusions supporting the findings of the RECs at the Site are presented in Table 7-1.

In accordance with Section 12.5 of ASTM E 1527, a summary of the history, relevant information obtained during the Phase I ESA, potential chemicals present, the known or suspect REC, as well as controlled RECs, historical RECs and *de minimis* conditions have been identified and provided in Table 7-1.

In accordance with Section 12.6 of ASTM E 1527, the opinions including WEST's rationale for concluding that the known or suspect RECs identified in the findings section are or are not currently RECs are presented in Table 7-1.

Pursuant to Section 3.2.18 of ASTM E 1527, a controlled REC is an REC resulting from a past release that has been addressed to the satisfaction of the applicable regulatory authority, e.g., issuance of no further action letter or equivalent, or meeting risk-based criteria, with hazardous substances or petroleum products allowed to remain in place subject to implementation of required controls including property use restrictions, activity and use limitations or engineering controls.

Pursuant to Section 3.2.22 of ASTM E 1527, *de minimis* conditions, i.e., conditions that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies, are not considered RECs.

Pursuant to Section 3.2.42 of ASTM E 1527, an historical REC is a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls, i.e., property use restrictions. Prior to concluding that a past release is an historical REC, the environmental professional must determine whether the past release is a recognized environmental condition at the time of the Phase I ESA, e.g., if there has been a change in regulatory criteria. If the past release is determined to be a REC at the time of the Phase I ESA, then the condition shall be deemed a REC.

8.0 DEVIATIONS

There were no deviations from the ASTM Practice E 1527 standard while conducting this *Phase I ESA* except for the following:

- Historical aerial photographs were not reviewed in five-year increments; and
- Site tax files were not reasonably ascertainable.

9.0 ADDITIONAL INVESTIGATIONS

Consistent with 40 CFR 312 Section 312.31 and ASTM E 1527 Section 12.6.1, an evaluation was conducted to identify whether additional investigations are needed to obtain greater certainty with regard to Site conditions. Based on the evaluation, Phase II ESA sampling was conducted on Parcels 110, 112, 114, 125, 145 and 153 to further characterize the known and suspect RECs at the Site. The findings from the Phase II ESA have been incorporated into Table 7-1 and a summary of the data is included in Appendix E.

10.0 DATA GAPS

Consistent with 40 CFR 312 Section 312.20(g) and ASTM E 1527 Section 12.7, a data gap analysis was performed. No significant data gaps associated with information for the *Phase I ESA* were identified.

11.0 ADDITIONAL SERVICES

No additional services were performed as part of this *Phase I ESA*.

12.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

This report has been prepared under the direction of Peter M. Krasnoff, P.E., a registered Civil Engineer with over 25 years of environmental assessment and evaluation experience. Mr. Krasnoff received his Master of Science from the University of California at Berkeley in Environmental Engineering and his Bachelor of Civil Engineering from the Georgia Institute of Technology. Mr. Krasnoff has extensive experience in environmental investigations and remediation and has conducted reviews of over 100 sites involving hazardous materials and waste disposal activities. Mr. Krasnoff was supported by Mr. Peter Morris, P.G., a Professional Geologist.

Mr. Morris, a Professional Geologist with over 20 years of environmental assessment and investigating experience, also prepared this *Phase I ESA*. Mr. Morris received his Bachelors of Science degree from the University of California at Davis in Geology and his Masters of Science degree in Civil and Environmental Engineering from George Washington University. Mr. Morris has conducted and supervised numerous site investigations involving the evaluation of hazardous materials and wastes with emphasis on soil and groundwater characterization and remediation.

13.0 REFERENCES

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14.0 DISTRIBUTION LIST

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c/o Lehman Brothers Holdings, Inc.
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Irvine, California 92612

TABLES

TABLE 7-1
SUMMARY OF SITE CONDITIONS
Former Naval Medical Center Oakland
8750 Mountain Boulevard
Oakland, California

Map ID (Figure 2-1)	Location		FINDINGS: History	FINDINGS: Known or suspect environmental conditions	FINDINGS: Chemicals: TPH	FINDINGS: Chemicals: VOCs	FINDINGS: Chemicals: SVOCs	FINDINGS: Chemicals: Pesticides	FINDINGS: Chemicals: Metals	FINDINGS: Chemicals: PCBs/Dioxins	FINDINGS: Regulatory Closure (FOST)	FINDINGS: Controlled REC	FINDINGS: Historical REC	OPINIONS: Rationale	CONCLUSIONS: Environmental Condition: Yes: Known	CONCLUSIONS: Environmental Condition: Yes: Suspect	CONCLUSIONS: Environmental Condition: No: *de minimis*	CONCLUSIONS: Environmental Condition: No: No
1	Former Underground Storage Tanks	Site Parcels 108, 110, 115, 132, 137, 139, 151, 154 and 159	Twenty underground storage tanks (USTs) were investigated at the Site between 1991 and 1997 (FOST, 1999). Based on the investigations, 18 of the 20 USTs were found and removed. Two of the 20 USTs were not found (Parcel 110). The USTs were used for storage of petroleum products at four former service stations (Parcels 108, 110, 151 and 159), the hospital and hospital boiler (Parcels 137 and 139), Officer's residence (Parcel 115), a warehouse (Parcel 132) and the boiler plant (Parcel 154). The 18 USTs were closed as "low risk soil-only" by the California Regional Water Quality Control Board - San Francisco Bay Region (Regional Water Board) between 1994 and 1997 with concurrence from the California Department of Toxic Substances Control (DTSC). Residual petroleum hydrocarbons remain in soil at 14 of the 18 former USTs on Parcels 108, 115, 132, 137, 139, 151, 154 and 159 (FOST, 1999). Total petroleum hydrocarbons as gasoline (TPHg) and benzene were detected in soil samples up to 4,000 milligrams per kilogram (mg/kg) and 23 mg/kg, respectively, adjacent to the former USTs at Parcel 108 (Regional Water Board, 1997a) above their current Regional Water Board ESLs of 100 mg/kg and 0.044 mg/kg and the current SWRCB Low Threat Closure Policy criteria of 12 mg/kg for benzene. Soil samples were not collected from the base of the excavations or along product piping runs during removal of the USTs at Parcels 132, 137 and 159. In 1999, the Department of the Navy (DoN) concluded that the releases from the former USTs did not pose a risk under a mixed-use scenario (FOST, 1999) and that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas.” (FOST, 1999). Information regarding current soil conditions near the former USTs was not reasonably ascertainable.	Releases of petroleum hydrocarbons and VOCs to soil from the former USTs.	X	X					X		X	While previously closed, based on the reported residual concentrations of benzene (e.g., 23 mg/kg) above current regulatory threshold (12 mg/kg), the releases from the USTs represent a current recognized environmental condition. In addition, due to the potential to encounter soil with residual petroleum hydrocarbons during Site development, actions should be taken to mitigate conditions (e.g., development of a Site Management Plan).	X			
2	Former Underground Storage Tanks	Site Parcels 108, 151 and 159	Residual petroleum hydrocarbons and VOCs are present in soil near the former gasoline USTs on less than 0.1-acre portions of the 162-acre Site: Parcel 108 (less than 1-acre; 510A, 510B and 510C); Parcel 151 (less than 1-acre; 214A to 214D); and Parcel 159 (less than 1-acre; 141-A; FOST, 1999). The Regional Water Board closed the gasoline USTs on Parcels 108 (Regional Water Board, 1997a), 151 (Regional Water Board, 1997b) and 159 (FOST, 1999). The Regional Water Board closure documentation indicated that "no further action related to the underground storage tank release is required," however, "if a change in land use is proposed, the owner must notify this agency." In 1995, ERM-West indicated that the inhalation exposure pathway for the USTs on Parcel 108 would be complete "if a structure was constructed over areas of impacted soil" (ERM-West, 1995). In 1999, the DoN concluded that the releases from the former USTs did not pose a risk under a mixed-use scenario (FOST, 1999) and that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas.” (FOST, 1999). Information regarding current soil gas conditions near the former USTs was not reasonably ascertainable.	Potential for impacts to indoor air from the gasoline UST releases.	X	X					X		X	While the Regional Water Board closed the gasoline USTs on Parcels 108, 151 and 159, due to the lack of soil gas data and the change in Site use, the potential for impacts to indoor air from the presence of VOCs in soil gas associated with the gasoline USTs represents a suspect recognized environmental condition.		X		

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3	Former Above-ground Storage Tanks	Site Parcels 110, 137 and 153	Six aboveground storage tanks (ASTs) were located on less than 0.1-acre portions of the 162-acre Site: Parcels 110 (two 300-gallon ASTs), 137 (one 500-gallon AST), and 153 (two 10,000-gallon and one 163,000 gallon AST; FOST, 1999). The ASTs reportedly contained diesel fuel. Four of the six ASTs were removed prior to 1999: the two 300-gallon ASTs on Parcel 110 (located inside); and the two 10,000-gallon ASTs on Parcel 153 (FOST, 1999). The two other ASTs were removed after 2008: the 500-gallon AST on Parcel 137; and the 163,000-gallon AST on Parcel 153. The 163,000-gallon AST on Parcel 153 "has never been filled" (ERM-West, 1994). Staining was observed within the secondary containment for the 10,000-gallon ASTs on Parcel 153 which indicate "past leaks" (ERM-West, 1994). Two soil samples collected near the 10,000-gallon ASTs on parcel 153 revealed total petroleum hydrocarbons at 760 mg/kg at 0.5 feet and 170 mg/kg at 3.5 feet below ground surface (PRC, 1996), above the Regional Water Board ESL of 100 mg/kg. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas.” (FOST, 1999). Observations during the Site visit, indicated that the soil near the former ASTs on Parcel 137 was graded due to 2011 demolition of the hospital building. As part of the future Site development plans (Appendix A), the Site will be graded including removal of surface soil for building pad construction, and infrastructure installation and slope stability. In January 2014, Phase II Environmental Site Assessment (Phase II ESA) sampling was conducted on Parcels 110 (W-1 and W-2) and 153 (W-5 and W-6) to characterize the current soil conditions. Soil samples near the former ASTs on Parcel 137 were not collected due to the previous grading and building demolition activities on Parcel 137 in 2011. Laboratory analysis of the soil samples collected on Parcels 110 and 153 did not reveal TPHg (less than 1.00 mg/kg); but TPH as diesel (TPHd; up to 92.9 mg/kg) and TPH as motor oil (TPHmo; up to 17.8 mg/kg), which are below their respective California Regional Water Quality Control Board-San Francisco Bay (Regional Water Board) Environmental Screening Levels (ESLs) of 100 mg/kg, 100 mg/kg and 100 mg/kg (Appendix E). Benzene, toluene, ethyl benzene and xylenes were not detected above the residential Regional Water Board ESLs. Polycyclic aromatic hydrocarbons (PAHs) were only detected in soil sample W-6 collected on Parcel 153 including benzo(a)pyrene (BaP) at 110 ug/kg (W-6) and indeno(1,2,3-cd) pyrene at 165 ug/kg, above the residential Regional Water Board ESLs of 38 ug/kg and 38 ug/kg (Appendix E). Arsenic was not detected above the laboratory-reporting limit of 2.50 mg/kg. Lead was detected up to 27.9 mg/kg (W-1), which is below its residential Regional Water Board ESL of 80 mg/kg.	Potential releases of petroleum hydrocarbons to soil from the former ASTs on Parcel 110	X	X	X		X		X			Based on the 2014 soil data, which revealed the presence of TPH, VOCs, PAHs and metals below applicable screening levels, releases from the former ASTs on Parcel 110 represent a *de minimis* condition, i.e., conditions that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies, and not a recognized environmental condition.			X	
				Potential releases of petroleum hydrocarbons to soil from the former ASTs on Parcel 137	X	X	X		X		X			Based on the findings in the FOST and subsequent grading activities, which did not reveal residual petroleum hydrocarbons, potential releases from the former ASTs on Parcel 137 do not represent a recognized environmental condition.				X
				Releases of petroleum hydrocarbons to soil from the former ASTs on Parcel 153	X	X	X		X		X		X	Based on the detection of PAHs above applicable screening levels, the historical releases from the AST represent a current recognized environmental condition. Due to the potential to encounter soil with TPH and PAHs during Site development, actions should be taken to mitigate conditions (e.g., development of a Site Management Plan).	X			

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4	Lead-Based Paint	Site Parcels	Lead-based paint is present on structures constructed before 1978 at the Site (FOST, 1999). Laboratory analysis of the soil samples collected by DTSC in 1997 revealed lead in soil up to 6,400 mg/kg (Parcel 115), up to 2,440 mg/kg near Building 67 (Parcel 130), up to 483 mg/kg near Building 101 (Parcel 131), up to 2,750 mg/kg near Building 73 (Parcel 134) and up to 314 mg/kg near Building 18 (Parcel 162) above the California Department of Toxic Substances Control (DTSC) California Human Health Screening Level (CHHSL) of 80 mg/kg for residential use. Soil containing lead was removed from Parcel 115 in 1999 (FOST, 1999). In 1997, the DoN conducted limited removal of soil containing lead near the Barcelona-Santa Cruz Streets residential area (IT, 1997). Post-removal soil sampling revealed lead in soil up to 1,090 mg/kg, which is above the DTSC residential CHHSL of 80 mg/kg. In 1999, the DoN concluded that the presence of lead in soil did not pose a risk under a mixed-use scenario (FOST, 1999) and that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas." (FOST, 1999). In 2000, DTSC indicated to the DoN, that due to the change from the previous plan to convey the property to the City of Oakland, DTSC required remedial actions and placed restrictions on the property until the successor owner "fully investigates and remediates lead in soil pursuant to the NCP" (DTSC, 2000). In 2005, the DoN indicated to the DTSC, that "the property recipient will demolish all target housing structures, conduct soil sampling, and if necessary, remediation after demolition" (DoN, 2005). Observations from the Site visit indicate that the buildings at the Site have been demolished (Appendix C). Information regarding soil conditions following demolition or if remedial actions have been conducted was not reasonably ascertainable.	Presence of lead in soil above its human-health based screening criterion.					X		X			Based on the presence of lead in soil above its current residential applicable screening criterion, DTSC's 2000 and DoN's 2005 requirements, and the lack of soil data following building demolition, the presence of lead in soil represents both a suspect and known recognized environmental condition.	X	X		

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5	Pesticides	Site Parcels	Pesticides, insecticides, termiticides and rodenticides were "ordinarily and routinely applied" at the Site (FOST, 1999). Pesticides were reportedly stored and mixed on a less than 0.3-acre portion of the 162-acre Site on Parcel 157. Laboratory analysis of two soil samples collected from Parcel 157 did not reveal pesticides at concentrations above current health-based residential screening criteria. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas.” (FOST, 1999). Information regarding soil conditions and past use, storage and disposal practices with respect to pesticides at the Site was not reasonably ascertainable.	Potential releases to soil from pesticide application				X			X			Based on the lack of soil data and the lack of information regarding past practices for Navy application of pesticides, the potential presence of pesticides in soil represents a suspect recognized environmental condition.		X		
6	Hazardous Substance and Waste Storage	Site Parcels 106, 113, 126, 131, 132, 137 and 154	"Incidental quantities of household type cleaning chemicals and consumer products" containing hazardous substances were historically stored in cabinets in buildings on Parcels 106, 113, 126, 131, 132, 137 and 154 (ERM-West, 1994; FOST, 1999). Compressed gas cylinders containing dichlorodifluoromethane (Freon-12) were stored within Building 216 on Parcel 105 (FOST, 1999). Halogenated solvents, i.e., F-listed wastes (F001 and F002) were stored within the open space on a less than approximately 1-acre portion of the 162-acre Site on Parcel 136 (FOST, 1999). Paints, pesticides, Photodeveloping chemicals including mercury were also stored on Parcel 131 (Building 101). Information regarding soil gas conditions and past disposal practices with respect to hazardous substances at the Site was not reasonably ascertainable.	Potential presence of hazardous substances in soil gas to that could migrate to indoor air for future buildings.		X					X			Based on the lack of soil gas data and information regarding disposal practices of halogenated solvents, the potential release of hazardous substances to soil gas from hazardous waste storage activities represents a suspect recognized environmental condition.		X		

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7	Boiler Treatment Chemicals	Site Parcel 154	Scale and corrosion chemicals for treatment of boiler blowdown water were used and stored in Building 22 on Parcel 154. "Stains on floor indicate past releases of chemicals" (ERM-West, 1994). Boiler blowdown was discharged to the storm drain. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas." (FOST, 1999). As part of the future Site development plans (Appendix A), the Site will be graded including removal of surface soil for building pad construction, and infrastructure installation and slope stability. In 2014, soil samples were collected from two borings W-7 and W-8 as part of a Phase II ESA to characterize the current soil conditions near former Building 22 (Appendix E). Laboratory analysis of the soil samples did not reveal metals including hexavalent chromium at concentrations above applicable Regional Water Board ESLs; except for lead which was detected up to 185 mg/kg (W-7), above its Regional Water Board ESL of 80 mg/kg.	Releases to soil from boiler blowdown of water with treatment chemicals.						X		X	X	Based on the 2014 soil data, which revealed water treatment chemicals (i.e., hexavalent chromium) at concentrations below applicable screening levels, the releases of water treatment chemicals represents a *de minimis* condition and not a recognized environmental condition.			X	
				Presence of lead in soil above its applicable residential screening criterion					X					The detection of lead in soil up to 175 mg/kg, above its current residential applicable screening criterion of 80 mg/kg, represents a recognized environmental condition. Due to the potential to encounter soil with metals during Site development, actions should be taken to mitigate conditions (e.g., development of a Site Management Plan).	X			

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8	Radioactive Material Storage	Site Parcels 112, 113, 116, 117, 123, 133 and 137	Radioactive materials were stored in Building 107 (Parcel 112), Building 17 (Parcel 113), Building 85 (Parcel 116) and Building 110 (Parcel 117), Building 75 (Parcel 133) and Building 500 (Parcel 137) (ERM, 1994). A radioactive waste compactor was formerly operated in Building 65 (Parcel 123; ERM, 1994). According to the DoN, radioactive material handling permits were terminated and no notifications or restrictions exist with respect to radioactive materials storage areas at the Site (FOST, 1999). Information regarding soil conditions with respect to the radioactive material storage areas was not reasonably ascertainable.	Potential releases to soil from storage of radioactive materials and waste.							X			Based on the closure of the radioactive material storage areas by the DoN with concurrence from DTSC prior to property transfer, the former storage of radioactive materials does not represent a recognized environmental condition.				X
9	Former Incinerator	Site Parcel 114	An incinerator formerly operated at Building 115 (Parcel 114) on a less than 0.1-acre portion of the 162-acre Site. The incinerator was reportedly operated until the 1970s and was used for disposal of animal carcasses, medical waste and narcotics (ERM, 1994). In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas." (FOST, 1999). The future Site development plans include grading for building pad preparation, infrastructure installation and for slope stability (Appendix A). In 2014, soil samples were collected from three borings W-9 to W-11 as part of a Phase II ESA to characterize the current soil conditions near the former incinerator (Appendix E). Laboratory analysis of the soil samples did not reveal PAHs or metals above Regional Water Board residential screening levels. Laboratory analysis of the soil samples also revealed dioxin/furans calculated as Toxicity Equivalent Quotient (TEQ) concentrations up to 1.485 nanograms per kilogram (ng/kg), below the California Environmental Protection Agency's, Department of Toxic Substances Control (DTSC) residential screening level of 50 ng/kg (Appendix E).	Potential releases of hazardous substances to soil from disposal of incinerator wastes.			X		X	X	X			Based on the 2014 soil data, potential releases of incinerator waste represents a *de minimis* condition and not a recognized environmental condition.			X	

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			History	Known or suspect environmental conditions	Chemicals						Regulatory Closure (FOST)	Controlled REC	Historical REC	Rationale	Environmental Condition			
															Yes		No	
					TPH	VOCs	SVOCs	Pesticides	Metals	PCBs/Dioxins					Known	Suspect	*de minimis*	No
10	Former Hydraulic Lift	Site Parcel 159	A hydraulic lift associated with auto repair facility operated near Building 111 (Parcel 159) on a less than 0.1-acre portion of the 162-acre Site (FOST, 1999). Building 111 is located near the hydraulically downgradient edge of the Site. Petroleum hydrocarbons were detected in soil at a depth between 12 and 14 feet below ground surface following removal of the hydraulic lift. Approximately 80 cubic yards of soil were removed near the hydraulic lift. Soil containing petroleum hydrocarbons and VOCs remained adjacent to Building 111 and Rifle Range Creek (FOST, 1999). Based on the analytical results of sediment samples collected from Rifle Range Creek near the former hydraulic lift, the United States Department of Fish and Game concluded that "there is no increased risk to ecological receptors of concern (FOST, 1999).	Potential for VOCs in soil gas to migrate to indoor air of future buildings from the former hydraulic lift release.	X	X					X			While the regulatory agencies have indicated that no further action is necessary to address the releases to soil from the hydraulic lift on Parcel 159, based of the lack of soil gas data and the potential change in Site use, the presence of VOCs in soil near the former hydraulic lift represents a suspect recognized environmental condition		X		
11	Former Automobile Repair	Site Parcel 159	An auto repair facility operated at Building 112 (Parcel 159) on a less than 0.1-acre portion of the 162-acre Site (FOST, 1999). Hazardous substances and petroleum products were used, stored and disposed at Building 112. Laboratory analysis for VOCs of one soil sample (SP-159-3) collected at approximately 3.5 feet below ground surface and adjacent to Building 112 did not reveal VOCs above their respective laboratory-reporting limits of 0.01 mg/kg (PRC, 1996). Laboratory analysis of five soil samples collected on Parcel 159 revealed arsenic up to 11.8 mg/kg below reported background concentrations of similar geologic strata of 11 mg/kg (Diverge, 2011). Lead was detected in the five soil samples up to 1,460 mg/kg above DTSC's CHHSL of 80 mg/kg (DTSC, 2010); and TPH as motor oil up to 3,500 mg/kg above its Regional Board Environmental Screening Level (ESL) of 500 mg/kg. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas.” (FOST, 1999). Information regarding soil gas conditions was not reasonably ascertainable.	Releases of TPH and lead to soil	X				X		X			Based on the presence of TPH and lead above current applicable screening criteria, the releases at the former automobile repair facility represent a recognized environmental condition.	X			
				Potential presence of VOCs in soil gas that could migrate to indoor air of future buildings		X					X			Based on the lack of soil gas data and the past releases to soil, the potential release of VOCs in automobile repair solvents to soil gas represents a suspect recognized environmental condition.		X		

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12	Oil-Filled Transformers	Site Parcel 155	Oil-filled transformers containing detectable concentrations of polychlorinated biphenyls (PCBs) were present at the Site until approximately 1985 (FOST, 1999). In 1994, the survey results of oil-filled industrial equipment at the Site did not reveal the presence of PCBs above 5 parts per million (FOST, 1999). Transformers were historically stored on a less than 0.05-acre portion of the 162-acre Site on Parcel 155 (PRC, 1996). Laboratory analysis of two soil samples collected on Parcel 155 revealed the presence of PCBs up to 0.4 mg/kg, above DTSC's residential CHHSL of 0.089 mg/kg. Based on the soil sample results and Site use, the DoN and DTSC concurred that no further action was necessary to address PCBs in soil at Parcel 155 (FOST, 1999).	Release of PCBs to soil						X	X			Based on the presence of PCBs in soil above current human-health protective levels, the release from the former transformer represents a current recognized environmental condition.	X			
13	Cleaning Solvent Tank	Site Parcel 104	A cleaning solvent tank was reportedly used at Building 63 (Parcel 104) on a less than 0.1-acre portion of the 162-acre Site (ERM, 1994). Flammable materials, acids and paints were also reportedly stored in cabinets in Building 63. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas” (FOST, 1999). Information regarding current soil and soil gas conditions near the former cleaning solvent tank was not reasonably ascertainable.	Potential releases of acids and VOCs to soil and potential migration of VOCs in soil gas to migrate to indoor air.		X			X		X			Due to the lack of soil and soil gas data and the lack of information regarding historical use, storage and disposal practices of hazardous waste, the potential for releases to soil and soil gas from cleaning solvent tank use represents a suspect recognized environmental condition.		X		

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14	Former Paint Booth, Paint, Pesticide, Solvent and Lubricant Storage	Site Parcel 110	A paint booth formerly operated in Building 13 and paints, pesticides, solvents and lubricants were stored in buildings on Parcel 110, which was the public works center for the Site (ERM, 1994, PRC, 1996). Soil samples collected in 1994, revealed TPH as motor oil up to 1,100 mg/kg, above the Regional Water Board's 2013 ESL of 500 mg/kg. Lead wa also detected in soil up to 85 mg/kg, above the CHHSL of 80 mg/kg. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas" (FOST, 1999). Information regarding current soil and soil gas conditions or historical use, storage and disposal practices was not reasonably ascertainable.	Potential releases to soil and soil gas of paints and solvents.		X					X			Due to the lack of soil and soil gas data and the lack of information regarding historical use, storage and disposal practices, the potential for releases to soil and soil gas from paints and solvents represents a suspect recognized environmental condition.		X		
15	Diesel Backup Generator	Site Parcel 123	A back-up diesel generator and associated diesel AST operated near Building 65 (Parcel 123) on a less than 0.1-acre portion of the 162-acre Site (ERM-West, 1994). Solvents may have also been used to clean equipment as part of the generator maintenance activities. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas" (FOST, 1999). Information regarding current soil and soil gas conditions or historical cleaning practices was not in the reasonably ascertainable documents.	Potential releases of petroleum products and hazardous substances from spills during maintenance activities.	X	X					X			Due of the lack of soil and soil gas data and the lack of information regarding historical maintenance activities, the potential for releases to soil and soil gas represents a suspect recognized environmental condition.		X		

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Map ID (Figure 2-1)	Location		FINDINGS: History	FINDINGS: Known or suspect environmental conditions	FINDINGS: Chemicals: TPH	FINDINGS: Chemicals: VOCs	FINDINGS: Chemicals: SVOCs	FINDINGS: Chemicals: Pesticides	FINDINGS: Chemicals: Metals	FINDINGS: Chemicals: PCBs/Dioxins	FINDINGS: Regulatory Closure (FOST)	FINDINGS: Controlled REC	FINDINGS: Historical REC	OPINIONS: Rationale	CONCLUSIONS: Environmental Condition: Yes: Known	CONCLUSIONS: Environmental Condition: Yes: Suspect	CONCLUSIONS: Environmental Condition: No: *de minimis*	CONCLUSIONS: Environmental Condition: No: No
16	Former Laboratory Facilities	Site Parcel 125	Former laboratory facilities were located in former Buildings 1, 4 and 46 (Parcel 125) on less than a 1-acre portion of the 162-acre Site (ERM, 1994). The buildings on Parcel 125 were demolished prior to construction of the hospital building in the 1960s (ERM-West, 1994). In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas” (FOST, 1999). Information regarding current soil and soil gas conditions or hazardous substance and petroleum product use, storage and disposal from laboratory operations was not in the reasonably ascertainable documents.	Potential releases of hazardous substances and petroleum products from the laboratories.	X	X					X			Based on the lack of soil and soil gas data and the lack of information regarding historical chemical use, storage and disposal practices, the potential releases of petroleum products and hazardous substances represents a suspect recognized environmental condition.		X		
17	Motor Oil Spill	Site Parcel 125	An unknown amount of motor oil was spilled on Parcel 125 in May 1992 (ERM, 1994). The area of the spill was reportedly "washed down" (ERM, 1994). In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for “residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas” (FOST, 1999). The future Site development plans include grading for building pad preparation, infrastructure installation and for slope stability (Appendix A). In 2014, soil samples were collected from three borings W-12 to W-14 as part of a Phase II ESA to characterize the current soil conditions near the former motor oil spill (Appendix E). Laboratory analysis of the soil samples revealed TPHd up to 624 mg/kg and TPHmo up to 513 mg/kg, which are above the Regional Water Board ESLs of 100 mg/kg and 100 mg/kg, respectively. In addition, the PAH BaP was detected up to 41.3 ug/kg (W-14), which is above the Regional Water Board ESL of 38 ug/kg. Arsenic was also detected up to 22.3 mg/kg (W-14), above its background arsenic concentration of 11 mg/kg.	Release to soil from the motor oil spill.	X		X		X		X		X	Based on the 2014 soil data, the historical release of motor oil represents a current recognized environmental condition. Due to the potential to encounter soil with TPH, PAHs and metals during Site development, actions should be taken to mitigate conditions (e.g., development of a Site Management Plan).	X			

TABLE 7-1
SUMMARY OF SITE CONDITIONS
Former Naval Medical Center Oakland
8750 Mountain Boulevard
Oakland, California

Map ID (Figure 2-1)	Location		FINDINGS: History	FINDINGS: Known or suspect environmental conditions	FINDINGS: Chemicals: TPH	FINDINGS: Chemicals: VOCs	FINDINGS: Chemicals: SVOCs	FINDINGS: Chemicals: Pesticides	FINDINGS: Chemicals: Metals	FINDINGS: Chemicals: PCBs/Dioxins	FINDINGS: Regulatory Closure (FOST)	FINDINGS: Controlled REC	FINDINGS: Historical REC	OPINIONS: Rationale	CONCLUSIONS: Environmental Condition: Yes: Known	CONCLUSIONS: Environmental Condition: Yes: Suspect	CONCLUSIONS: Environmental Condition: No: *de minimis*	CONCLUSIONS: Environmental Condition: No: No
18	Hydraulic Fluid Release	Site Parcel 149	Approximately five gallons of hydraulic fluid were spilled on Parcel 149 in 1991 (ERM, 1994). The spilled hydraulic fluid was reportedly cleaned up by "washing the chemicals down the storm sewer" (ERM, 1994). Groundwater has not been encountered at the Site between the ground surface and approximately 45 feet below ground surface (PRC, 1994). In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas" (FOST, 1999). Information regarding current soil conditions near the spill area was not in the reasonably ascertainable documents.	Release of hydraulic fluid to soil	X						X			The release of hydraulic fluid represents a historical recognized environmental condition; however, based on the lack of soil data, the release of hydraulic fluid on Parcel 149 is a current recognized environmental condition.	X			
19	Distressed vegetation	Site Parcel 145	Distressed vegetation was observed on the 1958, 1965, 1982, 1993 and 1998 historical aerial photographs on a less than 0.2-acre portion of the southwest corner of Parcel 145 (EDR, 2005). The distressed vegetation was observed near an unpaved access road on Parcel 145. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas" (FOST, 1999). The future Site development plans include grading for building pad preparation, infrastructure installation and for slope stability (Appendix A). Observations made during the Site reconnaissance indicated that the area is covered with asphaltic concrete pavement. In 2014, soil samples were collected from three borings W-15 to W-17 as part of a Phase II ESA to characterize the current soil conditions near the distressed vegetation area (Appendix E). The soil samples were collected from the edges of the pavement. Laboratory analysis of the soil samples revealed TPHd up to 18.2 mg/kg and TPHmo up to 44.1 mg/kg, which are below the Regional Water Board ESLs of 100 mg/kg and 100 mg/kg, respectively. PAHs including BaP and indeno(1,2,3-cd)pyrene were detected up to 139 ug/kg and 132 ug/kg, which are above the Regional Water Board ESLs of 38 ug/kg and 38 ug/kg, respectively. Polychlorinated biphenyls (PCBs) were not detected above the laboratory reporting limits. Arsenic was also detected up to 12.6 mg/kg (W-17), above its background arsenic concentration of 11 mg/kg. Lead was also detected up to 115 mg/kg, which is above its residential Regional Water Board ESL of 80 mg/kg.	Potential releases to soil of hazardous substances and petroleum products.	X	X	X		X	X	X			Based on the 2014 soil data, the releases of PAHs and metals at concentrations above applicable screening levels represent a current recognized environmental condition. Due to the potential to encounter soil with PAHs and metals during Site development, actions should be taken to mitigate conditions (e.g., development of a Site Management Plan).	X			

TABLE 7-1
SUMMARY OF SITE CONDITIONS
Former Naval Medical Center Oakland
8750 Mountain Boulevard
Oakland, California

Map ID (Figure 2-1)	Location		FINDINGS: History	FINDINGS: Known or suspect environmental conditions	FINDINGS: Chemicals: TPH	FINDINGS: Chemicals: VOCs	FINDINGS: Chemicals: SVOCs	FINDINGS: Chemicals: Pesticides	FINDINGS: Chemicals: Metals	FINDINGS: Chemicals: PCBs/Dioxins	FINDINGS: Regulatory Closure (FOST)	FINDINGS: Controlled REC	FINDINGS: Historical REC	OPINIONS: Rationale	CONCLUSIONS: Environmental Condition: Yes: Known	CONCLUSIONS: Environmental Condition: Yes: Suspect	CONCLUSIONS: Environmental Condition: No: *de minimis*	CONCLUSIONS: Environmental Condition: No: No
20	Rifle Range/Power House Creek	Site	Rifle Range Creek is an ephemeral stream that transects less than 0.1-acre portions of Parcels 110, 125, 135, 143 and 160 of the 162-acre Site. Rifle Range Creek is exposed on Parcels 110, 143 and 160 and flows underground through Parcels 125 and 135 (PRC, 1996). Power House Creek is channelized along the southern boundary of the Site and is exposed at Parcel 156. The confluence of Rifle Range Creek and Power House Creek is at Parcel 160. Laboratory analysis of sediment samples collected from Rifle Range and Power House Creeks revealed PCBs up to 200 micrograms per kilogram (ug/kg), above the residential CHHSL of 89 ug/kg and dieldrin up to 4 ug/kg which is above the Regional Water Board ESL of 2.3 ug/kg (PRC, 1996). Laboratory analysis of the sediment samples revealed the presence of: the pesticide 4,4-DDE; and metals including arsenic, copper, lead, mercury, nickel and zinc, above their respective 1996 and 2005 screening criteria (PRC, 1996). TPH as motor oil was reported up 1,200 mg/kg, above its 2005 screening criteria of 1,000 mg/kg (and 2013 Regional Water Board ESL of 500 mg/kg) for industrial/commercial exposure was determined to "not have caused an adverse environmental impact" (PRC, 1996). Based on the laboratory analysis of the sediment samples, the DoN concluded that, "[n]o further action is recommended for Rifle Range and Power House Creeks" (PRC, 1996). Information regarding current sediment conditions within Rifle Range Creek was not reasonably ascertainable.	Potential releases of hazardous substances and petroleum products to sediments.	X	X	X	X	X	X	X			Based on the sediment sample data, the presence of pesticides, metals and TPH in the sediments of Rifle Range Creek and Power House Creek above current screening levels represents a recognized environmental condition.	X			
21	Sanitary Sewers	Site	Sanitary sewers are present at the Site. Wastewater from operations conducted at the Site were discharged to the sanitary sewer system. Thirty-two soil samples were collected in 1994 from areas adjacent to the sanitary sewers near Parcels 109, 110, 123, 125, 128, 130, 131, 132, 134, 135, 136, 137, 142, 143, 146, 147, 148, 159 and 161 (PRC, 1996). Laboratory analysis of the soil samples did not reveal the presence of VOCs or SVOCs above their respective 1996 "residential PRGs in soil" or current regulatory screening criteria. Laboratory analysis of the soil samples revealed the presence of: metals including beryllium, manganese, nickel and zinc below their respective 1996 and 2005 regulatory screening criteria. TPH as motor oil was also detected up to 780 mg/kg, above its 2013 Regional Water Board ESL of 500 mg/kg. Soil gas samples were proposed to be collected but information regarding soil gas conditions was not reasonably ascertainable (ERM-West, 1995a). Based on the sewer soil sample analytical results, the DoN concluded that "no further action is recommended" (PRC, 1996).	Potential releases of hazardous substances and petroleum products from the sewers.	X	X	X		X		X			Based on the soil data and the lack of soil gas data, the sanitary sewers represent a suspect recognized environmental condition.		X		

TABLE 7-1
SUMMARY OF SITE CONDITIONS
Former Naval Medical Center Oakland
8750 Mountain Boulevard
Oakland, California

Map ID (Figure 2-1)	Location		FINDINGS: History	FINDINGS: Known or suspect environmental conditions	FINDINGS: Chemicals: TPH	VOCs	SVOCs	Pesticides	Metals	PCBs/Dioxins	Regulatory Closure (FOST)	Controlled REC	Historical REC	OPINIONS: Rationale	CONCLUSIONS: Environmental Condition: Yes: Known	Yes: Suspect	No: *de minimis*	No: No
22	Water Supply Wells No. 1 and No. 2	Site Parcels 110 and 143	Two water supply wells for irrigation were located on Parcels 110 (Well No. 2) and 143 (Well No. 1) (EBS-West, 1994). Well No. 1 was reportedly 200-feet deep (PRC, 1996). A water sample collected in 1995 from Well No. 1 contained: lead at 25.3 ug/l; 4,4-DDE at 2 ug/l; and TPH as motor oil at 300 ug/l, which are above their respective Regional Water Board ESLs. During the Site reconnaissance, Wells No. 1 and No. 2, were not observed. In 1999, the DoN indicated in the FOST that the Site is suitable for reuse for "residential use, golf course, mixed use, city and not-for-profit functions, recreation areas, and open space areas" (FOST, 1999). Information regarding current groundwater conditions or well abandonment records was not reasonably ascertainable.	Potential preferential pathway for releases to groundwater	X			X	X		X			Based on the groundwater data and the lack of well abandonment documentation, the water supply wells represent a suspect recognized environmental condition.		X		
23	Discarded Drums	Parcel 112	Discarded and crushed 55-gallon drums were a observed during the Site reconnaissance adjacent to the concrete pad for former Building 107 (Parcel 112). The future Site development plans include grading for building pad preparation, infrastructure installation and for slope stability (Appendix A). In 2014, soil samples were collected from three borings W-18 to W-20 as part of a Phase II ESA to characterize the current soil conditions near the discarded drums (Appendix E). Laboratory analysis of the soil samples revealed TPHd up to 191 mg/kg (W-19) and TPHmo up to 205 mg/kg (W-18), which are above the Regional Water Board ESLs of 100 mg/kg and 100 mg/kg, respectively. PCBs were detected up to 252 ug/kg, above the Regional Water Board ESL of 220 ug/kg. Lead was also detected up to 221 mg/kg, which is above its residential Regional Water Board ESL of 80 mg/kg.	Potential releases of hazardous substances or petroleum products to soil and soil gas from the drums.	X	X			X	X				Based on the 2014 soil data, which revealed the presence of TPH, PCBs and lead above applicable screening levels, the releases from the discarded drums represents a current recognized environmental condition. Due to the potential to encounter soil with TPH, PCBs and lead during Site development, actions should be taken to mitigate conditions (e.g., development of a Site Management Plan).	X			

TABLE 7-1
SUMMARY OF SITE CONDITIONS
Former Naval Medical Center Oakland
8750 Mountain Boulevard
Oakland, California

Map ID (Figure 2-1)	Location		FINDINGS											OPINIONS	CONCLUSIONS			
			History	Known or suspect environmental conditions	Chemicals						Regulatory Closure (FOST)	Controlled REC	Historical REC	Rationale	Environmental Condition			
															Yes		No	
					TPH	VOCs	SVOCs	Pesticides	Metals	PCBs/Dioxins					Known	Suspect	*de minimis*	No
24	Former Medical Debris Landfill	Off-Site Adjacent to Site Parcel 152	Non-biohazardous medical debris was discovered on the adjacent property east of Parcel 152 (FOST, 1999). The adjacent property was formerly owned by Navy. A work plan to remove the medical debris was prepared in March 1998 (SSPORTS, 1998). In August 1998, the non-biohazardous medical debris was removed from the adjacent property. The medical debris removal was overseen by Alameda County Health Department staff. Alameda County Health Department approved the completion report for the debris removal (FOST, 1999).	Potential releases to soil from disposal of medical debris	X	X			X		X		X	Based on the closure by the Alameda County Health Department, the former presence of medical debris on the adjacent property represents an historical recognized environmental condition and not a current recognized environmental condition.						X

FIGURES

APPENDIX A

STANDARD ENVIRONMENTAL RECORD SOURCES

APPENDIX B

HISTORICAL RECORD SOURCES

APPENDIX C

SITE PHOTOGRAPHS

APPENDIX D

INTERVIEW DOCUMENTATION

APPENDIX E

PHASE II ESA FINDINGS

TABLE 1
SUMMARY OF SOIL ANALYTICAL RESULTS - TPH, BTEX, PCBs, PAHs and DIOXIN/FURANS
Former Naval Medical Center Oakland
Oakalnd, California

Map Id (Figure 2-1)	Known or Suspect REC	Parcel	Sample ID	Date	Depth (ft)	Petroleum Hydrocarbons				Polychlorinated Biphenyls				Polycyclic Aromatic Hydrocarbons														Dioxin/ Furans - TEQ[1]
						TPHg	TPHd	TPHmo	BTEX	Aroclor 1248	Aroclor 1254	Aroclor 1260	Totals PCBs	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Benzo(a) pyrene	Benzo(g,h,I) perylene	Chrysene	Dibenzo(a,h) anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd) pyrene	Naphthalene	Phenanthrene	Pyrene	
						(mg/kg)	(mg/kg)	(mg/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ng/kg)
3	Former ASTs	Parcel 110	W-1	2/19/14	1	<1.00	<10.0	<10.0	<1.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			W-2	2/19/14	1	<1.00	<10.0	<10.0	<1.50	--	--	--	--	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<10.0	<2.50	<10.0	<2.50	<2.50	<10.0	<2.50	<2.50	<2.50	--
		Parcel 153	W-5	2/19/14	1	<1.00	92.9	14.4	1.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			W-6	2/19/14	1	<1.00	60.5	17.8	<1.56	--	--	--	--	<2.50	3.72	10	84.9	126	90.5	110	225	169	50.7	64	3.94	165	5.76	14.8	107	--
9	Former Incinerator	Parcel 114	W-9	2/19/14	1	--	--	--	--	--	--	--	--	<2.50	<2.50	<2.50	<2.50	3.13	<2.50	3.09	<10.0	4.28	<10.0	3.57	<2.50	<10.0	<2.50	3.42	5.29	0.878
			W-10	2/19/14	1	--	--	--	--	--	--	--	--	<2.50	<2.50	<2.50	2.91	3.21	<2.50	<2.50	<10.0	6.28	<10.0	5.12	<2.50	<10.0	3.36	10.5	7.41	--
			W-11	2/19/14	1	--	--	--	--	--	--	--	--	<2.50	<2.50	<2.50	<2.50	2.95	<2.50	<2.50	<10.0	5.56	<10.0	3.05	<2.50	<10.0	<2.50	6.94	3.95	1.485
17	Motor Oil Spill	Parcel 125	W-12	2/19/14	1	--	35.2	58.0	--	--	--	--	--	<2.50	<2.50	<2.50	7.51	8.16	6.19	9.01	11.8	9.42	<10.0	9.21	<2.50	<10.0	<2.50	5.36	13.9	--
			W-13	2/19/14	1	--	10.7	17.0	--	--	--	--	--	<2.50	<2.50	<2.50	3.83	4.53	3.37	5.23	<10.0	5.22	<10.0	4.45	<2.50	<10.0	<2.50	<2.50	5.08	--
			W-14	2/19/14	1	--	624	513	--	--	--	--	--	<2.50	4.78	4.89	25.5	38.2	28.2	41.3	66.8	31.3	19.2	25.4	<2.50	29.9	<2.50	16.8	43.5	--
19	Distressed vegetation	Parcel 145	W-15	2/19/14	0.5	--	<10.0	28.1	--	<25.0	<25.0	<25.0	--	<2.50	7.59	7.44	34	55.1	44.8	53.8	108	65	17.3	69.1	7.87	55.9	13.9	36.3	108	--
			W-16	2/19/14	0.5	--	18.2	42.2	--	<25.0	<25.0	<25.0	--	3.65	28.8	11.3	58.2	87.1	79.2	86.8	159	98.3	39.3	113	37.3	81.5	19.8	76.7	144	--
			W-17	2/19/14	0.5	--	14.8	44.1	--	<25.0	<25.0	<25.0	--	4.52	18.6	18	129	141	110	139	192	166	35.8	173	13.1	132	23.5	112	238	--
23	Discarded drums	Parcel 112	W-18	2/19/14	1	--	87.4	205	--	<25.0	<25.0	<25.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			W-19	2/19/14	1	--	191	171	--	76.9	128	47.1	252	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			W-20	2/19/14	1	--	51.5	97.5	--	<25.0	34.1	<25.0	34.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Regional Board ESLs						100	100	100	44	--			220	16,000	13,000	2,800	380	380	380	38	27,000	3,800	110	40,000	8,900	38	1,200	11,000	11,000	50

Notes:
mg/kg: milligrams per kilogram
ug/kg: micrograms per kilogram
ng/kg: nanograms per kilogram
--: Not analyzed
TPHg: Total petroleum hydrocarbons as gasoline
TPHd: Total petroleum hydrocarbons as diesel; characterized as heavier hydrocarbon than diesel
TPHmo: Total petroleum hydrocarbons as motor oil
BTEX: Benzene, toluene, ethyl benzene and xylenes
ESLs: California Regional Water Quality Control Board - San Franicsco Bay Region Environmental Screening Levels (2013).
1 TEQ calculated using the World Health Organization (WHO) 2005 Toxicity Equivalent Factors; Screening level of 50 ng/kg based on DTSC HERD Draft Note 2, 2009

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS - METALS
Former Naval Medical Center Oakland
Oakland, California

Map ID (Figure 2-1)	Known or Suspect REC	Parcel	Sample ID	Date	Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
						(mg/kg)																	
3	Former ASTs	Parcel 110	W-1	2/19/14	1	--	<2.50	--	--	--	--	--	--	--	27.9	--	--	--	--	--	--	--	--
			W-2	2/19/14	1	--	<2.50	--	--	--	--	--	--	--	20.9	--	--	--	--	--	--	--	--
		Parcel 153	W-5	2/19/14	1	--	<2.50	--	--	--	--	--	--	--	9.6	--	--	--	--	--	--	--	--
			W-6	2/19/14	1	--	<2.50	--	--	--	--	--	--	--	14.3	--	--	--	--	--	--	--	--
7	Boiler Treatment Chemicals	Parcel 154	W-7	2/19/14	1	<2.50	4.74	140	<2.50	<2.50	47.4	1.07	10.1	25.1	185	0.36	<2.50	46.4	<2.50	<2.50	<2.50	52.5	164
			W-8	2/19/14	1	<2.50	6.59	124	<2.50	<2.50	49.6	<0.625	10.7	136	96.2	3.33	<2.50	60.1	<2.50	<2.50	<2.50	69.4	256
9	Former Incinerator	Parcel 114	W-9	2/19/14	1	--	4.64	--	--	--	--	--	--	--	13.4	--	--	--	--	--	--	--	--
			W-10	2/19/14	1	<2.50	4.22	180	<2.50	<2.50	70.7	--	16.5	36.5	8.86	0.11	<2.50	40.2	<2.50	<2.50	<2.50	68.3	41.4
			W-11	2/19/14	1	--	3.9	--	--	--	--	--	--	--	11.6	--	--	--	--	--	--	--	--
17	Motor Oil Spill	Parcel 125	W-12	2/19/14	1	--	4.31	--	--	--	--	--	--	--	21.7	--	--	--	--	--	--	--	--
			W-13	2/19/14	1	<2.50	4.37	254	<2.50	<2.50	76.1	--	21.1	33.9	14.9	0.243	<2.50	47.9	<2.50	<2.50	<2.50	58.1	50.8
			W-14	2/19/14	1	--	22.3	--	--	--	--	--	--	--	44.9	--	--	--	--	--	--	--	--
19	Distressed vegetation	Parcel 145	W-15	2/19/14	0.5	--	3.36	--	--	--	--	--	--	--	63.8	--	--	--	--	--	--	--	--
			W-16	2/19/14	0.5	<2.50	6.78	72.9	<2.50	<2.50	65.3	--	24.4	51.5	61.9	0.115	<2.50	40	<2.50	<2.50	<2.50	116	59.2
			W-17	2/19/14	0.5	--	12.6	--	--	--	--	--	--	--	115	--	--	--	--	--	--	--	--
23	Discarded drums	Parcel 112	W-18	2/19/14	1	--	3.82	--	--	--	--	--	--	--	53.2	--	--	--	--	--	--	--	--
			W-19	2/19/14	1	<2.50	5.27	110	<2.50	4.01	22.4	--	7.64	25.4	216	0.283	<2.50	35.7	<2.50	<2.50	<2.50	45.5	162
			W-20	2/19/14	1	--	4.32	--	--	--	--	--	--	--	221	--	--	--	--	--	--	--	--
Regional Board ESLs						20	bg	750	4	12	750	8	23	230	80	6.7	40	150	10	20	0.78	200	600

Notes:
mg/kg: milligrams per kilogram
--: Not analyzed
ESLs: California Regional Water Quality Control Board - San Franicsco Bay Region Environmental Screening Levels (2013)

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 3/7/2014

TO: MR. PETER MORRIS
WEST ENVIRONMENTAL S&T
711 GRAND AVENUE, SUITE 220
SAN RAFAEL, CA 94901

Phone: 415-460-6770
Fax: 415-460-6771
Email: main@westenvironmental.com

ACCT: 9946
PROJ: SIGNATURE.OAK KNOLL

FROM: Richard A. Kagel, Ph.D. RAK 3/7/2014
Laboratory Director

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT SIGNATURE.OAK KNOLL

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	TIME	KPI LAB #
W-1	SOIL	2/19/2014	9:52	118026
W-2	SOIL	2/19/2014	9:54	118027
W-5	SOIL	2/19/2014	9:10	118028
W-6	SOIL	2/19/2014	9:12	118029
W-7	SOIL	2/19/2014	9:00	118030
W-8	SOIL	2/19/2014	9:05	118031
W-9	SOIL	2/19/2014	11:00	118032
W-10	SOIL	2/19/2014	11:05	118033
W-11	SOIL	2/19/2014	11:10	118034
W-12	SOIL	2/19/2014	9:35	118035
W-13	SOIL	2/19/2014	9:37	118036
W-14	SOIL	2/19/2014	9:40	118037
W-15	SOIL	2/19/2014	11:15	118038
W-16	SOIL	2/19/2014	11:18	118039
W-17	SOIL	2/19/2014	11:20	118040
W-18	SOIL	2/19/2014	9:20	118041
W-19	SOIL	2/19/2014	9:22	118042
W-20	SOIL	2/19/2014	9:25	118043

The above listed sample group was received on 2/19/2014 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

METHOD: GRO-GASOLINE RANGE ORGANICS
REFERENCE: EPA 8015B

SAMPLE TYPE: SOIL
UNITS: mg/Kg

SAMPLE ID	LAB NO.	DATE SAMPLED	TIME SAMPLED	BATCH ID	DATE ANALYZED	MRL	SAMPLE CONC	GRO PATTERN
W-1	118026	02/19/2014	09:52	021114S1	02/21/2014	1.00	ND	
W-2	118027	02/19/2014	09:54	021114S1	02/21/2014	1.00	ND	
W-5	118028	02/19/2014	09:10	021114S1	02/21/2014	1.00	ND	
W-6	118029	02/19/2014	09:12	021114S1	02/21/2014	1.00	ND	

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
MRL - METHOD REPORTING LIMIT
AE - UNKNOWN HYDROCARBON WITH A SINGLE PEAK
AN - UNKNOWN HYDROCARBON WITH SEVERAL PEAKS
AS - HEAVIER HYDROCARBON THAN GASOLINE CONTRIBUTING TO GRO VALUE
CO - HYDROCARBON RESPONSE IN GASOLINE RANGE BUT DOES NOT RESEMBLE GASOLINE

APPROVED BY: CH
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-1
LAB NO: 118026
SAMPLE TYPE: SOIL
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 09:52

METHOD: VOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 5035/8260

BATCH #: 022114S1
DATE ANALYZED: 02/21/2014
UNITS: µg/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
BENZENE	71-43-2	1.69	ND
TOLUENE	108-88-3	1.69	ND
ETHYLBENZENE	100-41-4	1.69	ND
XYLENE (M+P)	1330-20-7	1.69	ND
XYLENE (O)	1330-20-7	1.69	ND

SURROGATE RECOVERY	%
DIBROMOFLUOROMETHANE	94
TOLUENE-D8	99
4-BROMOFLUOROBENZENE	99

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA -NOT APPLICABLE OR AVAILABLE

APPROVED BY: CH
DATE: 02/20/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-2
LAB NO: 118027
SAMPLE TYPE: SOIL
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 09:54

BATCH #: 022114S1
DATE ANALYZED: 02/21/2014
UNITS: µg/Kg

METHOD: VOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 5035/8260

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
BENZENE	71-43-2	1.50	ND
TOLUENE	108-88-3	1.50	ND
ETHYLBENZENE	100-41-4	1.50	ND
XYLENE (M+P)	1330-20-7	1.50	ND
XYLENE (O)	1330-20-7	1.50	ND

SURROGATE RECOVERY	%
DIBROMOFLUOROMETHANE	95
TOLUENE-D8	98
4-BROMOFLUOROBENZENE	99

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA -NOT APPLICABLE OR AVAILABLE

APPROVED BY: CH
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-5
LAB NO: 118028
SAMPLE TYPE: SOIL
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 09:10

METHOD: VOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 5035/8260

BATCH #: 022114S1
DATE ANALYZED: 02/21/2014
UNITS: µg/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
BENZENE	71-43-2	1.30	ND
TOLUENE	108-88-3	1.30	1.35
ETHYLBENZENE	100-41-4	1.30	ND
XYLENE (M+P)	1330-20-7	1.30	ND
XYLENE (O)	1330-20-7	1.30	ND

SURROGATE RECOVERY	%
DIBROMOFLUOROMETHANE	96
TOLUENE-D8	99
4-BROMOFLUOROBENZENE	98

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA -NOT APPLICABLE OR AVAILABLE

APPROVED BY: CH
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-6
LAB NO: 118029
SAMPLE TYPE: SOIL
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 09:12

BATCH #: 022114S1
METHOD: VOLATILE ORGANIC COMPOUNDS
DATE ANALYZED: 02/21/2014
REFERENCE: EPA 5035/8260
UNITS: µg/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
BENZENE	71-43-2	1.56	ND
TOLUENE	108-88-3	1.56	ND
ETHYLBENZENE	100-41-4	1.56	ND
XYLENE (M+P)	1330-20-7	1.56	ND
XYLENE (O)	1330-20-7	1.56	ND

SURROGATE RECOVERY	%
DIBROMOFLUOROMETHANE	95
TOLUENE-D8	96
4-BROMOFLUOROBENZENE	99

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA -NOT APPLICABLE OR AVAILABLE

APPROVED BY: CW
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

SAMPLE ID: W-18
LAB NO: 118041
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 09:20
K PRIME PROJECT: 9946 **BATCH #:** 022114S1
CLIENT PROJECT: SIGNATURE.OAK KNOLL **DATE ANALYZED:** 02/21/2014

METHOD: VOLATILE ORGANIC COMPOUNDS **SAMPLE TYPE:** SOIL
REFERENCE: EPA 5035/8260 **UNITS:** µg/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	1.45	ND
CHLOROMETHANE	74-87-3	1.45	ND
VINYL CHLORIDE	75-01-4	1.45	ND
BROMOMETHANE	74-83-9	1.45	ND
CHLOROETHANE	75-00-3	1.45	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.45	ND
1,1-DICHLOROETHENE	75-35-4	1.45	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.45	ND
METHYLENE CHLORIDE	75-09-2	7.25	ND
TRANS-1,2-DICHLOROETHENE	156-60-5	1.45	ND
1,1-DICHLOROETHANE	75-34-3	1.45	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.45	ND
2,2-DICHLOROPROPANE	594-20-7	1.45	ND
BROMOCHLOROMETHANE	74-97-5	1.45	ND
CHLOROFORM	67-66-3	1.45	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.45	ND
CARBON TETRACHLORIDE	56-23-5	1.45	ND
1,1-DICHLOROPROPENE	563-58-6	1.45	ND
BENZENE	71-43-2	1.45	ND
1,2-DICHLOROETHANE	107-06-2	1.45	ND
TRICHLOROETHENE	79-01-6	1.45	ND
1,2-DICHLOROPROPANE	78-87-5	1.45	ND
DIBROMOMETHANE	74-95-3	1.45	ND
BROMODICHLOROMETHANE	75-27-4	1.45	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.45	ND
TOLUENE	108-88-3	1.45	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.45	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.45	ND
TETRACHLOROETHENE	127-18-4	1.45	ND
1,3-DICHLOROPROPANE	142-28-9	1.45	ND
DIBROMOCHLOROMETHANE	124-48-1	1.45	ND
1,2-DIBROMOETHANE	106-93-4	1.45	ND
CHLOROBENZENE	108-90-7	1.45	ND
1,1,1,2-TETRACHLOROETHANE	630-20-6	1.45	ND
ETHYLBENZENE	100-41-4	1.45	ND
XYLENE (M+P)	1330-20-7	1.45	ND
XYLENE (O)	1330-20-7	1.45	ND
STYRENE	100-42-5	1.45	ND
BROMOFORM	75-25-2	1.45	ND
ISOPROPYLBENZENE	98-82-8	1.45	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.45	ND
BROMOBENZENE	108-86-1	1.45	ND
1,2,3-TRICHLOROPROPANE	96-18-4	1.45	ND
N-PROPYLBENZENE	103-65-1	1.45	ND
2-CHLOROTOLUENE	95-49-8	1.45	ND

K PRIME, INC.
LABORATORY REPORT

SAMPLE ID: W-18
LAB NO: 118041
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 09:20
BATCH #: 022114S1
DATE ANALYZED: 02/21/2014

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

METHOD: VOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 5035/8260

SAMPLE TYPE: SOIL
UNITS: µg/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
1,3,5-TRIMETHYLBENZENE	108-67-8	1.45	ND
4-CHLOROTOLUENE	106-43-4	1.45	ND
TERT-BUTYLBENZENE	98-06-6	1.45	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.45	ND
SEC-BUTYLBENZENE	135-98-8	1.45	ND
1,3-DICHLOROBENZENE	541-73-1	1.45	ND
4-ISOPROPYLTOLUENE	99-87-6	1.45	ND
1,4-DICHLOROBENZENE	106-46-7	1.45	ND
N-BUTYLBENZENE	104-51-8	1.45	ND
1,2-DICHLOROBENZENE	95-50-1	1.45	ND
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	1.45	ND
1,2,4-TRICHLOROBENZENE	120-82-1	2.90	ND
HEXACHLOROBUTADIENE	87-68-3	2.90	ND
NAPHTHALENE	91-20-3	2.90	ND
1,2,3-TRICHLOROBENZENE	87-61-6	2.90	ND

SURROGATE RECOVERY	%
DIBROMOFLUOROMETHANE	97
TOLUENE-D8	97
4-BROMOFLUOROBENZENE	90

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA -NOT APPLICABLE OR AVAILABLE

APPROVED BY: CH
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

SAMPLE ID: W-19
LAB NO: 118042
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 09:22
BATCH #: 022114S1
DATE ANALYZED: 02/21/2014

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

METHOD: VOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 5035/8260

SAMPLE TYPE: SOIL
UNITS: µg/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	1.70	ND
CHLOROMETHANE	74-87-3	1.70	ND
VINYL CHLORIDE	75-01-4	1.70	ND
BROMOMETHANE	74-83-9	1.70	ND
CHLOROETHANE	75-00-3	1.70	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.70	ND
1,1-DICHLOROETHENE	75-35-4	1.70	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.70	ND
METHYLENE CHLORIDE	75-09-2	8.48	ND
TRANS-1,2-DICHLOROETHENE	156-60-5	1.70	ND
1,1-DICHLOROETHANE	75-34-3	1.70	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.70	ND
2,2-DICHLOROPROPANE	594-20-7	1.70	ND
BROMOCHLOROMETHANE	74-97-5	1.70	ND
CHLOROFORM	67-66-3	1.70	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.70	ND
CARBON TETRACHLORIDE	56-23-5	1.70	ND
1,1-DICHLOROPROPENE	563-58-6	1.70	ND
BENZENE	71-43-2	1.70	ND
1,2-DICHLOROETHANE	107-06-2	1.70	ND
TRICHLOROETHENE	79-01-6	1.70	ND
1,2-DICHLOROPROPANE	78-87-5	1.70	ND
DIBROMOMETHANE	74-95-3	1.70	ND
BROMODICHLOROMETHANE	75-27-4	1.70	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.70	ND
TOLUENE	108-88-3	1.70	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.70	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.70	ND
TETRACHLOROETHENE	127-18-4	1.70	ND
1,3-DICHLOROPROPANE	142-28-9	1.70	ND
DIBROMOCHLOROMETHANE	124-48-1	1.70	ND
1,2-DIBROMOETHANE	106-93-4	1.70	ND
CHLOROBENZENE	108-90-7	1.70	ND
1,1,1,2-TETRACHLOROETHANE	630-20-6	1.70	ND
ETHYLBENZENE	100-41-4	1.70	ND
XYLENE (M+P)	1330-20-7	1.70	ND
XYLENE (O)	1330-20-7	1.70	ND
STYRENE	100-42-5	1.70	ND
BROMOFORM	75-25-2	1.70	ND
ISOPROPYLBENZENE	98-82-8	1.70	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.70	ND
BROMOBENZENE	108-86-1	1.70	ND
1,2,3-TRICHLOROPROPANE	96-18-4	1.70	ND
N-PROPYLBENZENE	103-65-1	1.70	ND
2-CHLOROTOLUENE	95-49-8	1.70	ND

K PRIME, INC.
LABORATORY REPORT

SAMPLE ID: W-19
LAB NO: 118042
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 09:22
BATCH #: 022114S1
DATE ANALYZED: 02/21/2014

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

METHOD: VOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 5035/8260

SAMPLE TYPE: SOIL
UNITS: µg/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
1,3,5-TRIMETHYLBENZENE	108-67-8	1.70	ND
4-CHLOROTOLUENE	106-43-4	1.70	ND
TERT-BUTYLBENZENE	98-06-6	1.70	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.70	ND
SEC-BUTYLBENZENE	135-98-8	1.70	ND
1,3-DICHLOROBENZENE	541-73-1	1.70	ND
4-ISOPROPYLTOLUENE	99-87-6	1.70	ND
1,4-DICHLOROBENZENE	106-46-7	1.70	ND
N-BUTYLBENZENE	104-51-8	1.70	ND
1,2-DICHLOROBENZENE	95-50-1	1.70	ND
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	1.70	ND
1,2,4-TRICHLOROBENZENE	120-82-1	3.39	ND
HEXACHLOROBUTADIENE	87-68-3	3.39	ND
NAPHTHALENE	91-20-3	3.39	ND
1,2,3-TRICHLOROBENZENE	87-61-6	3.39	ND

SURROGATE RECOVERY	%
DIBROMOFLUOROMETHANE	99
TOLUENE-D8	93
4-BROMOFLUOROBENZENE	81

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA -NOT APPLICABLE OR AVAILABLE

APPROVED BY: CH
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

SAMPLE ID: W-20
LAB NO: 118043
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 09:25
K PRIME PROJECT: 9946 **BATCH #:** 022114S1
CLIENT PROJECT: SIGNATURE.OAK KNOLL **DATE ANALYZED:** 02/21/2014

METHOD: VOLATILE ORGANIC COMPOUNDS **SAMPLE TYPE:** SOIL
REFERENCE: EPA 5035/8260 **UNITS:** µg/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	1.61	ND
CHLOROMETHANE	74-87-3	1.61	ND
VINYL CHLORIDE	75-01-4	1.61	ND
BROMOMETHANE	74-83-9	1.61	ND
CHLOROETHANE	75-00-3	1.61	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.61	ND
1,1-DICHLOROETHENE	75-35-4	1.61	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.61	ND
METHYLENE CHLORIDE	75-09-2	8.03	ND
TRANS-1,2-DICHLOROETHENE	156-60-5	1.61	ND
1,1-DICHLOROETHANE	75-34-3	1.61	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.61	ND
2,2-DICHLOROPROPANE	594-20-7	1.61	ND
BROMOCHLOROMETHANE	74-97-5	1.61	ND
CHLOROFORM	67-66-3	1.61	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.61	ND
CARBON TETRACHLORIDE	56-23-5	1.61	ND
1,1-DICHLOROPROPENE	563-58-6	1.61	ND
BENZENE	71-43-2	1.61	ND
1,2-DICHLOROETHANE	107-06-2	1.61	ND
TRICHLOROETHENE	79-01-6	1.61	ND
1,2-DICHLOROPROPANE	78-87-5	1.61	ND
DIBROMOMETHANE	74-95-3	1.61	ND
BROMODICHLOROMETHANE	75-27-4	1.61	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.61	ND
TOLUENE	108-88-3	1.61	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.61	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.61	ND
TETRACHLOROETHENE	127-18-4	1.61	ND
1,3-DICHLOROPROPANE	142-28-9	1.61	ND
DIBROMOCHLOROMETHANE	124-48-1	1.61	ND
1,2-DIBROMOETHANE	106-93-4	1.61	ND
CHLOROBENZENE	108-90-7	1.61	ND
1,1,1,2-TETRACHLOROETHANE	630-20-6	1.61	ND
ETHYLBENZENE	100-41-4	1.61	ND
XYLENE (M+P)	1330-20-7	1.61	ND
XYLENE (O)	1330-20-7	1.61	ND
STYRENE	100-42-5	1.61	ND
BROMOFORM	75-25-2	1.61	ND
ISOPROPYLBENZENE	98-82-8	1.61	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.61	ND
BROMOBENZENE	108-86-1	1.61	ND
1,2,3-TRICHLOROPROPANE	96-18-4	1.61	ND
N-PROPYLBENZENE	103-65-1	1.61	ND
2-CHLOROTOLUENE	95-49-8	1.61	ND

K PRIME, INC.
LABORATORY REPORT

SAMPLE ID: W-20
LAB NO: 118043
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 09:25
K PRIME PROJECT: 9946 **BATCH #:** 022114S1
CLIENT PROJECT: SIGNATURE.OAK KNOLL **DATE ANALYZED:** 02/21/2014

METHOD: VOLATILE ORGANIC COMPOUNDS **SAMPLE TYPE:** SOIL
REFERENCE: EPA 5035/8260 **UNITS:** µg/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
1,3,5-TRIMETHYLBENZENE	108-67-8	1.61	ND
4-CHLOROTOLUENE	106-43-4	1.61	ND
TERT-BUTYLBENZENE	98-06-6	1.61	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.61	ND
SEC-BUTYLBENZENE	135-98-8	1.61	ND
1,3-DICHLOROBENZENE	541-73-1	1.61	ND
4-ISOPROPYLTOLUENE	99-87-6	1.61	ND
1,4-DICHLOROBENZENE	106-46-7	1.61	ND
N-BUTYLBENZENE	104-51-8	1.61	ND
1,2-DICHLOROBENZENE	95-50-1	1.61	ND
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	1.61	ND
1,2,4-TRICHLOROBENZENE	120-82-1	3.21	ND
HEXACHLOROBUTADIENE	87-68-3	3.21	ND
NAPHTHALENE	91-20-3	3.21	ND
1,2,3-TRICHLOROBENZENE	87-61-6	3.21	ND

SURROGATE RECOVERY	%
DIBROMOFLUOROMETHANE	101
TOLUENE-D8	97
4-BROMOFLUOROBENZENE	97

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA -NOT APPLICABLE OR AVAILABLE

APPROVED BY: CH
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

METHOD: DRO **SAMPLE TYPE:** SOIL
REFERENCE: EPA 8015B **UNITS:** mg/Kg

SAMPLE ID	LAB NO.	DATE SAMPLED	BATCH ID	EXTRACT DATE	DATE ANALYZED	MRL	SAMPLE CONC	DRO PATTERN
W-1	118026	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	ND	
W-2	118027	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	ND	
W-5	118028	02/19/2014	022114S1	02/14/2014	02/24/2014	10.0	92.9	AC
W-6	118029	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	60.5	AC
W-12	118035	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	35.2	AC
W-13	118036	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	10.7	AC
W-14	118037	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	624	AC
W-15	118038	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	ND	
W-16	118039	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	18.2	
W-17	118040	02/19/2014	022114S1	02/21/2014	02/25/2014	10.0	14.8	
W-18	118041	02/19/2014	022114S1	02/21/2014	02/25/2014	50.0	87.4	AC
W-19	118042	02/19/2014	022114S1	02/21/2014	02/25/2014	50.0	191	AN
W-20	118043	02/19/2014	022114S1	02/21/2014	02/25/2014	50.0	51.5	AN

NOTES:

DRO	Diesel Range Organics (C12-C23) with Silica Gel Cleanup
ND	Not Detected at or above the stated MRL
NA	Not Applicable or Available
MRL	Method Reporting Limit
AD	Typical Pattern for Diesel
AM	Hydrocarbon response is in the C12-C22 range
AC	Heavier hydrocarbons contributing to diesel range quantitation
AJ	Heavier hydrocarbon than diesel
AK	Lighter hydrocarbon than diesel
AE	Unknown hydrocarbon with a single peak
AN	Unknown hydrocarbon with several peaks

APPROVED BY: _____
DATE: 3/7/14

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

METHOD: HRO **SAMPLE TYPE:** SOIL
REFERENCE: EPA 8015B **UNITS:** mg/Kg

SAMPLE ID	LAB NO.	DATE SAMPLED	BATCH ID	EXTRACT DATE	DATE ANALYZED	MRL	SAMPLE CONC	HRO PATTERN
W-1	118026	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	ND	
W-2	118027	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	ND	
W-5	118028	02/19/2014	022114S1	02/14/2014	02/24/2014	10.0	14.4	
W-6	118029	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	17.8	
W-12	118035	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	58.0	
W-13	118036	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	17.0	
W-14	118037	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	513	
W-15	118038	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	28.1	AN
W-16	118039	02/19/2014	022114S1	02/21/2014	02/24/2014	10.0	42.2	AN
W-17	118040	02/19/2014	022114S1	02/21/2014	02/25/2014	10.0	44.1	AN
W-18	118041	02/19/2014	022114S1	02/21/2014	02/25/2014	50.0	205	
W-19	118042	02/19/2014	022114S1	02/21/2014	02/25/2014	50.0	171	
W-20	118043	02/19/2014	022114S1	02/21/2014	02/25/2014	50.0	97.5	

NOTES:

HRO	Heavy Range Organics (C24-C34) with Silica Gel Cleanup
ND	Not Detected at or above the stated MRL
NA	Not Applicable or Available
MRL	Method Reporting Limit
AE	Unknown hydrocarbon with a single peak
AN	Unknown hydrocarbon with several peaks

APPROVED BY: MRC
DATE: 3/7/14

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-2
LAB NO: 118027
DATE SAMPLED: 02/19/14
TIME SAMPLED: 9:54
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NUMBER	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	2.50	ND
ACENAPHTHYLENE	208-96-8	2.50	ND
ANTHRACENE	120-12-7	2.50	ND
BENZO (A) ANTHRACENE	56-55-3	2.50	ND
BENZO (B) FLUORANTHENE	205-99-2	2.50	ND
BENZO (K) FLUORANTHENE	207-08-9	2.50	ND
BENZO (A) PYRENE	50-32-8	2.50	ND
BENZO (G,H,I) PERYLENE	191-24-2	10.0	ND
CHRYSENE	218-01-9	2.50	ND
DIBENZO (A,H) ANTHRACENE	53-70-3	10.0	ND
FLUORANTHENE	206-44-0	2.50	ND
FLUORENE	86-73-7	2.50	ND
INDENO (1,2,3-CD) PYRENE	193-39-5	10.0	ND
NAPHTHALENE	91-20-3	2.50	ND
PHENANTHRENE	85-01-8	2.50	ND
PYRENE	129-00-0	2.50	ND

SURROGATE RECOVERY	%
2-FLUOROBIPHENYL	100
P-TERPHENYL-D14	110

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: [signature]
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-6
LAB NO: 118029
DATE SAMPLED: 02/19/14
TIME SAMPLED: 9:12
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NUMBER	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	2.50	ND
ACENAPHTHYLENE	208-96-8	2.50	3.72
ANTHRACENE	120-12-7	2.50	10.0
BENZO (A) ANTHRACENE	56-55-3	2.50	84.9
BENZO (B) FLUORANTHENE	205-99-2	2.50	126
BENZO (K) FLUORANTHENE	207-08-9	2.50	90.5
BENZO (A) PYRENE	50-32-8	2.50	110
BENZO (G,H,I) PERYLENE	191-24-2	10.0	225
CHRYSENE	218-01-9	2.50	169
DIBENZO (A,H) ANTHRACENE	53-70-3	10.0	50.7
FLUORANTHENE	206-44-0	2.50	64.0
FLUORENE	86-73-7	2.50	3.94
INDENO (1,2,3-CD) PYRENE	193-39-5	10.0	165
NAPHTHALENE	91-20-3	2.50	5.76
PHENANTHRENE	85-01-8	2.50	14.8
PYRENE	129-00-0	2.50	107

SURROGATE RECOVERY	%
2-FLUOROBIPHENYL	103
P-TERPHENYL-D14	115

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: CH
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-9
LAB NO: 118032
DATE SAMPLED: 02/19/14
TIME SAMPLED: 11:00
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NUMBER	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	2.50	ND
ACENAPHTHYLENE	208-96-8	2.50	ND
ANTHRACENE	120-12-7	2.50	ND
BENZO (A) ANTHRACENE	56-55-3	2.50	ND
BENZO (B) FLUORANTHENE	205-99-2	2.50	3.13
BENZO (K) FLUORANTHENE	207-08-9	2.50	ND
BENZO (A) PYRENE	50-32-8	2.50	3.09
BENZO (G,H,I) PERYLENE	191-24-2	10.0	ND
CHRYSENE	218-01-9	2.50	4.28
DIBENZO (A,H) ANTHRACENE	53-70-3	10.0	ND
FLUORANTHENE	206-44-0	2.50	3.57
FLUORENE	86-73-7	2.50	ND
INDENO (1,2,3-CD) PYRENE	193-39-5	10.0	ND
NAPHTHALENE	91-20-3	2.50	ND
PHENANTHRENE	85-01-8	2.50	3.42
PYRENE	129-00-0	2.50	5.29

SURROGATE RECOVERY	%
2-FLUOROBIPHENYL	98
P-TERPHENYL-D14	117

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: CH
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-10
LAB NO: 118033
DATE SAMPLED: 02/19/14
TIME SAMPLED: 11:05
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NUMBER	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	2.50	ND
ACENAPHTHYLENE	208-96-8	2.50	ND
ANTHRACENE	120-12-7	2.50	ND
BENZO (A) ANTHRACENE	56-55-3	2.50	2.91
BENZO (B) FLUORANTHENE	205-99-2	2.50	3.21
BENZO (K) FLUORANTHENE	207-08-9	2.50	ND
BENZO (A) PYRENE	50-32-8	2.50	ND
BENZO (G,H,I) PERYLENE	191-24-2	10.0	ND
CHRYSENE	218-01-9	2.50	6.28
DIBENZO (A,H) ANTHRACENE	53-70-3	10.0	ND
FLUORANTHENE	206-44-0	2.50	5.12
FLUORENE	86-73-7	2.50	ND
INDENO (1,2,3-CD) PYRENE	193-39-5	10.0	ND
NAPHTHALENE	91-20-3	2.50	3.36
PHENANTHRENE	85-01-8	2.50	10.5
PYRENE	129-00-0	2.50	7.41

SURROGATE RECOVERY	%
2-FLUOROBIPHENYL	91
P-TERPHENYL-D14	109

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: CW
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-11
LAB NO: 118034
DATE SAMPLED: 02/19/14
TIME SAMPLED: 11:10
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NUMBER	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	2.50	ND
ACENAPHTHYLENE	208-96-8	2.50	ND
ANTHRACENE	120-12-7	2.50	ND
BENZO (A) ANTHRACENE	56-55-3	2.50	ND
BENZO (B) FLUORANTHENE	205-99-2	2.50	2.95
BENZO (K) FLUORANTHENE	207-08-9	2.50	ND
BENZO (A) PYRENE	50-32-8	2.50	ND
BENZO (G,H,I) PERYLENE	191-24-2	10.0	ND
CHRYSENE	218-01-9	2.50	5.56
DIBENZO (A,H) ANTHRACENE	53-70-3	10.0	ND
FLUORANTHENE	206-44-0	2.50	3.05
FLUORENE	86-73-7	2.50	ND
INDENO (1,2,3-CD) PYRENE	193-39-5	10.0	ND
NAPHTHALENE	91-20-3	2.50	ND
PHENANTHRENE	85-01-8	2.50	6.94
PYRENE	129-00-0	2.50	3.95

SURROGATE RECOVERY	%
2-FLUOROBIPHENYL	93
P-TERPHENYL-D14	105

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: [signature]
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-12
LAB NO: 118035
DATE SAMPLED: 02/19/14
TIME SAMPLED: 09:35
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NUMBER	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	2.50	ND
ACENAPHTHYLENE	208-96-8	2.50	ND
ANTHRACENE	120-12-7	2.50	ND
BENZO (A) ANTHRACENE	56-55-3	2.50	7.51
BENZO (B) FLUORANTHENE	205-99-2	2.50	8.16
BENZO (K) FLUORANTHENE	207-08-9	2.50	6.19
BENZO (A) PYRENE	50-32-8	2.50	9.01
BENZO (G,H,I) PERYLENE	191-24-2	10.0	11.8
CHRYSENE	218-01-9	2.50	9.42
DIBENZO (A,H) ANTHRACENE	53-70-3	10.0	ND
FLUORANTHENE	206-44-0	2.50	9.21
FLUORENE	86-73-7	2.50	ND
INDENO (1,2,3-CD) PYRENE	193-39-5	10.0	ND
NAPHTHALENE	91-20-3	2.50	ND
PHENANTHRENE	85-01-8	2.50	5.36
PYRENE	129-00-0	2.50	13.9

SURROGATE RECOVERY	%
2-FLUOROBIPHENYL	100
P-TERPHENYL-D14	119

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: GW
DATE: 03/03/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-13
LAB NO: 118036
DATE SAMPLED: 02/19/14
TIME SAMPLED: 9:37
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NUMBER	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	2.50	ND
ACENAPHTHYLENE	208-96-8	2.50	ND
ANTHRACENE	120-12-7	2.50	ND
BENZO (A) ANTHRACENE	56-55-3	2.50	3.83
BENZO (B) FLUORANTHENE	205-99-2	2.50	4.53
BENZO (K) FLUORANTHENE	207-08-9	2.50	3.37
BENZO (A) PYRENE	50-32-8	2.50	5.23
BENZO (G,H,I) PERYLENE	191-24-2	10.0	ND
CHRYSENE	218-01-9	2.50	5.22
DIBENZO (A,H) ANTHRACENE	53-70-3	10.0	ND
FLUORANTHENE	206-44-0	2.50	4.45
FLUORENE	86-73-7	2.50	ND
INDENO (1,2,3-CD) PYRENE	193-39-5	10.0	ND
NAPHTHALENE	91-20-3	2.50	ND
PHENANTHRENE	85-01-8	2.50	ND
PYRENE	129-00-0	2.50	5.08

SURROGATE RECOVERY	%
2-FLUOROBIPHENYL	92
P-TERPHENYL-D14	98

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: CH
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-14
LAB NO: 118037
DATE SAMPLED: 02/19/14
TIME SAMPLED: 9:40
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NUMBER	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	2.50	ND
ACENAPHTHYLENE	208-96-8	2.50	4.78
ANTHRACENE	120-12-7	2.50	4.89
BENZO (A) ANTHRACENE	56-55-3	2.50	25.5
BENZO (B) FLUORANTHENE	205-99-2	2.50	38.2
BENZO (K) FLUORANTHENE	207-08-9	2.50	28.2
BENZO (A) PYRENE	50-32-8	2.50	41.3
BENZO (G,H,I) PERYLENE	191-24-2	10.0	66.8
CHRYSENE	218-01-9	2.50	31.3
DIBENZO (A,H) ANTHRACENE	53-70-3	10.0	19.2
FLUORANTHENE	206-44-0	2.50	25.4
FLUORENE	86-73-7	2.50	ND
INDENO (1,2,3-CD) PYRENE	193-39-5	10.0	29.9
NAPHTHALENE	91-20-3	2.50	ND
PHENANTHRENE	85-01-8	2.50	16.8
PYRENE	129-00-0	2.50	43.5

SURROGATE RECOVERY	%
2-FLUOROBIPHENYL	108
P-TERPHENYL-D14	102

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: CW
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-15
LAB NO: 118038
DATE SAMPLED: 02/19/14
TIME SAMPLED: 11:15
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NUMBER	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	2.50	ND
ACENAPHTHYLENE	208-96-8	2.50	7.59
ANTHRACENE	120-12-7	2.50	7.44
BENZO (A) ANTHRACENE	56-55-3	2.50	34.0
BENZO (B) FLUORANTHENE	205-99-2	2.50	55.1
BENZO (K) FLUORANTHENE	207-08-9	2.50	44.8
BENZO (A) PYRENE	50-32-8	2.50	53.8
BENZO (G,H,I) PERYLENE	191-24-2	10.0	108
CHRYSENE	218-01-9	2.50	65.0
DIBENZO (A,H) ANTHRACENE	53-70-3	10.0	17.3
FLUORANTHENE	206-44-0	2.50	69.1
FLUORENE	86-73-7	2.50	7.87
INDENO (1,2,3-CD) PYRENE	193-39-5	10.0	55.9
NAPHTHALENE	91-20-3	2.50	13.9
PHENANTHRENE	85-01-8	2.50	36.3
PYRENE	129-00-0	2.50	108

SURROGATE RECOVERY	%
2-FLUOROBIPHENYL	93
P-TERPHENYL-D14	112

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: CW
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-16
LAB NO: 118039
DATE SAMPLED: 02/19/14
TIME SAMPLED: 11:18
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NUMBER	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	2.50	3.65
ACENAPHTHYLENE	208-96-8	2.50	28.8
ANTHRACENE	120-12-7	2.50	11.3
BENZO (A) ANTHRACENE	56-55-3	2.50	58.2
BENZO (B) FLUORANTHENE	205-99-2	2.50	87.1
BENZO (K) FLUORANTHENE	207-08-9	2.50	79.2
BENZO (A) PYRENE	50-32-8	2.50	86.8
BENZO (G,H,I) PERYLENE	191-24-2	10.0	159
CHRYSENE	218-01-9	2.50	98.3
DIBENZO (A,H) ANTHRACENE	53-70-3	10.0	39.3
FLUORANTHENE	206-44-0	2.50	113
FLUORENE	86-73-7	2.50	37.3
INDENO (1,2,3-CD) PYRENE	193-39-5	10.0	81.5
NAPHTHALENE	91-20-3	2.50	19.8
PHENANTHRENE	85-01-8	2.50	76.7
PYRENE	129-00-0	2.50	144

SURROGATE RECOVERY	%
2-FLUOROBIPHENYL	89
P-TERPHENYL-D14	112

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: CW
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-17
LAB NO: 118040
DATE SAMPLED: 02/19/14
TIME SAMPLED: 11:20
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NUMBER	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	2.50	4.52
ACENAPHTHYLENE	208-96-8	2.50	18.6
ANTHRACENE	120-12-7	2.50	18.0
BENZO (A) ANTHRACENE	56-55-3	2.50	129
BENZO (B) FLUORANTHENE	205-99-2	2.50	141
BENZO (K) FLUORANTHENE	207-08-9	2.50	110
BENZO (A) PYRENE	50-32-8	2.50	139
BENZO (G,H,I) PERYLENE	191-24-2	10.0	192
CHRYSENE	218-01-9	2.50	166
DIBENZO (A,H) ANTHRACENE	53-70-3	10.0	35.8
FLUORANTHENE	206-44-0	2.50	173
FLUORENE	86-73-7	2.50	13.1
INDENO (1,2,3-CD) PYRENE	193-39-5	10.0	132
NAPHTHALENE	91-20-3	2.50	23.5
PHENANTHRENE	85-01-8	2.50	112
PYRENE	129-00-0	2.50	238

SURROGATE RECOVERY	%
2-FLUOROBIPHENYL	91
P-TERPHENYL-D14	120

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: CW
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-15
LAB NO: 118038
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 11:15
BATCH #: 022514S1
DATE EXTRACTED: 02/25/2014
DATE ANALYZED: 02/26/2014

METHOD: POLYCHLORINATED BIPHENYLS
REFERENCE: EPA 3550/8082

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
AROCLOR 1016	12674-11-2	25.0	ND
AROCLOR 1221	11104-28-2	25.0	ND
AROCLOR 1232	11141-16-5	25.0	ND
AROCLOR 1242	53469-21-9	25.0	ND
AROCLOR 1248	12672-29-6	25.0	ND
AROCLOR 1254	11097-69-1	25.0	ND
AROCLOR 1260	11096-82-5	25.0	ND

SURROGATE RECOVERY	%
TCMX	94
DCBP	101

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: CN
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-16
LAB NO: 118039
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 11:18
BATCH #: 022514S1
DATE EXTRACTED: 02/25/2014
DATE ANALYZED: 02/26/2014

METHOD: POLYCHLORINATED BIPHENYLS
REFERENCE: EPA 3550/8082

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
AROCLOR 1016	12674-11-2	25.0	ND
AROCLOR 1221	11104-28-2	25.0	ND
AROCLOR 1232	11141-16-5	25.0	ND
AROCLOR 1242	53469-21-9	25.0	ND
AROCLOR 1248	12672-29-6	25.0	ND
AROCLOR 1254	11097-69-1	25.0	ND
AROCLOR 1260	11096-82-5	25.0	ND

SURROGATE RECOVERY	%
TCMX	97
DCBP	105

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: CW
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-17
LAB NO: 118040
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 11:20
BATCH #: 022514S1
DATE EXTRACTED: 02/25/2014
DATE ANALYZED: 02/26/2014

METHOD: POLYCHLORINATED BIPHENYLS
REFERENCE: EPA 3550/8082

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
AROCLOR 1016	12674-11-2	25.0	ND
AROCLOR 1221	11104-28-2	25.0	ND
AROCLOR 1232	11141-16-5	25.0	ND
AROCLOR 1242	53469-21-9	25.0	ND
AROCLOR 1248	12672-29-6	25.0	ND
AROCLOR 1254	11097-69-1	25.0	ND
AROCLOR 1260	11096-82-5	25.0	ND

SURROGATE RECOVERY	%
TCMX	91
DCBP	102

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: _____
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-18
LAB NO: 118041
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 9:20
BATCH #: 022514S1
DATE EXTRACTED: 02/25/2014
DATE ANALYZED: 02/26/2014

METHOD: POLYCHLORINATED BIPHENYLS
REFERENCE: EPA 3550/8082

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
AROCLOR 1016	12674-11-2	25.0	ND
AROCLOR 1221	11104-28-2	25.0	ND
AROCLOR 1232	11141-16-5	25.0	ND
AROCLOR 1242	53469-21-9	25.0	ND
AROCLOR 1248	12672-29-6	25.0	ND
AROCLOR 1254	11097-69-1	25.0	ND
AROCLOR 1260	11096-82-5	25.0	ND

SURROGATE RECOVERY	%
TCMX	97
DCBP	90

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: _____
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-19
LAB NO: 118042
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 9:22
BATCH #: 022514S1
DATE EXTRACTED: 02/25/2014
DATE ANALYZED: 02/26/2014

METHOD: POLYCHLORINATED BIPHENYLS
REFERENCE: EPA 3550/8082

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
AROCLOR 1016	12674-11-2	25.0	ND
AROCLOR 1221	11104-28-2	25.0	ND
AROCLOR 1232	11141-16-5	25.0	ND
AROCLOR 1242	53469-21-9	25.0	ND
AROCLOR 1248	12672-29-6	25.0	76.9
AROCLOR 1254	11097-69-1	25.0	128
AROCLOR 1260	11096-82-5	25.0	47.1

SURROGATE RECOVERY	%
TCMX	92
DCBP	89

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: AW
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE ID: W-20
LAB NO: 118043
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 9:25
BATCH #: 022514S1
DATE EXTRACTED: 02/25/2014
DATE ANALYZED: 02/26/2014

METHOD: POLYCHLORINATED BIPHENYLS
REFERENCE: EPA 3550/8082

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
AROCLOR 1016	12674-11-2	25.0	ND
AROCLOR 1221	11104-28-2	25.0	ND
AROCLOR 1232	11141-16-5	25.0	ND
AROCLOR 1242	53469-21-9	25.0	ND
AROCLOR 1248	12672-29-6	25.0	ND
AROCLOR 1254	11097-69-1	25.0	34.1
AROCLOR 1260	11096-82-5	25.0	ND

SURROGATE RECOVERY	%
TCMX	87
DCBP	85

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: CW
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

METHOD: TOTAL ARSENIC
REFERENCE: EPA 3050B/6020A

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE TYPE: SOIL
UNITS: mg/Kg

SAMPLE ID	LAB ID	BATCH #	DATE SAMPLED	DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
W-1	118026	022414S1	02/19/2014	02/25/2014	2.50	ND
W-2	118027	022414S1	02/19/2014	02/25/2014	2.50	ND
W-5	118028	022414S1	02/19/2014	02/25/2014	2.50	ND
W-6	118029	022414S1	02/19/2014	02/25/2014	2.50	ND
W-9	118032	022414S1	02/19/2014	02/25/2014	2.50	4.64
W-11	118034	022414S1	02/19/2014	02/25/2014	2.50	3.90
W-12	118035	022414S1	02/19/2014	02/25/2014	2.50	4.31
W-14	118037	022414S1	02/19/2014	02/25/2014	2.50	22.3
W-15	118038	022414S1	02/19/2014	02/25/2014	2.50	3.36
W-17	118040	022414S1	02/19/2014	02/25/2014	2.50	12.6
W-18	118041	022414S1	02/19/2014	02/25/2014	2.50	3.82
W-20	118043	022414S1	02/19/2014	02/25/2014	2.50	4.32

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: CH

DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

METHOD: TOTAL LEAD
REFERENCE: EPA 3050B/6020A

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE TYPE: SOIL
UNITS: mg/Kg

SAMPLE ID	LAB ID	BATCH #	DATE SAMPLED	DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
W-1	118026	022414S1	02/19/2014	02/25/2014	2.50	27.9
W-2	118027	022414S1	02/19/2014	02/25/2014	2.50	20.9
W-5	118028	022414S1	02/19/2014	02/25/2014	2.50	9.60
W-6	118029	022414S1	02/19/2014	02/25/2014	2.50	14.3
W-9	118032	022414S1	02/19/2014	02/25/2014	2.50	13.4
W-11	118034	022414S1	02/19/2014	02/25/2014	2.50	11.6
W-12	118035	022414S1	02/19/2014	02/25/2014	2.50	21.7
W-14	118037	022414S1	02/19/2014	02/25/2014	2.50	44.9
W-15	118038	022414S1	02/19/2014	02/25/2014	2.50	63.8
W-17	118040	022414S1	02/19/2014	02/25/2014	2.50	115
W-18	118041	022414S1	02/19/2014	02/25/2014	2.50	53.2
W-20	118043	022414S1	02/19/2014	02/25/2014	2.50	221

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: CW

DATE: 02/28/2014

K PRIME, INC.

LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

METHOD: TOTAL METALS BY ICP/MS
REFERENCE: EPA 3050B/6020A

SAMPLE ID: W-7
LAB NO: 118030
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 9:00
BATCH ID: 022414S1

SAMPLE TYPE: SOIL
UNITS: mg/Kg

ELEMENT NAME		DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
ANTIMONY	Sb	02/25/2014	2.50	ND
ARSENIC	As	02/25/2014	2.50	4.74
BARIUM	Ba	02/25/2014	2.50	140
BERYLLIUM	Be	02/25/2014	2.50	ND
CADMIUM	Cd	02/25/2014	2.50	ND
CHROMIUM	Cr	02/25/2014	2.50	47.4
COBALT	Co	02/25/2014	2.50	10.1
COPPER	Cu	02/25/2014	2.50	25.1
LEAD	Pb	02/25/2014	2.50	185
MERCURY	Hg	02/25/2014	0.100	0.360
MOLYBDENUM	Mo	02/25/2014	2.50	ND
NICKEL	Ni	02/25/2014	2.50	46.4
SELENIUM	Se	02/25/2014	2.50	ND
SILVER	Ag	02/25/2014	2.50	ND
THALLIUM	Tl	02/25/2014	2.50	ND
VANADIUM	V	02/25/2014	2.50	52.5
ZINC	Zn	02/25/2014	2.50	164

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: CH
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

METHOD: TOTAL METALS BY ICP/MS
REFERENCE: EPA 3050B/6020A

SAMPLE ID: W-8
LAB NO: 118031
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 9:05
BATCH ID: 022414S1

SAMPLE TYPE: SOIL
UNITS: mg/Kg

ELEMENT NAME		DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
ANTIMONY	Sb	02/25/2014	2.50	ND
ARSENIC	As	02/25/2014	2.50	6.59
BARIUM	Ba	02/25/2014	2.50	124
BERYLLIUM	Be	02/25/2014	2.50	ND
CADMIUM	Cd	02/25/2014	2.50	ND
CHROMIUM	Cr	02/25/2014	2.50	49.6
COBALT	Co	02/25/2014	2.50	10.7
COPPER	Cu	02/25/2014	2.50	136
LEAD	Pb	02/25/2014	2.50	96.2
MERCURY	Hg	02/25/2014	0.100	3.33
MOLYBDENUM	Mo	02/25/2014	2.50	ND
NICKEL	Ni	02/25/2014	2.50	60.1
SELENIUM	Se	02/25/2014	2.50	ND
SILVER	Ag	02/25/2014	2.50	ND
THALLIUM	Tl	02/25/2014	2.50	ND
VANADIUM	V	02/25/2014	2.50	69.4
ZINC	Zn	02/25/2014	2.50	256

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: [signature]
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

METHOD: TOTAL METALS BY ICP/MS
REFERENCE: EPA 3050B/6020A

SAMPLE ID: W-10
LAB NO: 118033
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 11:05
BATCH ID: 022414S1

SAMPLE TYPE: SOIL
UNITS: mg/Kg

ELEMENT NAME		DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
ANTIMONY	Sb	02/25/2014	2.50	ND
ARSENIC	As	02/25/2014	2.50	4.22
BARIUM	Ba	02/25/2014	2.50	180
BERYLLIUM	Be	02/25/2014	2.50	ND
CADMIUM	Cd	02/25/2014	2.50	ND
CHROMIUM	Cr	02/25/2014	2.50	70.7
COBALT	Co	02/25/2014	2.50	16.5
COPPER	Cu	02/25/2014	2.50	36.5
LEAD	Pb	02/25/2014	2.50	8.86
MERCURY	Hg	02/25/2014	0.100	0.110
MOLYBDENUM	Mo	02/25/2014	2.50	ND
NICKEL	Ni	02/25/2014	2.50	40.2
SELENIUM	Se	02/25/2014	2.50	ND
SILVER	Ag	02/25/2014	2.50	ND
THALLIUM	Tl	02/25/2014	2.50	ND
VANADIUM	V	02/25/2014	2.50	68.3
ZINC	Zn	02/25/2014	2.50	41.4

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: [signature]
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

METHOD: TOTAL METALS BY ICP/MS
REFERENCE: EPA 3050B/6020A

SAMPLE ID: W-13
LAB NO: 118036
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 9:37
BATCH ID: 022414S1

SAMPLE TYPE: SOIL
UNITS: mg/Kg

ELEMENT NAME		DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
ANTIMONY	Sb	02/25/2014	2.50	ND
ARSENIC	As	02/25/2014	2.50	4.37
BARIUM	Ba	02/25/2014	2.50	254
BERYLLIUM	Be	02/25/2014	2.50	ND
CADMIUM	Cd	02/25/2014	2.50	ND
CHROMIUM	Cr	02/25/2014	2.50	76.1
COBALT	Co	02/25/2014	2.50	21.1
COPPER	Cu	02/25/2014	2.50	33.9
LEAD	Pb	02/25/2014	2.50	14.9
MERCURY	Hg	02/25/2014	0.100	0.243
MOLYBDENUM	Mo	02/25/2014	2.50	ND
NICKEL	Ni	02/25/2014	2.50	47.9
SELENIUM	Se	02/25/2014	2.50	ND
SILVER	Ag	02/25/2014	2.50	ND
THALLIUM	Tl	02/25/2014	2.50	ND
VANADIUM	V	02/25/2014	2.50	58.1
ZINC	Zn	02/25/2014	2.50	50.8

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: [signature]
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

METHOD: TOTAL METALS BY ICP/MS
REFERENCE: EPA 3050B/6020A

SAMPLE ID: W-16
LAB NO: 118039
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 11:18
BATCH ID: 022414S1

SAMPLE TYPE: SOIL
UNITS: mg/Kg

ELEMENT NAME		DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
ANTIMONY	Sb	02/25/2014	2.50	ND
ARSENIC	As	02/25/2014	2.50	6.78
BARIUM	Ba	02/25/2014	2.50	72.9
BERYLLIUM	Be	02/25/2014	2.50	ND
CADMIUM	Cd	02/25/2014	2.50	ND
CHROMIUM	Cr	02/25/2014	2.50	65.3
COBALT	Co	02/25/2014	2.50	24.4
COPPER	Cu	02/25/2014	2.50	51.5
LEAD	Pb	02/25/2014	2.50	61.9
MERCURY	Hg	02/25/2014	0.100	0.115
MOLYBDENUM	Mo	02/25/2014	2.50	ND
NICKEL	Ni	02/25/2014	2.50	40.0
SELENIUM	Se	02/25/2014	2.50	ND
SILVER	Ag	02/25/2014	2.50	ND
THALLIUM	Ti	02/25/2014	2.50	ND
VANADIUM	V	02/25/2014	2.50	116
ZINC	Zn	02/25/2014	2.50	59.2

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: CH
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

METHOD: TOTAL METALS BY ICP/MS
REFERENCE: EPA 3050B/6020A

SAMPLE ID: W-19
LAB NO: 118042
DATE SAMPLED: 02/19/2014
TIME SAMPLED: 9:22
BATCH ID: 022414S1

SAMPLE TYPE: SOIL
UNITS: mg/Kg

ELEMENT NAME		DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
ANTIMONY	Sb	02/25/2014	2.50	ND
ARSENIC	As	02/25/2014	2.50	5.27
BARIUM	Ba	02/25/2014	2.50	110
BERYLLIUM	Be	02/25/2014	2.50	ND
CADMIUM	Cd	02/25/2014	2.50	4.01
CHROMIUM	Cr	02/25/2014	2.50	22.4
COBALT	Co	02/25/2014	2.50	7.64
COPPER	Cu	02/25/2014	2.50	25.4
LEAD	Pb	02/25/2014	2.50	216
MERCURY	Hg	02/25/2014	0.100	0.283
MOLYBDENUM	Mo	02/25/2014	2.50	ND
NICKEL	Ni	02/25/2014	2.50	35.7
SELENIUM	Se	02/25/2014	2.50	ND
SILVER	Ag	02/25/2014	2.50	ND
THALLIUM	Tl	02/25/2014	2.50	ND
VANADIUM	V	02/25/2014	2.50	45.5
ZINC	Zn	02/25/2014	2.50	162

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: CH
DATE: 02/28/2014

K PRIME, INC.
LABORATORY REPORT

METHOD: HEXAVALENT CHROMIUM
REFERENCE: EPA 7199

K PRIME PROJECT: 9946
CLIENT PROJECT: SIGNATURE.OAK KNOLL

SAMPLE TYPE: SOIL
UNITS: MG/KG

SAMPLE ID	LAB ID #	DATE SAMPLED	BATCH ID	DATE ANALYZED	MRL	SAMPLE CONC
W-7	118030	2/19/2014	021414S1	2/20/2014	0.625	1.07
W-8	118031	2/19/2014	021414S1	2/20/2014	0.625	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE
MRL - METHOD REPORTING LIMIT

APPROVED BY: CH

DATE: 02/28/2014

K PRIME, INC.

LABORATORY QC REPORT

METHOD: GRO-GASOLINE RANGE ORGANICS
REFERENCE: EPA 8015B

METHOD BLANK ID: B021114S1
SAMPLE TYPE: SOIL

BATCH #: 021114S1
DATE EXTRACTED: 02/11/2014
DATE ANALYZED: 02/11/2014

UNITS: mg/kg

COMPOUND NAME	REPORTING LIMIT	SAMPLE CONC
TPH-G	1.00	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

SAMPLE ID: L021114S1
DUPLICATE ID: D021114S1
BATCH #: 021114S1
SAMPLE TYPE: SOIL
UNITS: mg/kg

DATE EXTRACTED: 02/11/2014
DATE ANALYZED: 02/11/2014

ACCURACY (MATRIX SPIKE)

PARAMETER	SPIKE ADDED	SAMPLE RESULT	SPIKE RESULT	RECOVERY (%)	LIMITS (%)
TPH-G	5.00	ND	4.78	96	60-140

PRECISION (SPIKE DUPLICATE)

COMPOUND NAME	REPORTING LIMIT	SPIKE RESULT	DUPLICATE RESULT	RPD (%)	LIMITS (%)
TPH-G	1.00	4.78	5.27	9.6	±20

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

K PRIME, INC.

LABORATORY METHOD BLANK REPORT **METHOD BLANK ID:** B022114S1

BATCH #: 022114S1
DATE ANALYZED: 02/21/2014

METHOD: VOLATILE ORGANIC COMPOUNDS **SAMPLE TYPE:** SOIL
REFERENCE: EPA 5035/8260 **UNITS:** µg/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	1.50	ND
CHLOROMETHANE	74-87-3	1.50	ND
VINYL CHLORIDE	75-01-4	1.50	ND
BROMOMETHANE	74-83-9	1.50	ND
CHLOROETHANE	75-00-3	1.50	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.50	ND
1,1-DICHLOROETHENE	75-35-4	1.50	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.50	ND
METHYLENE CHLORIDE	75-09-2	7.50	ND
TRANS-1,2-DICHLOROETHENE	156-60-5	1.50	ND
1,1-DICHLOROETHANE	75-34-3	1.50	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.50	ND
2,2-DICHLOROPROPANE	594-20-7	1.50	ND
BROMOCHLOROMETHANE	74-97-5	1.50	ND
CHLOROFORM	67-66-3	1.50	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.50	ND
CARBON TETRACHLORIDE	56-23-5	1.50	ND
1,1-DICHLOROPROPENE	563-58-6	1.50	ND
BENZENE	71-43-2	1.50	ND
1,2-DICHLOROETHANE	107-06-2	1.50	ND
TRICHLOROETHENE	79-01-6	1.50	ND
1,2-DICHLOROPROPANE	78-87-5	1.50	ND
DIBROMOMETHANE	74-95-3	1.50	ND
BROMODICHLOROMETHANE	75-27-4	1.50	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.50	ND
TOLUENE	108-88-3	1.50	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.50	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.50	ND
TETRACHLOROETHENE	127-18-4	1.50	ND
1,3-DICHLOROPROPANE	142-28-9	1.50	ND
DIBROMOCHLOROMETHANE	124-48-1	1.50	ND
1,2-DIBROMOETHANE	106-93-4	1.50	ND
CHLOROBENZENE	108-90-7	1.50	ND
1,1,1,2-TETRACHLOROETHANE	630-20-6	1.50	ND
ETHYLBENZENE	100-41-4	1.50	ND
XYLENE (M+P)	1330-20-7	1.50	ND
XYLENE (O)	1330-20-7	1.50	ND
STYRENE	100-42-5	1.50	ND
BROMOFORM	75-25-2	1.50	ND
ISOPROPYLBENZENE	98-82-8	1.50	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.50	ND
BROMOBENZENE	108-86-1	1.50	ND
1,2,3-TRICHLOROPROPANE	96-18-4	1.50	ND
N-PROPYLBENZENE	103-65-1	1.50	ND
2-CHLOROTOLUENE	95-49-8	1.50	ND

K PRIME, INC.

LABORATORY METHOD BLANK REPORT **METHOD BLANK ID:** B022114S1

BATCH #: 022114S1
DATE ANALYZED: 02/21/2014

METHOD: VOLATILE ORGANIC COMPOUNDS **SAMPLE TYPE:** SOIL
REFERENCE: EPA 5035/8260 **UNITS:** µg/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
1,3,5-TRIMETHYLBENZENE	108-67-8	1.50	ND
4-CHLOROTOLUENE	106-43-4	1.50	ND
TERT-BUTYLBENZENE	98-06-6	1.50	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.50	ND
SEC-BUTYLBENZENE	135-98-8	1.50	ND
1,3-DICHLOROBENZENE	541-73-1	1.50	ND
4-ISOPROPYLTOLUENE	99-87-6	1.50	ND
1,4-DICHLOROBENZENE	106-46-7	1.50	ND
N-BUTYLBENZENE	104-51-8	1.50	ND
1,2-DICHLOROBENZENE	95-50-1	1.50	ND
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	1.50	ND
1,2,4-TRICHLOROBENZENE	120-82-1	3.00	ND
HEXACHLOROBUTADIENE	87-68-3	3.00	ND
NAPHTHALENE	91-20-3	3.00	ND
1,2,3-TRICHLOROBENZENE	87-61-6	3.00	ND

SURROGATE RECOVERY	%
DIBROMOFLUOROMETHANE	92
TOLUENE-D8	98
4-BROMOFLUOROBENZENE	98

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA -NOT APPLICABLE OR AVAILABLE

K PRIME, INC.

LABORATORY QC REPORT

METHOD: VOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 5035/8260

SAMPLE ID: B022114S1
SPIKE ID: L022114S1
DUPLICATE ID: D022114S1
BATCH #: 022114S1
SAMPLE TYPE: SOIL
UNITS: µg/Kg

ACCURACY (MATRIX SPIKE)

PARAMETER	SPIKE ADDED	SAMPLE RESULT	SPIKE RESULT	RECOVERY (%)	LIMITS (%)
1,1 DICHLOROETHENE	30.0	ND	28.9	96	60-140
BENZENE	30.0	ND	28.0	93	60-140
TRICHLOROETHENE	30.0	ND	27.6	92	60-140
TOLUENE	30.0	ND	28.5	95	60-140
CHLOROBENZENE	30.0	ND	30.3	101	60-140

PRECISION (SPIKE DUPLICATE)

COMPOUND NAME	REPORTING LIMIT	SPIKE RESULT	DUPLICATE RESULT	RPD (%)	LIMITS (%)
1,1 DICHLOROETHENE	1.50	28.9	26.7	8.1	±20
BENZENE	1.50	28.0	26.3	6.3	±20
TRICHLOROETHENE	1.50	27.6	25.6	7.3	±20
TOLUENE	1.50	28.5	25.9	9.3	±20
CHLOROBENZENE	1.50	30.3	28.5	6.0	±20

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

K PRIME, INC.
LABORATORY QUALITY CONTROL REPORT

BATCH ID: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/24/14

METHOD: DRO
REFERENCE: EPA 8015C

SAMPLE TYPE: SOIL
UNITS: mg/Kg

METHOD BLANK ID: B022114S1

COMPOUND NAME	REPORTING LIMIT	SAMPLE CONC
DRO	10.0	ND

SAMPLE ID: L022114S1
DUPLICATE ID: D022114S1

ACCURACY (MATRIX SPIKE)

PARAMETER	SPIKE ADDED	SAMPLE RESULT	SPIKE RESULT	RECOVERY (%)	LIMITS (%)
DRO	500	ND	491	98	60-140

PRECISION (SPIKE DUPLICATE)

COMPOUND NAME	REPORTING LIMIT	SPIKE RESULT	DUPLICATE RESULT	RPD (%)	LIMITS (%)
DRO	10.0	491	492	0.3	±20

NOTES:
DRO - DIESEL RANGE ORGANICS (C12-C34)
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

K PRIME, INC.
LABORATORY QUALITY CONTROL REPORT

METHOD BLANK ID: B022114S1
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/24/14

METHOD: DRO
REFERENCE: EPA 8015B

SAMPLE TYPE: SOIL
UNITS: mg/Kg

COMPOUND NAME	REPORTING LIMIT	SAMPLE CONC
DRO	10.0	ND

SAMPLE ID: MS118026
DUPLICATE ID: SD118026

ACCURACY (MATRIX SPIKE)

PARAMETER	SPIKE ADDED	SAMPLE RESULT	SPIKE RESULT	RECOVERY (%)	LIMITS (%)
DRO	500	ND	478	96	60-140

PRECISION (SPIKE DUPLICATE)

COMPOUND NAME	REPORTING LIMIT	SPIKE RESULT	DUPLICATE RESULT	RPD (%)	LIMITS (%)
DRO	10.0	478	498	4.1	±20

NOTES:
DRO - DIESEL RANGE ORGANICS (C12-C34)
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

K PRIME, INC.
LABORATORY QC REPORT

METHOD BLANK ID: B022114S1
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	2.50	ND
ACENAPHTHYLENE	208-96-8	2.50	ND
ANTHRACENE	120-12-7	2.50	ND
BENZO (A) ANTHRACENE	56-55-3	2.50	ND
BENZO (B) FLUORANTHENE	205-99-2	2.50	ND
BENZO (K) FLUORANTHENE	207-08-9	2.50	ND
BENZO (A) PYRENE	50-32-8	2.50	ND
BENZO (G,H,I) PERYLENE	191-24-2	10.0	ND
CHRYSENE	218-01-9	2.50	ND
DIBENZO (A,H) ANTHRACENE	53-70-3	10.0	ND
FLUORANTHENE	206-44-0	2.50	ND
FLUORENE	86-73-7	2.50	ND
INDENO (1,2,3-CD) PYRENE	193-39-5	10.0	ND
NAPHTHALENE	91-20-3	2.50	ND
PHENANTHRENE	85-01-8	2.50	ND
PYRENE	129-00-0	2.50	ND

SURROGATE RECOVERY	%
2-FLUOROBIPHENYL	111
P-TERPHENYL-D14	126

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

K PRIME, INC.
LABORATORY QC REPORT

SAMPLE ID: L022114S1
DUPLICATE ID: D022114S1
BATCH #: 022114S1
DATE EXTRACTED: 02/21/14
DATE ANALYZED: 02/25/14

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270-SIM

SAMPLE TYPE: SOIL
UNITS: ug/Kg

ACCURACY (MATRIX SPIKE)

PARAMETER	SPIKE ADDED	SAMPLE RESULT	SPIKE RESULT	RECOVERY (%)	LIMITS (%)
ACENAPHTHENE	100	ND	91.2	91	40-140
PYRENE	100	ND	95.5	96	40-140

PRECISION (SPIKE DUPLICATE)

COMPOUND NAME	REPORTING LIMIT	SPIKE RESULT	DUPLICATE RESULT	RPD (%)	LIMITS (%)
ACENAPHTHENE	2.50	91	87.9	3.7	±30
PYRENE	2.50	96	95.1	0.4	±30

K PRIME, INC.
LABORATORY QC REPORT

METHOD BLANK ID: B022514S1
BATCH #: 022514S1
DATE EXTRACTED: 2/25/2014
DATE ANALYZED: 2/25/2014

METHOD: POLYCHLORINATED BIPHENYLS
REFERENCE: EPA 3550/8082

SAMPLE TYPE: SOLID
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
AROCLOR 1016	12674-11-2	25.0	ND
AROCLOR 1221	11104-28-2	25.0	ND
AROCLOR 1232	11141-16-5	25.0	ND
AROCLOR 1242	53469-21-9	25.0	ND
AROCLOR 1248	12672-29-6	25.0	ND
AROCLOR 1254	11097-69-1	25.0	ND
AROCLOR 1260	11096-82-5	25.0	ND

SURROGATE RECOVERY	%
TCMX	88
DCBP	91

NOTES:
ND - NOT DETECTED ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

K PRIME, INC.
LABORATORY QC REPORT

SAMPLE ID: L022514S1
DUPLICATE ID: D022514S1
BATCH #: 022514S1
DATE EXTRACTED: 2/25/2014
DATE ANALYZED: 2/25/2014

METHOD: POLYCHLORINATED BIPHENYLS
REFERENCE: EPA 3550/8082

SAMPLE TYPE: SOLID
UNITS: ug/Kg

ACCURACY (MATRIX SPIKE)

PARAMETER	SPIKE ADDED	SAMPLE RESULT	SPIKE RESULT	RECOVERY (%)	LIMITS (%)
AROCLOR 1260	375	ND	395	105	60-140

PRECISION (SPIKE DUPLICATE)

COMPOUND NAME	REPORTING LIMIT	SPIKE RESULT	DUPLICATE RESULT	RPD (%)	LIMITS (%)
AROCLOR 1260	25.0	395	481	19.6	±20

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

K PRIME, INC.

LABORATORY BATCH QC REPORT

SAMPLE ID: L022414S1
DUPLICATE ID: D022414S1
METHOD BLANK ID: B022414S1
BATCH #: 022414S1
DATE ANALYZED: 02/25/2014

METHOD: TOTAL METALS BY ICP/MS
REFERENCE: EPA 3050B/6020A

SAMPLE TYPE: SOIL
UNITS: mg/Kg

ELEMENT		MB mg/Kg	SA mg/Kg	SR mg/Kg	SP mg/Kg	SPD mg/Kg	SP %R	RPD %
ARSENIC	As	<2.50	25.0	0.0	23.8	24.0	95	1.0
LEAD	Pb	<2.50	25.0	0.0	25.1	25.4	100	1.3

NOTES:
ND: NOT DETECTED
MB: METHOD BLANK
SA: SPIKE ADDED
SR: SAMPLE RESULT
SP: SPIKE RESULT
SPD: SPIKE DUPLICATE RESULT
SP(%R): SPIKE % RECOVERY
RPD: RELATIVE PERCENT DIFFERENCE

K PRIME, INC.

LABORATORY BATCH QC REPORT

SAMPLE ID: MS118027
DUPLICATE ID: SD118027
METHOD BLANK ID: B022414S1
BATCH #: 022414S1
DATE ANALYZED: 02/25/2014

METHOD: TOTAL METALS BY ICP/MS
REFERENCE: EPA 3050B/6020A

SAMPLE TYPE: SOIL
UNITS: mg/Kg

ELEMENT		MB mg/Kg	SA mg/Kg	SR mg/Kg	SP mg/Kg	SPD mg/Kg	SP %R	RPD %
ARSENIC	As	<2.50	25.0	<2.50	21.9	21.8	81	0.6
LEAD	Pb	<2.50	25.0	20.9	41.9	38.8	84	7.6

NOTES:
ND: NOT DETECTED
MB: METHOD BLANK
SA: SPIKE ADDED
SR: SAMPLE RESULT
SP: SPIKE RESULT
SPD: SPIKE DUPLICATE RESULT
SP(%R): SPIKE % RECOVERY
RPD: RELATIVE PERCENT DIFFERENCE

K PRIME, INC.

LABORATORY BATCH QC REPORT

SAMPLE ID: L022414S1
DUPLICATE ID: D022414S1
METHOD BLANK ID: B022414S1
BATCH #: 022414S1
DATE ANALYZED: 02/25/2014

METHOD: TOTAL METALS BY ICP/MS
REFERENCE: EPA 3050B/6020A

SAMPLE TYPE: SOIL
UNITS: mg/Kg

ELEMENT		MB mg/Kg	SA mg/Kg	SR mg/Kg	SP mg/Kg	SPD mg/Kg	SP %R	RPD %
ANTIMONY	Sb	<2.50	25.0	0.0	25.8	26.0	103	0.8
ARSENIC	As	<2.50	25.0	0.0	24.6	24.2	98	1.4
BARIUM	Ba	<2.50	25.0	0.0	25.4	25.5	102	0.2
BERYLLIUM	Be	<2.50	25.0	0.0	24.3	24.1	97	0.7
CADMIUM	Cd	<2.50	25.0	0.0	25.1	24.9	100	0.5
CHROMIUM	Cr	<2.50	25.0	0.0	25.8	25.6	103	0.7
COBALT	Co	<2.50	25.0	0.0	25.5	25.9	102	1.7
COPPER	Cu	<2.50	25.0	0.0	25.5	25.5	102	0.2
LEAD	Pb	<2.50	25.0	0.0	25.7	25.7	103	0.0
MERCURY	Hg	<0.10	1.00	0.0	1.03	1.02	103	0.4
MOLYBDENUM	Mo	<2.50	25.0	0.0	25.9	25.8	103	0.4
NICKEL	Ni	<2.50	25.0	0.0	25.8	25.7	103	0.6
SELENIUM	Se	<2.50	25.0	0.0	23.2	22.7	93	2.0
SILVER	Ag	<2.50	12.5	0.0	10.7	10.7	86	0.0
THALLIUM	Tl	<2.50	25.0	0.0	25.5	25.4	102	0.5
VANADIUM	V	<2.50	25.0	0.0	25.9	25.7	104	0.8
ZINC	Zn	<2.50	25.0	0.0	23.1	23.1	92	0.2

NOTES:
ND: NOT DETECTED
MB: METHOD BLANK
SA: SPIKE ADDED
SR: SAMPLE RESULT
SP: SPIKE RESULT
SPD: SPIKE DUPLICATE RESULT
SP(%R): SPIKE % RECOVERY
RPD: RELATIVE PERCENT DIFFERENCE

K PRIME, INC.

LABORATORY BATCH QC REPORT

SAMPLE TYPE: SOLID
UNITS: mg/kg
BATCH ID: 021414S1

METHOD: HEXAVALENT CHROMIUM
REFERENCE: EPA 7199

METHOD BLANK: B021414S1

COMPOUND	RL mg/kg	MB mg/kg
HEXAVALENT CHROMIUM	0.250	ND

BLANK SPIKE: L021414S1
BLANK SPIKE DUPLICATE: D021414S1

COMPOUND	RL mg/kg	SA mg/kg	SR mg/kg	SP mg/kg	SPD mg/kg	SP %R	RPD %
HEXAVALENT CHROMIUM	0.250	10.0	0.00	10.1	10.3	101	2.1

NOTES:

ND:	NOT DETECTED
MB:	METHOD BLANK
SA:	SPIKE ADDED
SR:	SAMPLE RESULT
SP:	SPIKE RESULT
SPD:	SPIKE DUPLICATE RESULT
SP(%R):	SPIKE % RECOVERY
RPD:	RELATIVE PERCENT DIFFERENCE

WEST
Environmental Services & Technology
711 Grand Avenue, Suite 220
San Rafael, California 94901
415.460.6770 • Fax 415.460.6771
main@westenvironmental.com

SAMPLE ANALYSIS/COMPOSITE REQUEST FORM

CHAIN-OF-CUSTODY

| | | |

WEST
Environmental Services & Technology
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SAMPLE ANALYSIS/COMPOSITE REQUEST FORM

CHAIN-OF-CUSTODY

Invoice to: WEST, Inc.								**Date: 2/19/14**										**Page 2 of 2**						
Project: Signature.Oak Knoll								**Location: 8750 Mountain Blvd, Oakland, CA**																
Project Manager: Peter Morris, WEST, Inc.								**Phone: 415/460-6770**										**Fax: 415/460-6771**						
Laboratory: KPrime, Inc, Santa Rosa, CA								**Turnaround time (days)**		**1**		**2**		**3**		**5**		**7**		**10**			**Std.**	
Sampler Signature:																							**X**	
								Analyses Requested																
Sample ID	KPI #	Date	Time	Type	# Containers	Composite		TPHg (8015M)	TPHd/TPHmo (8015M) *	BTEX (8260B/8021)	VOCs (8260B)	PCBs (8082)	PAHs (8270C)	Dioxins (1613)	Hex Chrome (6020/7196)	Arsenic, Lead (6020)	Title 22 Metals (6000/7000)			HOLD				
W-15	1180038	2/19/14	1115	S	1				X			X	X			X								
W-16	1180039	2/19/14	1118	S	1				X			X	X				X							
W-17	1180040	2/19/14	1120	S	1				X			X	X			X								
W-18	1180041	2/19/14	0920	S	1				X		X	X				X								
W-19	1180042	2/19/14	0922	S	1				X		X	X					X							
W-20	1180043	2/19/14	0925	S	1				X		X	X				X								

NOTES: ~~(+)~~ silica gel cleanup

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	2/19/14 1245	L Swens	2-19-14 12:45
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
L. Swens	2-19-14 14:17	Rec-Cool KPI	2/19/14 14:17

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 3/17/2014

TO: MR. PETER KRASNOFF
WEST ENVIRONMENTAL S&T
711 GRAND AVENUE, SUITE 220
SAN RAFAEL, CA 94901

Phone: 415-460-6770
Fax: 415-460-6771
Email: main@westenvironmental.com

ACCT: 9946
PROJ: SIGNATURE.OAK KNOLL

FROM: Richard A. Kagel, Ph.D. RAK 3/17/2014
Laboratory Director

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT SIGNATURE.OAK KNOLL

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	TIME	KPI LAB #
W-9	SOIL	2/19/2014	11:00	118032
W-11	SOIL	2/19/2014	11:10	118034

The above listed sample group was received on 2/19/2014 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

March 13, 2014

Vista Project I.D.: 1400155

Dr. Carla Kagel
K Prime, Inc.
3621 Westwind Blvd.
Santa Rosa, CA 95403

Dear Dr. Kagel,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on February 21, 2014. This sample set was analyzed on a standard turn-around time, under your Project Name '9946'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier
Laboratory Director

Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAC for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 1400155
Case Narrative

Sample Condition on Receipt:

Two soil samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

These samples were extracted and analyzed for tetra-through-octa chlorinated dioxins and furans by EPA Method 1613 using a ZB-5MS GC column.

Holding Times

These samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank. The OPR recoveries were within the method acceptance criteria.

Labeled standard recoveries for all QC and field samples were within method acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/ Containers
1400155-01	118032	19-Feb-14 11:00	21-Feb-14 09:00	Glass Jar, 250mL
1400155-02	118034	19-Feb-14 11:10	21-Feb-14 09:00	Glass Jar, 250mL

Vista Project: 1400155

Client Project: 9946

ANALYTICAL RESULTS

Sample ID: Method Blank — **EPA Method 1613B**

Matrix: Solid
Sample Size: 10.0 g

QC Batch: B4B0107
Date Extracted: 26-Feb-2014 13:58

Lab Sample: B4B0107-BLK1
Date Analyzed : 27-Feb-14 19:36 Column: ZB-5MS Analyst: FEB

Analyte	Conc. (pg/g)	DL	EMPC	Qualifiers
2,3,7,8-TCDD	ND	0.0405		
1,2,3,7,8-PeCDD	ND	0.0834		
1,2,3,4,7,8-HxCDD	ND	0.0605		
1,2,3,6,7,8-HxCDD	ND	0.0692		
1,2,3,7,8,9-HxCDD	ND	0.0737		
1,2,3,4,6,7,8-HpCDD	ND	0.0667		
OCDD	ND		0.152	
2,3,7,8-TCDF	ND	0.0247		
1,2,3,7,8-PeCDF	ND	0.0303		
2,3,4,7,8-PeCDF	ND	0.0301		
1,2,3,4,7,8-HxCDF	ND	0.0286		
1,2,3,6,7,8-HxCDF	ND	0.0292		
2,3,4,6,7,8-HxCDF	ND	0.0318		
1,2,3,7,8,9-HxCDF	ND	0.0452		
1,2,3,4,6,7,8-HpCDF	ND	0.0320		
1,2,3,4,7,8,9-HpCDF	ND	0.0380		
OCDF	ND	0.0776		

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C-2,3,7,8-TCDD	84.9	25 - 164	
	13C-1,2,3,7,8-PeCDD	89.3	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	76.1	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	79.6	28 - 130	
	13C-1,2,3,7,8,9-HxCDD	78.4	32 - 141	
	13C-1,2,3,4,6,7,8-HpCDD	92.3	23 - 140	
	13C-OCDD	90.0	17 - 157	
	13C-2,3,7,8-TCDF	86.6	24 - 169	
	13C-1,2,3,7,8-PeCDF	82.4	24 - 185	
	13C-2,3,4,7,8-PeCDF	84.5	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	87.1	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	85.2	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	87.3	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	90.0	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	90.2	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	98.8	26 - 138	
	13C-OCDF	95.5	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	94.8	35 - 197	

Toxic Equivalent Quotient (TEQ) Data

TEQMinEPA_ITEF1989 0.00

TOTALS

Total TCDD	ND	0.0405
Total PeCDD	ND	0.0834
Total HxCDD	ND	0.0737
Total HpCDD	ND	0.0667
Total TCDF	ND	0.0247
Total PeCDF	ND	0.0303
Total HxCDF	ND	0.0452
Total HpCDF	ND	0.0380

DL - Sample specific estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL- Lower control limit - upper control limit

The results are reported in dry weight. The sample size is reported in wet weight.

Min-The TEQ is calculated using zero for the concentration of congeners that are not detected.

Sample ID: OPR — **EPA Method 1613B**

Matrix: Solid	QC Batch: B4B0107	Lab Sample: B4B0107-BS1
Sample Size: 10.0 g	Date Extracted: 26-Feb-2014 13:58	Date Analyzed: 27-Feb-14 17:56 Column: ZB-5MS Analyst: FEB

Analyte	Amt Found (pg/g)	Spike Amt	%R	Limits
2,3,7,8-TCDD	21.9	20.0	110	67 - 158
1,2,3,7,8-PeCDD	111	100	111	70 - 142
1,2,3,4,7,8-HxCDD	117	100	117	70 - 164
1,2,3,6,7,8-HxCDD	117	100	117	76 - 134
1,2,3,7,8,9-HxCDD	117	100	117	64 - 162
1,2,3,4,6,7,8-HpCDD	115	100	115	70 - 140
OCDD	228	200	114	78 - 144
2,3,7,8-TCDF	22.6	20.0	113	75 - 158
1,2,3,7,8-PeCDF	120	100	120	80 - 134
2,3,4,7,8-PeCDF	117	100	117	68 - 160
1,2,3,4,7,8-HxCDF	113	100	113	72 - 134
1,2,3,6,7,8-HxCDF	112	100	112	84 - 130
2,3,4,6,7,8-HxCDF	113	100	113	70 - 156
1,2,3,7,8,9-HxCDF	111	100	111	78 - 130
1,2,3,4,6,7,8-HpCDF	113	100	113	82 - 122
1,2,3,4,7,8,9-HpCDF	108	100	108	78 - 138
OCDF	225	200	112	63 - 170

	Labeled Standard	%R	LCL-UCL
IS	13C-2,3,7,8-TCDD	88.5	20 - 175
	13C-1,2,3,7,8-PeCDD	92.6	21 - 227
	13C-1,2,3,4,7,8-HxCDD	82.4	21 - 193
	13C-1,2,3,6,7,8-HxCDD	84.8	25 - 163
	13C-1,2,3,7,8,9-HxCDD	84.8	21 - 193
	13C-1,2,3,4,6,7,8-HpCDD	97.2	26 - 166
	13C-OCDD	97.8	13 - 199
	13C-2,3,7,8-TCDF	88.6	22 - 152
	13C-1,2,3,7,8-PeCDF	87.9	21 - 192
	13C-2,3,4,7,8-PeCDF	89.8	13 - 328
	13C-1,2,3,4,7,8-HxCDF	89.8	19 - 202
	13C-1,2,3,6,7,8-HxCDF	88.2	21 - 159
	13C-2,3,4,6,7,8-HxCDF	89.4	22 - 176
	13C-1,2,3,7,8,9-HxCDF	96.8	17 - 205
	13C-1,2,3,4,6,7,8-HpCDF	98.4	21 - 158
	13C-1,2,3,4,7,8,9-HpCDF	108	20 - 186
	13C-OCDF	101	13 - 199
CRS	37Cl-2,3,7,8-TCDD	99.6	31 - 191

LCL-UCL - Lower control limit - upper control limit

Sample ID: 118032

EPA Method 1613B

Client Data
Name: K Prime, Inc.
Project: 9946
Date Collected: 19-Feb-2014 11:00

Sample Data
Matrix: Soil
Sample Size: 12.2 g
% Solids: 82.3

Laboratory Data
Lab Sample: 1400155-01 Date Received: 21-Feb-2014 9:00
QC Batch: B4B0107 Date Extracted: 26-Feb-2014 13:58
Date Analyzed : 28-Feb-14 04:06 Column: ZB-5MS Analyst: FEB

Analyte	Conc. (pg/g)	DL	EMPC	Qualifiers
2,3,7,8-TCDD	ND		0.132	
1,2,3,7,8-PeCDD	ND	0.0876		
1,2,3,4,7,8-HxCDD	ND	0.124		
1,2,3,6,7,8-HxCDD	ND		0.322	
1,2,3,7,8,9-HxCDD	0.307			J
1,2,3,4,6,7,8-HpCDD	4.42			
OCDD	81.7			
2,3,7,8-TCDF	0.117			J
1,2,3,7,8-PeCDF	ND	0.0720		
2,3,4,7,8-PeCDF	1.40			J
1,2,3,4,7,8-HxCDF	0.262			J
1,2,3,6,7,8-HxCDF	ND		0.207	
2,3,4,6,7,8-HxCDF	ND		0.667	
1,2,3,7,8,9-HxCDF	ND	0.0821		
1,2,3,4,6,7,8-HpCDF	1.23			J
1,2,3,4,7,8,9-HpCDF	ND	0.204		
OCDF	2.18			J

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C-2,3,7,8-TCDD	90.1	25 - 164	
	13C-1,2,3,7,8-PeCDD	94.8	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	83.9	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	85.7	28 - 130	
	13C-1,2,3,7,8,9-HxCDD	84.7	32 - 141	
	13C-1,2,3,4,6,7,8-HpCDD	98.2	23 - 140	
	13C-OCDD	95.0	17 - 157	
	13C-2,3,7,8-TCDF	92.2	24 - 169	
	13C-1,2,3,7,8-PeCDF	89.9	24 - 185	
	13C-2,3,4,7,8-PeCDF	92.1	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	94.9	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	92.4	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	91.5	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	97.0	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	97.9	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	107	26 - 138	
	13C-OCDF	104	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	102	35 - 197	

Toxic Equivalent Quotient (TEQ) Data

TEQMinEPA_ITEF1989	0.909

TOTALS

Total TCDD	0.388	0.519
Total PeCDD	0.205	0.347
Total HxCDD	1.48	1.90
Total HpCDD	8.54	
Total TCDF	3.00	3.21
Total PeCDF	14.2	14.5
Total HxCDF	9.35	10.2
Total HpCDF	3.10	

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL- Lower control limit - upper control limit

The results are reported in dry weight. The sample size is reported in wet weight.

Min-The TEQ is calculated using zero for the concentration of congeners that are not detected.

Sample ID: 118034

EPA Method 1613B

Client Data
Name: K Prime, Inc.
Project: 9946
Date Collected: 19-Feb-2014 11:10

Sample Data
Matrix: Soil
Sample Size: 12.1 g
% Solids: 83.3

Laboratory Data
Lab Sample: 1400155-02 Date Received: 21-Feb-2014 9:00
QC Batch: B4B0107 Date Extracted: 26-Feb-2014 13:58
Date Analyzed : 28-Feb-14 04:56 Column: ZB-5MS Analyst: FEB

Analyte	Conc. (pg/g)	DL	EMPC	Qualifiers
2,3,7,8-TCDD	ND	0.0702		
1,2,3,7,8-PeCDD	ND		0.158	
1,2,3,4,7,8-HxCDD	0.0984			J
1,2,3,6,7,8-HxCDD	0.549			J
1,2,3,7,8,9-HxCDD	0.465			J
1,2,3,4,6,7,8-HpCDD	4.93			
OCDD	63.5			
2,3,7,8-TCDF	0.238			J
1,2,3,7,8-PeCDF	0.181			J
2,3,4,7,8-PeCDF	2.59			
1,2,3,4,7,8-HxCDF	0.444			J
1,2,3,6,7,8-HxCDF	0.504			J
2,3,4,6,7,8-HxCDF	1.47			J
1,2,3,7,8,9-HxCDF	0.381			J
1,2,3,4,6,7,8-HpCDF	2.39			J
1,2,3,4,7,8,9-HpCDF	0.141			J
OCDF	2.82			J

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C-2,3,7,8-TCDD	94.1	25 - 164	
	13C-1,2,3,7,8-PeCDD	95.9	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	87.2	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	90.6	28 - 130	
	13C-1,2,3,7,8,9-HxCDD	88.6	32 - 141	
	13C-1,2,3,4,6,7,8-HpCDD	103	23 - 140	
	13C-OCDD	103	17 - 157	
	13C-2,3,7,8-TCDF	94.8	24 - 169	
	13C-1,2,3,7,8-PeCDF	93.3	24 - 185	
	13C-2,3,4,7,8-PeCDF	93.3	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	97.8	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	96.8	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	96.1	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	103	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	103	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	113	26 - 138	
	13C-OCDF	108	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	99.8	35 - 197	

Toxic Equivalent Quotient (TEQ) Data

TEQMinEPA_ITEF1989	1.86

TOTALS

Total TCDD	1.51	1.78	
Total PeCDD	0.315	1.41	
Total HxCDD	3.46		
Total HpCDD	9.44		
Total TCDF	9.54		
Total PeCDF	32.5		
Total HxCDF	20.6	20.8	
Total HpCDF	5.60		

DL - Sample specifc estimated detection limit
EMPC - Estimated maximum possible concentration
LCL-UCL- Lower control limit - upper control limit
The results are reported in dry weight. The sample size is reported in wet weight.
Min-The TEQ is calculated using zero for the concentration of congeners that are not detected.

DATA QUALIFIERS & ABBREVIATIONS

B	**This compound was also detected in the method blank.**
D	**Dilution**
E	**The amount detected is above the High Calibration Limit.**
H	**Recovery was outside laboratory acceptance limits.**
I	**Chemical Interference**
J	**The amount detected is below the Low Calibration Limit.**
P	**The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.**
*	**See Cover Letter**
Conc.	**Concentration**
DL	**Sample-specific estimated detection limit**
MDL	**Method Detection Limit as determined by 40 CFR 136, Appendix B.**
EMPC	**Estimated Maximum Possible Concentration**
NA	**Not applicable**
RL	**Reporting Limit – concentrations that correspond to low calibration point**
ND	**Not Detected**
TEQ	**Toxic Equivalency**

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

CERTIFICATIONS

Accrediting Authority	Certificate Number
Alabama Department of Environmental Management	41610
Alaska Department of Environmental Conservation	CA00413
Arkansas Department of Environmental Quality	13-017-0
California Department of Health – ELAP	2892
Connecticut Department of Public Health	PH-0182
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2012010
Michigan Department of Natural Resources	9932
Mississippi Department of Health	N/A
Nevada Division of Environmental Protection	CA004132013-2
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
North Carolina Department of Health & Human Services	06700
North Dakota Department of Health	R-078
Oregon Laboratory Accreditation Program	4042-001
Pennsylvania Department of Environmental Protection	010
South Carolina Department of Health	87002001
Tennessee Dept of Environment and Conservation	TN02996
Texas Commission on Environmental Quality	T104704189-14-5
Utah Department of Health	CA164002012-2
Virginia Department of General Services	2358
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

SUBCONTRACT TO: Vista Labs PAGE 1 OF 1

K PRIME INC. 1400155 5892 CHAIN OF CUSTODY RECORD

CONSULTING ANALYTICAL CHEMISTS 3621 Westwind Blvd., Santa Rosa, CA 95403 Phone: 707-527-7574 Fax: 707-527-7879

Client/Project ID: K PRIME INC.	Client Project No.: 9946	ANALYSES								
Send PDF to: carlakagel@sbcglobal.net shellyalbertson@sbcglobal.net	Contact: Carla Kagel	Method Dioxins (EPA 1613)	Method	Method	Method	Method	Method	Method	Expected Turnaround Time	Remarks
Please send PDF by:	☐ EDF Global ID #: Log Code:									

Sample Identification No.	Date	Time	Lab Sample No.	Sample Type	No. of Containers									
118032	2/19/14	1100		S	1	X							Std	
118034	2/19/14	1110		S	1	X								

Relinquished by: (signature)		Received by: (signature)	Date:	Time:
Myrtle Rockiede	KPI	On Trac	2/20/14	1500
Relinquished by: (signature)		Received by: (signature)	Date:	Time:
On Trac	2/21/14	Bitrina Benedict	2/21/14	0902

SAMPLE LOG-IN CHECKLIST

Vista Analytical Laboratory

Vista Project #: 1400155 TAT Std

Samples Arrival:	**Date/Time** 2/21/14 0900	**Initials:** JBB	**Location:** WR-2 **Shelf/Rack:** NA
Logged In:	**Date/Time** 2/21/14 1501	**Initials:** JBB	**Location:** WR-2 **Shelf/Rack:** F 3

Delivered By:	FedEx	UPS	On Trac	DHL	Hand Delivered	Other
Preservation:	Ice	Blue Ice		Dry Ice	None	

Temp °C: 5.8 (uncorrected)	**Time:** 0902	**Thermometer ID:** IR-2
Temp °C: 5.8 (corrected)		

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Shipping Documentation Present?	✓		
Airbill Trk # 8102770685 28	✓		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?		✓	
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓

$Na_2S_2O_3$ Preservation Documented? NA	COC	Sample Container	None		
Shipping Container	Vista	Client	Retain	Return	Dispose

Comments:

Sample Login 11/2013 ckt

WEST
Environmental Services & Technology
711 Grand Avenue, Suite 220
San Rafael, California 94901
415.460.6770 • Fax 415.460.6771
main@westenvironmental.com

SAMPLE ANALYSIS/COMPOSITE REQUEST FORM

CHAIN-OF-CUSTODY

| | | |

WEST
Environmental Services & Technology
711 Grand Avenue, Suite 220
San Rafael, California 94901
415.460.6770 • Fax 415.460.6771
main@westenvironmental.com

SAMPLE ANALYSIS/COMPOSITE REQUEST FORM

CHAIN-OF-CUSTODY

Invoice to: WEST, Inc.	Date: 2/19/14 — Page 2 of 2
Project: Signature.Oak Knoll	Location: 8750 Mountain Blvd, Oakland, CA
Project Manager: Peter Morris, WEST, Inc.	Phone: 415/460-6770 — Fax: 415/460-6771
Laboratory: KPrime, Inc, Santa Rosa, CA	Turnaround time (days): 1 / 2 / 3 / 5 / 7 / 10 / Std. X
Sampler Signature: [signature]	Analyses Requested

Sample ID	KPI #	Date	Time	Type	# Containers	Composite	TPHg (8015M)	TPHd/TPHmo (8015M) *	BTEX (8260B/8021)	VOCs (8260B)	PCBs (8082)	PAHs (8270C)	Dioxins (1613)	Hex Chrome (6020/7196)	Arsenic, Lead (6020)	Title 22 Metals (6000/7000)			HOLD
W-15	118038	2/19/14	1115	S	1			X			X	X			X				
W-16	118039	2/19/14	1118	S	1			X			X	X				X			
W-17	118040	2/19/14	1120	S	1			X			X	X			X				
W-18	118041	2/19/14	0920	S	1			X		X	X				X				
W-19	118042	2/19/14	0922	S	1			X		X	X					X			
W-20	118043	2/19/14	0925	S	1			X		X	X				X				

NOTES: (*) silica gel Cleanup

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	2/19/14 1245	L Swens	2-19-14 12:45
L. Swens	2-19-14 14:17	Rw-Cook KPI	2/19/14 14:17

OAK KNOLL
Preliminary Storm Drainage Master Plan
(Draft)

September 22, 2015
20056154

FOR:
Oak Knoll Venture Acquisitions LLC
Irvine, California

ENGINEERS / SURVEYORS / PLANNERS

DESIGN ENGINEER:
BKF ENGINEERS
255 Shoreline Drive, Suite 200
Redwood City, CA 94065
Sravan Paladugu
P.E. CA 74343

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1. INTRODUCTION

Oak Knoll Venture Acquisitions LLC (OKVA) is proposing a mixed-use development in the City of Oakland (City) at the site of the Naval Medical Center Oakland (NMCO), also known as Oak Knoll Naval Hospital. The proposed site contains approximately 187 acres and is bounded by Mountain Boulevard on the west, Keller Avenue on the north and east, and by Saint Andrews, Briar Cliff and Sequoyah Roads on the south. The site has been largely unused since the hospital discontinued operations in the 1990's. The site location and vicinity is shown on Figure 1.

The proposed development will consist of multiple land uses including single-family and multi-family residential and mixed use parcels. A similar Project was proposed in 2007 and a Draft Supplemental Environmental Impact Report (SEIR) was published but the Project did not receive further entitlements.

This report documents drainage and storm water management facilities necessary to serve the proposed development and to mitigate off-site drainage impacts. The focus of this report is the design of onsite system required to treat, retain and convey runoff from the proposed development so as to maintain the rate of discharge to Rifle Range Creek that existed at the time of NMCO facility operations.

This report is intended to provide general concepts and guidelines to be followed by more detailed and comprehensive analyses. The design criteria and engineering analyses are presented in more detail under Appendix A.

2. BACKGROUND

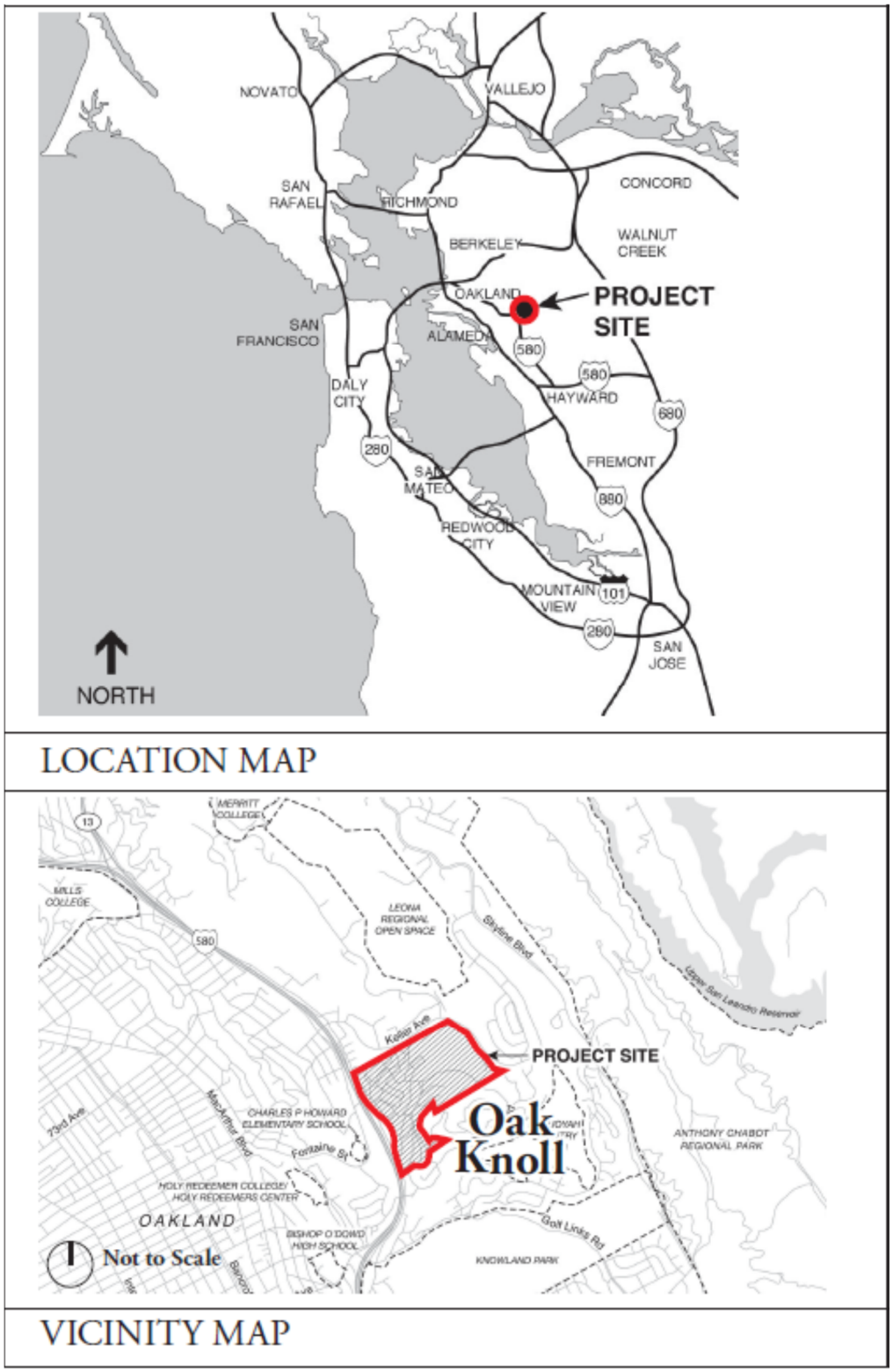
In 2005, Oak Knoll LLC proposed a mixed-use development at the former Oak Knoll Naval Medical Center property that was similar to the currently proposed mixed-use development. An Initial Study and Draft SEIR were prepared in 2006 and 2007, respectively, for the development proposed in 2005. No Final SEIR was published.

To supplement the 2007 Draft SEIR, BKF prepared a Preliminary Drainage Master Plan in 2006 (2006 BKF Report) to evaluate backbone storm sewer facilities necessary to serve then proposed development. The 2006 BKF Report included an evaluation of existing conditions, new infrastructure requirements and storm water management facilities.

The site is shown on the Flood Insurance Rate Map (FIRM) number 06001C0095G, dated August 03, 2009. The FIRM maps the Project site as Zone D. The Zone D designation is used for areas where there are possible but undetermined flood hazards, as no analysis of flood hazards has been conducted. The designation of Zone D is also used when a community incorporates portions of another community's area, in this case a federal facility, where no map has been prepared. There are no adjacent areas that are shown as flood hazard Zone A, subject to flooding during a 100-year event. The FIRM panel is shown in Appendix B.

No other reports were available documenting existing storm drainage at the project site.

FIGURE 1 – Location and Vicinity Map



2.1 PROJECT DESCRIPTION

The Project site includes approximately 165 acres of the Oak Knoll Naval Medical Center (NMCO) property, approximately 15 acres of an adjacent property, and approximately 7 acres of City-owned property for a site with a total area of approximately 187 acres.

The Project area lies at the toe of the Oakland hills and generally slopes southwest towards the San Francisco Bay. The site elevations range between 250 and 600. Much of the site consists of hilly terrain with oak, eucalyptus, Monterey pine, riparian, and annual grassland habitats. The center of the site adjacent to Mountain Boulevard is relatively flat where the partially-culverted Rifle Range Creek flow across the Project site from north to southwest. The upper elevations, located along Keller Avenue and Briar Cliff Road on the eastern edge of the site, are steep and hilly.

Surrounding uses are primarily residential development, small local commercial centers, and regional open space. All buildings on the Project site from the Naval Facility (closed in 1996) have been demolished except for the deteriorated 1925 former Oak Knoll Golf and Country Club clubhouse building (known as Club Knoll).

The modified Oak Knoll Project proposes a mixed-use residential community of: a) approximately 935 residential units of varying types; b) approximately 72,000 square feet of neighborhood commercial use; and c) approximately 77 acres of open space and recreation areas, including an improved creek corridor. Refer to attached Figure 2 for proposed Project site plan. Table 1 below lists proposed uses, unit count and anticipated construction phasing.

Table 1: Project Development Plan

No.	Area	Unit Type	Unit Count	Area (sq.ft)	Phasing
1	Town Center	Multifamily	134		3
2	Creekside North	Townhomes	140		3
3	Uplands North	Townhomes	60		3
4	Creekside Village 1	Townhomes	87		1
		Single Family 1	26		2
		Single Family 2	93		2
5	Creekside Village 2	Townhomes	70		1
6	Creekside South	Townhomes	76		1
		Single Family	53		2
7	Uplands South	Single Family	49		1
8	Uplands East	Single Family	147		2
9	Creekside Village	Commercial	-	72,000	1
10	Community Center			4,000	1
		Total	**935**	**76,000**	

Notes:

a) Phase 1 construction is anticipated to begin in Spring of 2017 and end in Fall of 2018.
b) Phase 2 construction is anticipated to begin in Summer of 2018 and end in Winter of 2019.
c) Phase 3 construction is anticipated to begin in Summer of 2020 and end in Winter of 2022.

3. DRAINAGE SYSTEM EVALUATION

Runoff from the Project site is conveyed, a) as overland flow in the paved street sections, b) in underground storm drain systems, and, c) in engineered ditches during existing conditions and will continue to do the same in a reconfigured system during proposed conditions. All onsite flow is ultimately discharged to Rifle Range Creek which is a regional conveyance channel that flows through the Project area.

The drainage area tributary to Rifle Range Creek at Keller Avenue is about 709 acres. Upstream of the Project site, north of Keller Drive, Rifle Range Creek flows through the East Bay Regional Park District's Leona Detention Basin. Peak flows are attenuated within the Detention Basin, reducing the peak flow rate through the site from storm events. Rifle Range Creek through the Project site is primarily a natural open channel, with flow also conveyed through approximately 870 feet of culvert and under approximately 90 feet of bridges. The Creek has an average slope of 2.8% through the Project area.

The largest remaining off-site tributary area is the Power House Creek drainage area, which has a tributary area of about 55 acres. The remaining off-site drainage areas that drain directly through this property total about 51 acres.

3.1 CRITERIA

The City Storm Drainage Design Guidelines require all new secondary facilities (i.e., storm drain systems with drainage areas less than 50 acres) be designed to convey runoff from a 10-year storm with 1.25-feet of freeboard below top of curb. The minimum pipe size shall be 12-inches in diameter. Runoff to all secondary facilities be determined using Modified Rational Method. The City also requires Projects to not exceed existing peak 15-year and 100-year design storm flow. Refer to Appendix A for hydrologic and hydraulic design parameter requirements.

The City as a member of the Alameda Countywide Clean Water Program require all new developments to incorporate long-term storm water management strategies to reduce pollutant loading to the Creeks and to the Bay and also to reduce runoff to the maximum extent feasible. Commonly utilized storm water management measures shown in the Alameda Countywide Clean Water Program (C.3 Requirements) such as pervious ground cover, grassy swales, tree wells, rain gardens, infiltration, retention, and other methods acceptable by the City, may be utilized in treating and attenuation of runoff and reducing impervious ground cover.

The C.3 Requirements also require all new developments in hydromodification susceptible area to incorporate infiltration measures to mimic existing conditions if the development results in a net increase in impervious area.

3.2 EXISTING CONDITION

The existing on site drainage facilities include Rifle Range Creek, which runs through the site, and a network of underground storm drain lines and concrete lined ditches. The Creek conveys runoff through the site, entering the site at Keller Avenue and discharging at Mountain Boulevard. Rifle Range Creek's total drainage area at Mountain Boulevard is about 900 acres.

Rifle Range Creek is currently showing signs of degradation. Portions of Rifle Range Creek are concrete lined, which has accelerated channel velocities, resulting in steepened, destabilized creek banks. Rifle Range Creek stabilization is being reviewed by others, and therefore will not be discussed in this Preliminary Drainage Master Plan.

The existing on-site storm drain system is beyond it's useful life and does not meet the current standards for storm water conveyance. There are no existing storm water treatment or detention facilities on the site. For these reasons, the existing drainage system will be abandoned and is not considered further in this Preliminary Drainage Master Plan.

3.3 PROPOSED SYSTEM

The proposed storm drainage system will include street curb and gutter system, a network of new underground storm drain lines with multiple outfalls to the Creek, concrete lined ditches and storm water management facilities. For the most part, storm water management facilities such as bio-retention areas, grass swales, tree wells, pervious pavers and others will be the first point of surface flow interception followed by storm drain lines discharging to the Creek.

Rifle Range Creek will continue to be the primary drainage facility through the Project area. As a part of this Project, portions of the Rifle Range Creek channel will be restored. The rehabilitation of Rifle Range Creek will increase the existing channel cross-sectional area at any given depth and as a result the channel storage capacity will be increased which helps attenuate and reduce the peak runoff. The analyses and design related to Creek restoration and improvements is conducted as part of a separate study. Therefore, our discussion focuses on the onsite drainage facilities that discharge to the Creek.

Storm Water Management Facilities

The proposed storm water management facilities will include, a) low impact development features such as disconnected impervious surfaces or impervious areas separated by pervious areas, down spouts draining to pervious or landscaped areas, permeable pavement or pavers, rainwater barrels, rain gardens, tree wells and, b) treatment facilities such as grass swales and bio-treatment basins, to provide storm water treatment for on-site runoff and flow attenuation in accordance with the C.3 Requirements. The treatment will primarily occur within the proposed street right-of-ways and on individual parcels/lots. Within the right-of-way, treatment facilities will be located in the planter strips (located between the curb and the sidewalk) and within designated street parking spaces. Runoff from the street and untreated lots will be directed to the treatment basins via street curb and gutter system. Once treated, flow will be re-captured by a system of sub-drains and routed to an overflow inlet/catch-basin connected to the storm drain main shown in Figures 3 through 5. During intense storm events, flow in excess of treatment flow will be captured by an overflow inlet adjacent to the treatment system and conveyed to the storm drain main shown in Figures 3 through 5.

Where feasible, runoff from the self-treating areas such as open spaces and large pervious areas will be intercepted and diverted away from the treatment basins to minimize treatment footprint. Treatment facilities will be sized to capture 80-percent of all storm events occurring annually using historic rainfall data recorded at Oakland Airport. The Mean Annual Precipitation (MAP) at Oakland Airport is 18.35 inches. As such, the 80-percent rainfall capture depth will be adjusted to Project MAP depth of 25 inches. The depth of flow in treatment facilities will range from 6-inches to 12-inches. The basins will be sized using flow and volume based approach.

The area of the treatment basin using this approach will fall between 3- to 4-percent of the net impervious area.

Off-site runoff will continue to discharge historically via Rifle Range Creek without treatment provided by this Project. Site runoff will be treated prior to commingling with the off-site runoff.

Storm Drain Mains

Runoff collected by treatment facilities and excess runoff collected by overflow inlets or catch-basins will be routed to new underground storm drain system that ultimately discharges to Rifle Range Creek at ten separate locations. The storm drain system to each outfall is identified as System 1 through 10. The drainage area to each system is shown on Figure 3. All of the proposed storm drain systems, except System 6, are categorized as secondary facilities since the drainage area to these systems at outfall to the Creek is less than 50-acres. Therefore, the proposed storm drain systems are designed to convey runoff from a 10-year event with a minimum freeboard of 0.75 feet to the nearest inlet flow line (i.e., 1.25 feet to top-of-curb).

A portion of System 6 is designed to intercept offsite runoff conveyed by Power House Creek. The drainage area to this system is roughly 55 acres at the point of interception. Therefore, System 6 is designed to convey runoff from a 25-year event with a freeboard of 0.75 feet below top of flow line.

A hydraulic model was used to design and optimize the proposed storm drain system. The storm drain system was analyzed using the computer-modeling program, StormCAD by Haestad Methods. StormCAD is a collection system analysis program that evaluates gravity and pressurized pipe systems using Manning's equation. All new storm drain will be Reinforced Concrete Pipe (RCP). The analyses showed that the proposed development will require pipe sizes ranging from 12-inches to 48-inches in diameter. Storm drain system analyses is presented in Table A5 and A6. The pipe and node identifiers referenced in Table A5 and A6 are shown on Figure 4 and 5.

Ditch System

A system of concrete-lined ditches is proposed to convey hillside runoff around proposed development pads. These ditches are required where runoff from developed and undeveloped hillsides is directed toward building sites and streets.

Overland Flow Path

The proposed streets will carry all the flow in excess of storm drain system within the right-of-way either to an outfall to the Creek or further south to Mountain Boulevard. Street intersections, vertical curves and site grading may result in low points where the depth of ponding from a 100-year event may extend beyond the right-of-way prior to overland release of the flow. The storm drain system serving these low lying areas will be sized to carry 100-year flow below the inlet finished grade. For events larger than a 100-year event or storm drain system failure situations, an overland flow path is provided to convey excess runoff with at least 1 foot of freeboard to building finished floor elevations.

Detention and Hydromodification Management

The existing condition impervious area analyses was conducted in 2006 as part of the Draft SEIR which estimated that approximately 73 acres of the 187 acre site, or about 39% of the site, to be impervious. With the proposed Project, the impervious area will be approximately 76 acres or roughly 41% of the site. The slight increase in imperviousness compared to existing condition is not anticipated to increase runoff to the Creek because the Project will be adding a significant amount of treatment facilities that will attenuate and reduce runoff via infiltration and surface ponding. Additionally, the Project will be incorporating low impact development strategies that further promote infiltration and provide addition retention volume to reduce runoff. Therefore, no additional detention or hydromodification measures will be required.

4. IMPACTS, MITIGATIONS, AND RECOMMENDATIONS

The existing on-site storm drain system is beyond it's useful life and does not meet the current standards for storm water conveyance. There are no existing storm water treatment or detention facilities on the site. For these reasons, the existing drainage system which include a network of underground storm drain lines, concrete lined ditches and curb and gutter will be abandoned.

The proposed Project will include reconfigured drainage conveyance system designed using low impact development standards and treatment facilities. The Rifle Range Creek and Power House Creek are major drainage facilities running through the site and will continue to remain as primary conveyance facilities.

Rifle Range Creek is currently showing signs of degradation. Portions of Rifle Range Creek are concrete lined, which has accelerated channel velocities, resulting in steepened, destabilized creek banks. As part of the Project, Rifle Range Creek will be rehabilitated which could include replacing the culverted reach with a restored open channel, re-grading channel banks to a more stable slope and revegetating. The analyses and design related to all Creek improvements is conducted as part of a separate study. Any impacts associated with such improvements and mitigation measures will be discussed as part of that study.

The existing culverts carrying Power House Creek runoff through the site will need to be reconfigured to fit the proposed development layout. No impacts are anticipated as a result.

The Project will also increase impervious area from 40% in existing condition to 41% with development which may result in slightly increased runoff peak and volume when compared to existing. This is considered to be and impact to downstream areas offsite for which the mitigation measures are discussed here.

Mitigation

The proposed Project will incorporate low impact development features such as disconnected impervious surfaces or impervious areas separated by pervious areas, down spouts draining to pervious or landscaped areas, permeable pavement or pavers, rainwater barrels, rain gardens, tree wells and treatment facilities such as grass swales and bio-treatment basins all of which promote infiltration, retention and attenuation of runoff. Such measure are not present in the existing condition. As a result, the Project will reduce impact to downstream areas due to increase in impervious area compared to existing condition.

Secondly, the rehabilitation of Rifle Range Creek will increase the existing channel cross-sectional area at any given depth and as a result the channel storage capacity will be increased which further helps attenuate and reduce the peak runoff.

Therefore, with the proposed drainage modifications, the peak runoff from the Project to the culvert under Mountain Boulevard will be less than existing condition runoff.

Recommendations

We recommend that the storm drain facilities presented on Figures 3 through 5 be implemented to serve the proposed development. These proposed facilities include local storm drains, treatment facilities and creek discharge structures.

The proposed storm drainage facilities meet the City of Oakland drainage and storm water treatment requirements. The secondary pipe systems convey the 10-year storm event with the required freeboard of 1.25 feet to the top of curb. The primary drainage system conveys the 25-year storm event with 1.25 feet to the top of curb.

The Permit C.3 Requirements are met by implementation of low impact development strategies and treatment measures on parcel/lot and within right of way.

5. REFERENCES

BKF Engineers, Preliminary Drainage Master Plan, October 20, 2006.

City of Oakland, Bureau of Engineering & Construction, Storm Drainage Design Standards, October 2014.

Alameda Countywide Clean Water Program, C.3 Stormwater Technical Guidance, January 1, 2015.

ESA, Oak Knoll Mixed Use Community Plan Project Supplemental Environmental Impact Report, September 2007.

FIGURES



RESIDENTIAL DEVELOPMENT PROGRAM

Type	Units
Multifamily Apartments	134
Townhomes	433
Single Family Detached	368
TOTAL	935

COMMERCIAL DEVELOPMENT PROGRAM

Use	Area (sf)
Retail (Gross Leasable)	72,000
Community Facility	4,000
TOTAL	76,000

LAND USE SUMMARY (APPROX.)

Use	Area (ac.)
Developed Area	92
Major Streets (approx)	17
Parks and Open Space	77
TOTAL	187

Trails & Paths +/- 4.3 miles

Site Entrance

Pedestrian Bike Access

GRAPHIC SCALE
400 0 400 800

FIGURE 2: PROJECT SITE PLAN

DRAWING NAME: J:\2015\150183_Oak_Knoll\DOCS\06-Design\E-Water_System\Figure-2.dwg
PLOT DATE: 07-20-15 PLOTTED BY: tayl

OAK KNOLL
Oakland, California

BKF

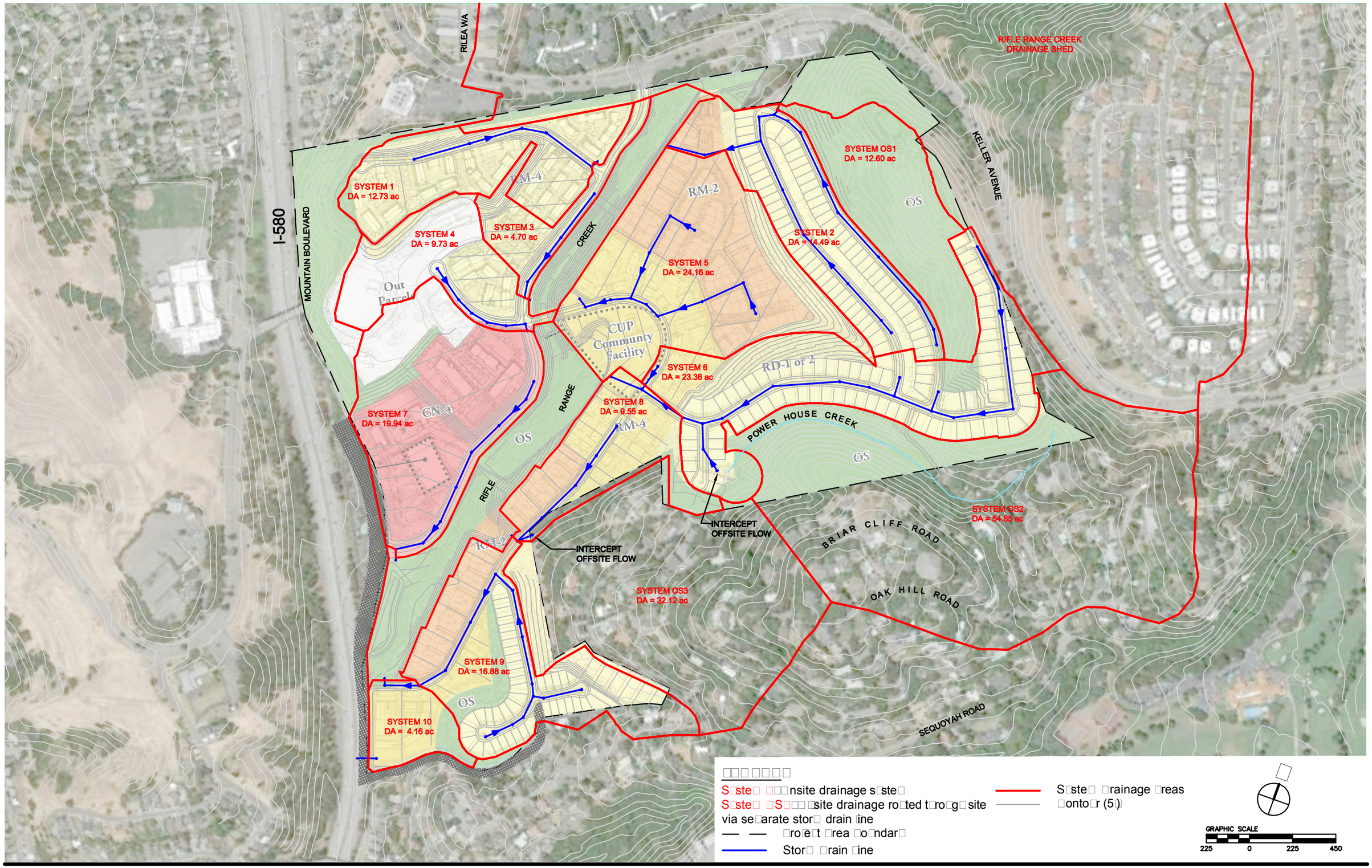


FIGURE 3: Drainage Areas
OAK KNOLL DEVELOPMENT

DRAWING NAME: K:\2015\150183_Oak_Knoll\DOCS\08-Design\D-Stormwater_System\Figures\System-Areas.dwg
PLOT DATE: 09-23-15 PLOTTED BY: paia

OAK KNOLL
Oakland, California

BkF

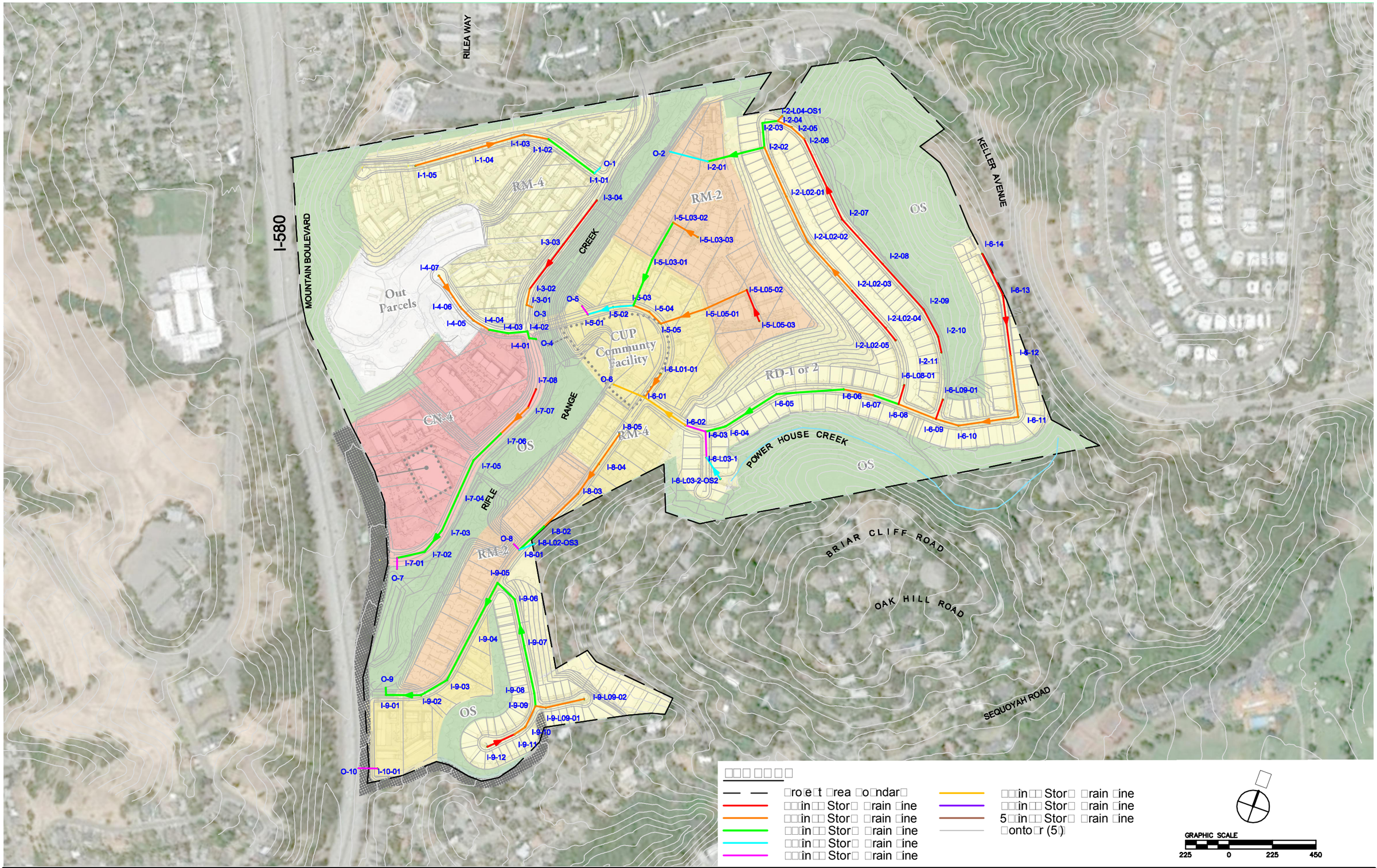


FIGURE 4: PROPOSED STORM DRAIN SYSTEM MODEL NODES
OAK KNOLL DEVELOPMENT

DRAWING NAME: K:\2015\150183_Oak_Knoll\DOCS\06-Design\D-Stormwater_System\Figures\Figure-4.dwg
PLOT DATE: 09-23-15 PLOTTED BY: pala

OAK KNOLL
Oakland, California

BkF

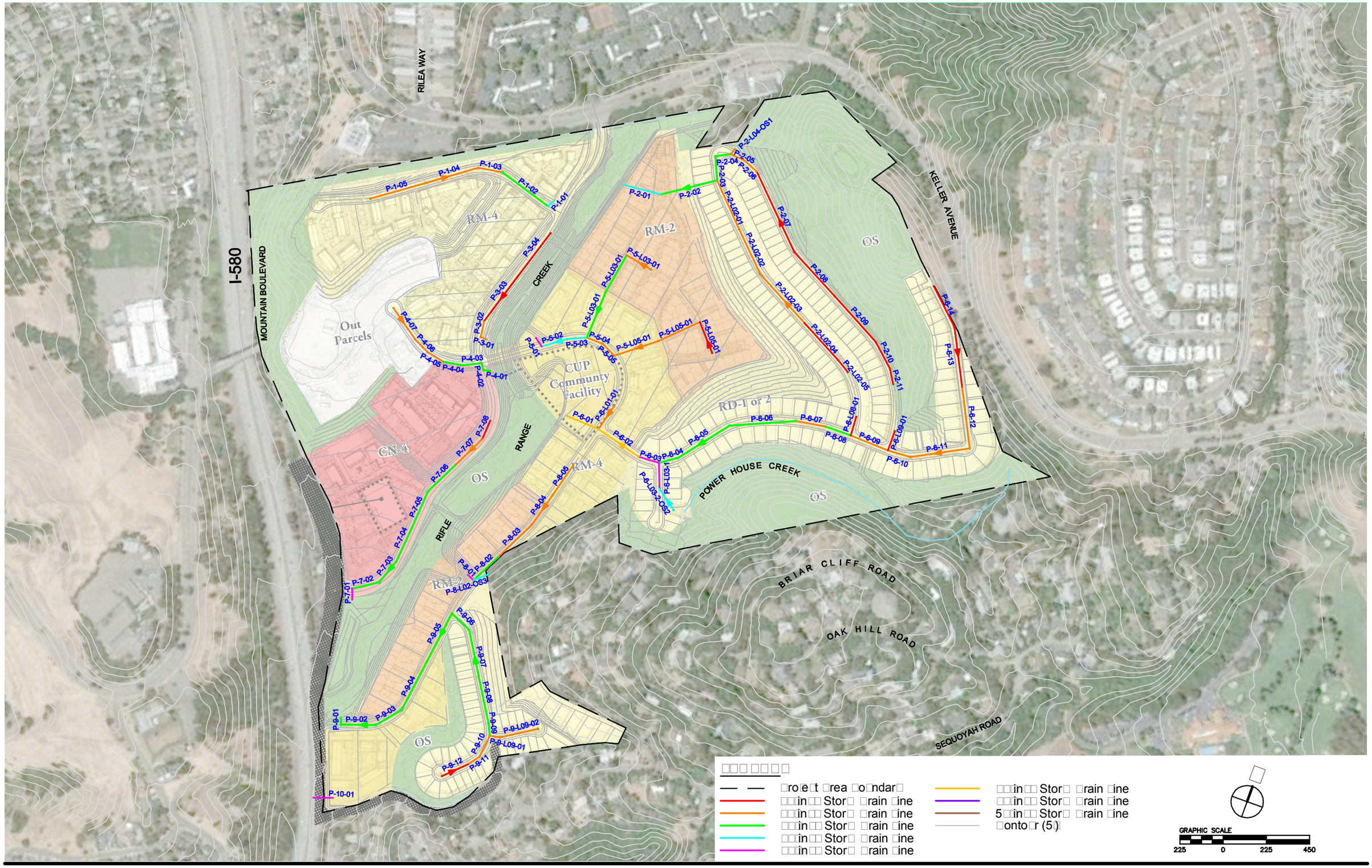
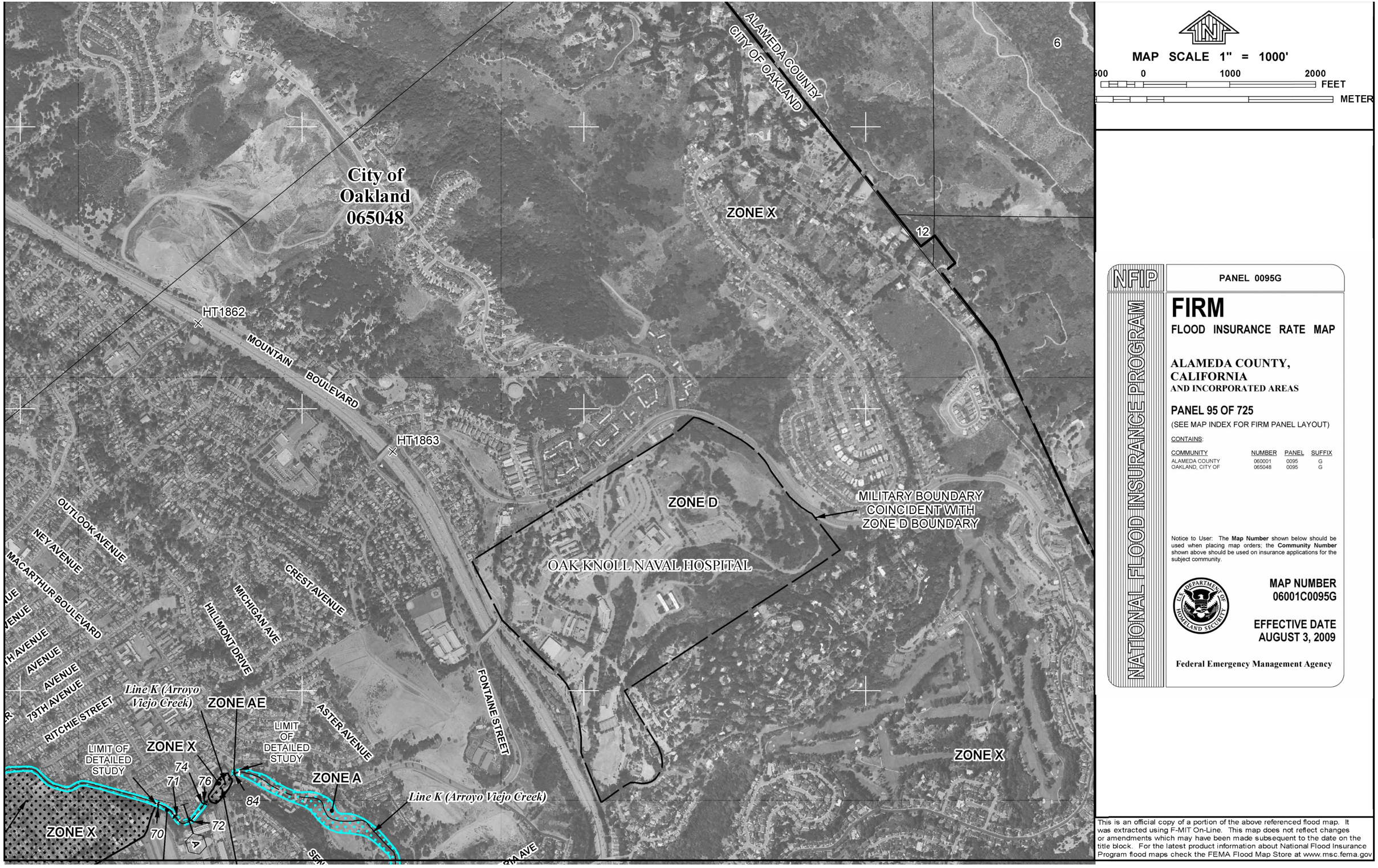


FIGURE 5: PROPOSED STORM DRAIN SYSTEM MODEL PIPES
OAK KNOLL DEVELOPMENT

DRAWING NAME: K:\2015\150183_Oak_Knoll\DOCS\06-Design\D-Stormwater_System\Figures\Figure-4.dwg
PLOT DATE: 09-23-15 PLOTTED BY: pala

OAK KNOLL
Oakland, California

BKF



MAP SCALE 1" = 1000'

500 0 1000 2000

FEET

METER

NFIP

PANEL 0095G

FIRM

FLOOD INSURANCE RATE MAP

ALAMEDA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 95 OF 725

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALAMEDA COUNTY	060001	0095	G
OAKLAND, CITY OF	065048	0095	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06001C0095G

EFFECTIVE DATE
AUGUST 3, 2009

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

FIGURE 6: FEMA FIRM MAP

DRAWING NAME: K:\2015\150183_Oak_Knoll\DOCS\06-Design\D-Stormwater_System\Figures\Figure-6.dwg
PLOT DATE: 09-23-15 PLOTTED BY: pala

OAK KNOLL
Oakland, California

BkF

APPENDIX A

Design Criteria and Engineering Analyses

A.1 Design Criteria

The design criteria, methodology and design parameters used in this Preliminary Storm Drain Master Plan conforms to the requirements of the City of Oakland (City) Storm Drainage Design Guidelines dated July 2009 and updated on October 2014. These requirements reference an unpublished update to the County of Alameda's drainage guidelines. The design criteria, methodology and design parameters used in this Master Plan are summarized below:

1. *Facility Designation*

   Drainage facilities are considered Secondary Facilities where the drainage area is less than 50 acres, and primary facilities where the drainage area is greater than 50 acres.

2. *Level of Protection*

   Secondary Facilities shall be designed to provide a 10-year level of protection with 1.25 feet freeboard to the top of curb. Primary facilities shall provide a 25-year level of protection with 1.25 feet freeboard to the top of curb.

   The energy grade line shall be below the top of curb for underground storm drain systems.

   Rifle Range Creek shall have at least one foot freeboard to the top of bank except at road crossings or where levees are used. Two feet freeboard is required at road crossings. One foot freeboard to the top of levee is required within levee sections.

   FEMA requires that all new habitable structures be protected from the 100-year flow event.

3. *Changes in Peak Flow Rate*

   The City's downstream drainage system may not have the required flow capacity to convey increases in runoff associated with changes in site land uses. In general, the City's system is aged and typically is unable to handle additional flows. A detailed off-site study would be required to confirm whether off-site flow capacity is available to handle changes in site runoff. In most cases, and to the extent possible, the City requires developments to detain storm water.

   Detention facilities are those facilities designed to reduce the rate of discharge from a drainage area into a receiving waterway. One of the common uses for a detention facility is to limit the augmented discharge rate from a development site. When such a facility becomes a permanent drainage feature, assurances for the continued maintenance of its design capacity must be provided for; i.e., maintenance by the property owners or a private party through a maintenance agreement. Several types of detention facilities are acceptable to the City for controlling on-site the augmented storm discharge:

a) Parking lot detention for industrial/business development. Using this method requires the filing of notice with the beneficiaries of the improvement and the City. Parking lots shall provide pedestrian access through the ponded areas. Depths of ponding shall not exceed four inches (4").

b) Conduit storage can be utilized by oversizing the underground drainage facilities. Care should be taken to prevent siltation problems.

c) Channel storage can be utilized by oversizing open channel facilities. Care again should be taken to prevent siltation problems and allowances must be made for a minimum capacity at a maximum silt buildup.

d) Multi-purpose facilities can be used as detention facilities such as park areas, tennis courts, parking areas, existing ponds and wetland areas, and landscaped areas.

   The detention pond shall be designed such that the water surface returns to its base or starting elevation within 24 hours after the cessation of a 24-hour, 100-year storm.

4. *Treatment Standards*

Treatment methods shall be employed to minimize the transport of pollutants into the City's storm drain system. Best Management Practices (BMPs) shall be implemented to comply with C.3 Requirements.

Flow-based treatment measures shall be sized for a flow rate calculated based on a 0.2 inch per hour treatment storm event.

Volume-based storm water treatment measures shall be sized to treat storm water runoff equal to the volume of annual runoff required to achieve 80 percent capture as presented in the California Best Management Practices Handbook. The 80 percent capture shall be based on Oakland Airport gage with Mean Annual Precipitation of 18.35 inches and unit storage volume of 0.67 inches.

5. *Hydraulic Standards*

Minimum pipe size shall be 12 inches in diameter and the pipe materials for buried pipe installation shall be RCP class III or HDPE SDR 11 minimum. Pipes shall not decrease in flow cross sectional area or diameter in the downstream direction.

Minimum bottom width for open channels with established vegetated bottoms and sides shall be four feet. For these channels, the ratio of side slope shall be no steeper than two and one half (2 1/2) horizontal units to one (1) vertical unit.

Minimum bottom width for improved channels (concrete or paved) shall be no less than two feet and the side slopes shall be no steeper than one (1) horizontal to one (1) vertical for concrete, and two (2) horizontal to one (1) vertical for reinforced earth with vegetation.

Access manholes or access structures for underground storm drainage conduits shall not exceed 400 feet on center. Inlets are considered access structures.

6. *Methodology and Design Parameters*

The site runoff is evaluated using the Modified Rational Method.

- Modified Rational Method

  The Modified Rational Method is based on the methodology presented in the Drainage Guidelines.

  Runoff Coefficient – The City requires a modified runoff coefficient, C', to be used in the design of drainage facilities. C' is made up of a basic runoff coefficient, C, a ground slope factor, Cs, and a rainfall intensity factor, Ci. The following sections contain procedures to determine C, Cs, and Ci. The formula for calculating the modified runoff coefficient is:

  $C' = C + Cs + Ci$

  The City Standards provide the following basic runoff coefficients "C" for various land use category. Table A1 below is a replica of Table 2 of Design Guidelines.

Table A1: Landuse Impervious Percent and Base Runoff Coefficients

Land Use Description Impervious	Percent Impervious	Runoff Coefficient, C Oakland Hydrological Soil Group, D
Undeveloped land, Parks Golf Courses	0%	0.30
Older Residential 1/8 Ac. (5000—7900 SF lots)	24%	0.44
1980 and Newer Residential 1/8 Ac.	50%	0.60
Older Residential 1/4 Ac. (8000—11050 SF lots)	22%	0.43
1980 and Newer Residential 1/4 Ac.	40%	0.54
Residential Zero Lot Line 3600 SF lots	75%	0.75
Residential Duets 4500 SF lots	69%	0.71
Commercial / Industrial *	85%	0.81
Townhouse	68%	0.71
Apartment	89%	0.83
Rural Housing	11%	0.37
Freeway	100%	0.90

The base weighted runoff coefficient for relevant land use categories is then adjusted by two factors:

Cs – an adjustment for the ground slope, where

$$Cs = \frac{(0.8 - C)\,[\ln(S - 1)]\,S^{0.5}}{56}, \quad \text{for } C>0.8: Cs=0$$

Ci – an adjustment for the intensity of rainfall, where

$$Ci = [0.8 - (C + Cs)] \times \left[1 - \frac{1}{(1/(e^{\wedge}i)) + \ln(i + 1)} \right], \text{ for } C + Cs > 0.8, Ci = 0$$

where:

S = Average slope in percent

Ci = rainfall intensity adjustment factor

C = base weighted runoff coefficient

Cs = slope adjustment runoff coefficient

i = rainfall intensity in inches/hour from County Flood Control District Attachment 10 or Rainfall Intensity Equation below.

- Rainfall Intensity

Rainfall Intensity – The rainfall intensity for the appropriate time of concentration and storm recurrence interval is computed from the following equation:

$$Ij = (0.33 + 0.091144 \times MAP) \times \left(0.249 + 0.1006 \times K_j\right) \times T_i^{-0.56253}$$

Where:
I_j = Rainfall intensity (in/hr) for return frequency, j, and storm duration, i
MAP = Mean Annual Precipitation (inches)
T_i = Storm Duration (hr) - (Tc/60)
K_j = Frequency factor to be determined as shown in the Table below

Design Storm (years)	5	10	15	25	100
Frequency Factor (K_j)	0.719	1.339	1.684	2.108	3.211

The mean annual precipitation (MAP) of the Project site is about 25 inches according to Attachment 8 of the Drainage Guidelines. Rainfall intensities are calculated from equation 3 above of the Drainage Guidelines. For a 10-minute time of concentration, the rainfall intensities used in these analyses are 2.74, 3.30 and 4.09 inches per hour for the 10, 25 and 100-year storm events, respectively.

- Drainage System

The project area has one development area, which discharges to a County storm drain system at Mountain Boulevard that conveys flows to Arroyo Viejo. The drainage areas are:

Drainage Area	(acres)
Off-site	730
On-site	167
Total Drainage Area	900

- Time of Concentration

  An initial time of 5 minutes for and 10 minutes is used at the upstream end of the site. The time of concentration is increased to account for travel time through the development area. The StormCAD model is used to compute travel time through the system, with pipe velocity adjusted depending on whether the pipe is flowing surcharge or non-surcharge.

- Analyses

  The flow capacities of the ten local storm drainage systems serving the site are evaluated using the StormCAD program by Bentley Systems (formerly Haestad Methods). The StormCAD model is a Rational Method-based program that evaluates both partial and pressure flow through the storm drain lines.

- Starting Water Level

  A starting water level at the overflow point of the treatment ponds is used to evaluate the local storm drain systems.

- Pipe Roughness (Manning's Roughness)

  A Manning's Roughness coefficient of 0.014 is used for all reinforced concrete pipe sizes to be conservative.

- Bend Losses

  Losses through structures are calculated using the HEC-22 Energy Method that is incorporated into the StormCAD program. Losses are based on flat manholes. The loss is then checked with the City method of junction losses and adjusted if not adequate.

A.2 Engineering Analyses

Engineering Analyses was conducted using StormCAD V8i by Bentley Systems (formerly Haestad Methods). StormCAD is a hydrologic and hydraulic analyses program. StormCAD uses Rational Method to compute runoff in conjunction with the collection system analysis program that evaluates gravity and pressurized pipe systems using Manning's equation. The hydrologic parameters used in the program are presented in the following paragraphs and tables.

Modified Runoff Coefficient

The proposed development is made up of a) traditional single family detached homes that are considered to be same as "1980 and Newer Residential 1/8 Ac", b) Single family mixed housing that are considered to be same as "Residential Zero Lot Line 3600 SF Lots", c) Townhomes, d) Apartments and e) Commercial.

The Project Base and Modified runoff coefficients for 10-year and 25-year recurrence interval corresponding to different land uses used in the model are presented in Table A2 below.

Table A2: 10-Yr and 25-Yr Project Runoff Coefficients

Proposed Zoning	Corresponding Landuse Per Table A1	10 year			
		C	Cs	Ci	C'
Commercial/Multifamily Apartment (CN-4)	Apartment	0.83	0.00	0.00	0.83
Townhomes (RM-4)	Townhouse	0.71	0.01	0.02	0.74
Single Family Detached (RD-1 or 2)	1980 and Newer Residential 1/8 AC	0.60	0.03	0.05	0.67
Single Family Mixed Housing (RM-2)	Residential Zero Lot Line 3600 SF lots	0.75	0.01	0.01	0.77
Residential - Offsite	Older Residential	0.43	0.05	0.09	0.57
Parks/Open Space	Parks/Open Space	0.3	0.06	0.12	0.48
Proposed Zoning	**Table A1 Corresponding Landuse**	**25 year**			
		C	**Cs**	**Ci**	**C'**
Commercial/Multifamily Apartment (CN-4)	Apartment	0.83	0.00	0.00	0.83
Townhomes (RM-4)	Townhouse	0.71	0.01	0.03	0.75
Single Family Detached (RD-1 or 2)	1980 and Newer Residential 1/8 AC	0.60	0.03	0.06	0.68
Single Family Mixed Housing (RM-2)	Residential Zero Lot Line 3600 SF lots	0.75	0.01	0.01	0.77
Residential - Offsite	Older Residential	0.43	0.05	0.11	0.58
Parks/Open Space	Parks/Open Space	0.3	0.06	0.14	0.51

Impervious Area Calculations

The existing condition impervious area analyses was conducted in 2006 as part of the Draft SEIR. BKF used topographic information aerial imagery of the project site collected prior to demolition to digitize and calculate existing impervious and pervious areas. Table below presents existing impervious/pervious areas by parcel.

Table A3: Existing Impervious Areas

Parcel	Total Area (ac)	Asphalt Area (ac)	Roof Area (ac)	Total Impervious (ac)	Total Pervious (ac)	% Impervious
Suncal Parcel	167.0	58.6	11.0	69.6	97.4	42%
City Parcel	5.4	1.2	0.5	1.7	4.4	31%
Seneca Center Parcel	7.9	1.0	0.3	1.3	6.6	17%
Credit Union Parcel	1.3	0.4	0.2	0.6	0.7	47%
Open Space	5.4				5.4	0%
Totals	187.0	61.2	12.0	73.2	114.5	39%

BKF used impervious percentage corresponding to different land uses as presented in Table 2 of Design Guidelines to estimate total impervious area. With the proposed Project, the impervious area will be approximately 76 acres or roughly 41% of the site.

Table A4: Proposed Impervious Areas

Land Use	% Impervious	Area (acres)
Commercial (CN-4)	85%	14.7
Town Home (RM-4)	68%	40.5
Zero Lot Line (RM-2)	75%	20.6
Single Family (RD-1 or 2)	50%	33.5
Community Center	40%	3.8
Roadway	90%	0.9
Seneca Center Parcel	17%	7.9
Credit Union Parcel	47%	1.3
Open Space	0%	63.8
Total Area		187.0
Impervious Area		76.5
% Impervious		41%

TABLE A5
OAK KNOLL DEVELOPMENT
10-YR & 25-YR STORM HYDROLOGY, NODE OUTPUT

Node [1] #	Ground Elevation (ft) [1]	Sump Elevation (ft)	Inlet Area (acres)	Lateral Area (acres)	Inlet C	Inlet C*A (acres)	Cumulative Area (acres)	Cumulative C*A (acres)	Inlet Tc (minutes)	System Tc (minutes)	Intensity (in/hr)	**Discharge [2] (cfs)**
OUTFALL OS3 - 10 YEAR STORM												
I-OS3-2	300.00	292.00	32.12		0.57	18.16	32.12	18.16	7.8	7.75	3.34	**61.1**
I-OS3-1	297.00	289.00	(N/A)		(N/A)	0.00	32.12	18.16	5.0	7.93	3.29	**60.3**
OUTFALL OS2 - 10 YEAR STORM							**32.12**	**1.00**				
I-OS2-5	375.00	352.00	54.85		0.57	31.05	54.85	31.05	10.0	10.00	2.75	**86.1**
I-OS2-4	375.00	350.00	(N/A)		(N/A)	0.00	54.85	31.05	5.0	10.19	2.73	**85.4**
I-OS2-3	375.00	348.60	(N/A)		(N/A)	0.00	54.85	31.05	5.0	10.36	2.71	**84.8**
I-OS2-2	366.00	347.50	(N/A)		(N/A)	0.00	54.85	31.05	5.0	10.50	2.69	**84.3**
I-OS2-1	345.00	335.50	(N/A)		(N/A)	0.00	54.85	31.05	5.0	10.72	2.67	**83.6**
OUTFALL OS1 - 10 YEAR STORM							**54.85**	**1.00**				
I-OS1-4	388.00	377.50	12.60		0.48	6.05	12.60	6.05	5.0	5.00	4.06	**24.8**
I-OS1-3	383.00	375.50	(N/A)		(N/A)	0.00	12.60	6.05	5.0	5.25	3.99	**24.4**
I-OS1-2	380.00	372.00	(N/A)		(N/A)	0.00	12.60	6.05	5.0	5.53	3.92	**23.9**
I-OS1-1	345.60	337.10	(N/A)		(N/A)	0.00	12.60	6.05	5.0	5.76	3.86	**23.5**
OUTFALL 10 - 10 YEAR STORM							**12.60**	**1.00**				
I-10-01	222.00	215.50	4.16		0.69	2.86	4.16	2.86	5.0	5.00	4.06	**11.7**
OUTFALL 9 - 10 YEAR STORM							**4.16**	**1.00**				
I-9-L09-02	340.00	332.00	3.50		0.63	2.21	3.50	2.21	5.0	5.00	4.06	**9.0**
I-9-L09-01	316.00	308.00	1.69		0.65	1.10	5.19	3.30	5.0	5.21	4.01	**13.3**
I-9-12	310.00	304.00	0.61		0.67	0.41	0.61	0.41	5.0	5.00	4.06	**1.7**
I-9-11	310.00	302.50	0.87		0.67	0.58	1.48	0.99	5.0	5.61	3.90	**3.9**
I-9-10	310.00	301.80	0.37		0.67	0.25	1.85	1.24	5.0	5.83	3.84	**4.8**
I-9-09	310.00	300.60	0.54	5.19	0.67	0.36	7.58	4.91	5.0	6.19	3.75	**18.5**
I-9-08	307.60	299.60	0.22		0.67	0.15	7.80	5.05	5.0	6.32	3.72	**18.9**
I-9-07	298.50	290.50	0.78		0.67	0.52	8.58	5.58	5.0	6.65	3.63	**20.4**
I-9-06	289.50	281.50	0.80		0.67	0.54	9.38	6.11	5.0	6.97	3.54	**21.8**
I-9-05	285.00	277.00	0.87		0.75	0.65	10.25	6.76	5.0	7.13	3.50	**23.9**
I-9-04	271.30	263.30	1.73		0.76	1.31	11.98	8.07	5.0	7.45	3.42	**27.8**
I-9-03	257.60	249.60	3.28		0.70	2.30	15.26	10.37	5.0	7.75	3.34	**34.9**
I-9-02	250.00	242.00	1.61		0.66	1.06	16.87	11.42	5.0	7.91	3.30	**38.0**
I-9-01	230.00	222.00	(N/A)		(N/A)	0.00	16.87	11.42	5.0	8.05	3.26	**37.6**
OUTFALL 8 - 10 YEAR STORM							**16.88**	**1.00**				
I-8-05	330.00	323.50	3.81		0.64	2.42	3.81	2.42	5.0	5.00	4.06	**9.9**
I-8-04	322.90	316.40	1.91		0.74	1.41	5.72	3.84	5.0	5.29	3.98	**15.4**
I-8-03	315.80	309.30	1.54		0.76	1.17	7.26	5.00	5.0	5.55	3.92	**19.8**
I-8-02	306.70	299.70	1.56		0.76	1.19	8.82	6.20	5.0	5.91	3.82	**23.9**
I-8-01	297.00	290.00	0.72		0.72	0.52	9.54	6.71	5.0	6.10	3.77	**25.5**
OUTFALL 7 - 10 YEAR STORM							**9.55**	**1.00**				
I-7-08	295.00	289.00	0.51		0.83	0.42	0.51	0.42	5.0	5.00	4.06	**1.7**
I-7-07	290.90	284.40	2.98		0.52	1.56	3.49	1.98	5.0	5.23	4.00	**8.0**
I-7-06	283.00	276.00	3.94		0.78	3.08	7.43	5.06	5.0	5.54	3.92	**20.0**
I-7-05	275.00	268.00	3.17		0.80	2.52	10.60	7.58	5.0	5.78	3.86	**29.4**
I-7-04	267.40	260.40	(N/A)		(N/A)	0.00	10.60	7.58	5.0	6.02	3.79	**29.0**
I-7-03	260.20	253.20	(N/A)		(N/A)	0.00	10.60	7.58	5.0	6.26	3.73	**28.5**
I-7-02	255.00	248.00	(N/A)		(N/A)	0.00	10.60	7.58	5.0	6.43	3.69	**28.2**
I-7-01	250.00	242.00	9.36		0.80	7.44	19.96	15.02	5.0	6.60	3.64	**55.1**

TABLE A5
OAK KNOLL DEVELOPMENT
10-YR & 25-YR STORM HYDROLOGY, NODE OUTPUT

Node [1] #	Ground Elevation (ft) [1]	Sump Elevation (ft)	Inlet Area (acres)	Lateral Area (acres)	Inlet C	Inlet C*A (acres)	Cumulative Area (acres)	Cumulative C*A (acres)	Inlet Tc (minutes)	System Tc (minutes)	Intensity (in/hr)	**Discharge [2] (cfs)**
OUTFALL 6 - 25 YEAR STORM							**19.94**	**1.00**				
I-6-L09-01	495.00	488.50	0.76		0.58	0.44	0.76	0.44	5.0	5.00	4.06	**1.8**
I-6-L08-01	472.50	466.00	0.54		0.67	0.36	0.54	0.36	5.0	5.00	4.06	**1.5**
I-6-L03-01	375.00	366.00	2.11		0.59	1.25	2.11	1.25	5.0	5.00	4.06	**5.1**
I-6-L01-01	350.00	343.50	4.51		0.58	2.63	4.51	2.63	5.0	5.00	4.06	**10.8**
I-6-14	590.00	584.00	0.32		0.67	0.21	0.32	0.21	5.0	5.00	4.06	**0.9**
I-6-13	578.00	572.00	0.68		0.67	0.46	1.00	0.67	5.0	5.62	3.90	**2.6**
I-6-12	562.00	555.50	1.64		0.61	1.00	2.64	1.67	5.0	6.23	3.74	**6.3**
I-6-11	546.00	539.50	2.62		0.62	1.63	5.26	3.30	5.0	6.73	3.61	**12.0**
I-6-10	505.60	499.10	1.29		0.67	0.86	6.55	4.16	5.0	7.02	3.53	**14.8**
I-6-09	490.00	483.50	1.63	0.76	0.61	1.00	8.94	5.60	5.0	7.13	3.50	**19.8**
I-6-08	467.50	460.50	0.98	0.54	0.67	0.66	10.46	6.62	5.0	7.31	3.46	**23.1**
I-6-07	455.00	448.00	0.71		0.67	0.48	11.17	7.09	5.0	7.43	3.42	**24.5**
I-6-06	441.50	434.50	0.85		0.67	0.57	12.02	7.66	5.0	7.57	3.39	**26.2**
I-6-05	411.30	404.30	1.88		0.67	1.26	13.90	8.92	5.0	7.88	3.31	**29.7**
I-6-04	384.20	377.20	1.63		0.67	1.09	15.53	10.01	5.0	8.15	3.24	**32.7**
I-6-03	375.00	364.70	(N/A)	2.11	(N/A)	0.00	17.64	11.27	5.0	8.23	3.22	**36.5**
I-6-02	366.00	357.00	1.23		0.67	0.82	18.87	12.09	5.0	8.31	3.19	**38.9**
I-6-01	345.00	335.50	(N/A)	4.51	(N/A)	0.00	23.38	14.72	5.0	8.50	3.14	**46.7**
OUTFALL 5 - 10 YEAR STORM							**23.36**	**1.00**				
4.70	349.00	343.00	1.20		0.65	0.79	1.20	0.79	5.0	5.00	4.06	**3.2**
I-5-L05-02	346.00	339.50	0.71		0.77	0.55	1.91	1.33	5.0	5.45	3.94	**5.3**
I-5-L05-01	342.00	335.50	1.86		0.77	1.43	3.77	2.76	5.0	6.02	3.79	**10.6**
I-5-L03-03	338.00	331.50	3.88		0.58	2.26	3.88	2.26	5.0	5.00	4.06	**9.2**
I-5-L03-02	336.00	329.00	3.16		0.77	2.43	7.04	4.69	5.0	5.47	3.94	**18.6**
I-5-L03-01	334.00	327.00	1.51		0.77	1.16	8.55	5.85	5.0	6.09	3.77	**22.3**
I-5-05	340.00	333.50	1.52	3.77	0.74	1.13	5.29	3.89	5.0	6.70	3.62	**14.2**
I-5-04	336.90	330.40	(N/A)		(N/A)	0.00	5.29	3.89	5.0	6.82	3.58	**14.0**
I-5-03	332.00	324.50	(N/A)	8.55	(N/A)	0.00	13.84	9.74	5.0	6.92	3.56	**34.9**
I-5-02	329.90	322.40	6.29		0.75	4.73	20.13	14.47	5.0	7.07	3.52	**51.3**
I-5-01	325.00	317.00	4.02		0.74	2.98	24.15	17.45	5.0	7.21	3.48	**61.2**
OUTFALL 4 - 10 YEAR STORM							**24.16**	**1.00**				
I-4-07	330.00	323.50	6.23		0.62	3.84	6.23	3.84	5.0	5.00	4.06	**15.7**
I-4-06	322.40	315.90	0.39		0.65	0.26	6.62	4.09	5.0	5.27	3.99	**16.5**
I-4-05	318.60	312.10	(N/A)		(N/A)	0.00	6.62	4.09	5.0	5.41	3.95	**16.3**
I-4-04	315.00	308.00	1.20		0.71	0.86	7.82	4.95	5.0	5.53	3.92	**19.6**
I-4-03	311.10	304.10	(N/A)		(N/A)	0.00	7.82	4.95	5.0	5.66	3.89	**19.4**
I-4-02	307.20	300.20	(N/A)		(N/A)	0.00	7.82	4.95	5.0	5.78	3.86	**19.2**
I-4-01	302.20	295.20	1.91		0.74	1.42	9.73	6.37	5.0	5.81	3.85	**24.7**
OUTFALL 3 - 10 YEAR STORM							**9.73**	**1.00**				
I-3-04	335.00	329.00	0.92		0.74	0.68	0.92	0.68	5.0	5.00	4.06	**2.8**
I-3-03	328.30	322.30	0.53		0.74	0.39	1.45	1.07	5.0	5.72	3.87	**4.2**
I-3-02	321.70	315.20	3.11		0.74	2.30	4.56	3.37	5.0	6.38	3.70	**12.6**
I-3-01	315.00	308.50	0.14		0.74	0.10	4.70	3.48	5.0	6.47	3.68	**12.9**

TABLE A5
OAK KNOLL DEVELOPMENT
10-YR & 25-YR STORM HYDROLOGY, NODE OUTPUT

Node [1] #	Ground Elevation (ft) [1]	Sump Elevation (ft)	Inlet Area (acres)	Lateral Area (acres)	Inlet C	Inlet C*A (acres)	Cumulative Area (acres)	Cumulative C*A (acres)	Inlet Tc (minutes)	System Tc (minutes)	Intensity (in/hr)	**Discharge [2] (cfs)**
OUTFALL 2 - 10 YEAR STORM							**4.70**	**1.00**				
I-2-L02-05	435.00	429.00	0.42		0.67	0.28	0.42	0.28	5.0	5.00	4.06	**1.2**
I-2-L02-04	435.00	427.20	0.42		0.67	0.28	0.84	0.56	5.0	5.27	3.99	**2.3**
I-2-L02-03	418.60	412.10	1.27		0.67	0.85	2.11	1.41	5.0	5.77	3.86	**5.5**
I-2-L02-02	416.70	410.20	1.65		0.67	1.11	3.76	2.52	5.0	7.03	3.53	**9.0**
I-2-L02-01	393.70	387.20	1.27		0.67	0.85	5.03	3.37	5.0	7.33	3.45	**11.7**
I-2-11	485.00	479.00	0.27		0.67	0.18	0.27	0.18	5.0	5.00	4.06	**0.7**
I-2-10	480.50	474.00	0.29		0.67	0.19	0.56	0.38	5.0	5.22	4.00	**1.5**
I-2-09	471.90	465.40	0.51		0.67	0.34	1.07	0.72	5.0	5.57	3.91	**2.8**
I-2-08	454.80	448.30	1.02		0.67	0.68	2.09	1.40	5.0	6.15	3.76	**5.3**
I-2-07	437.90	431.40	1.09		0.67	0.73	3.18	2.13	5.0	6.64	3.63	**7.8**
I-2-06	405.00	397.50	1.60		0.65	1.04	4.78	3.17	5.0	7.24	3.47	**11.1**
I-2-05	397.00	389.50	0.25		0.67	0.17	5.03	3.34	5.0	7.34	3.45	**11.6**
I-2-04	385.00	377.50	0.06		0.67	0.04	5.09	3.38	5.0	7.41	3.43	**11.7**
I-2-03	383.00	375.50	0.25		0.65	0.16	5.34	3.54	5.0	7.54	3.39	**12.1**
I-2-02	380.00	372.00	2.07	5.03	0.67	1.39	12.44	8.30	5.0	7.75	3.34	**27.9**
I-2-01	345.60	337.10	2.06		0.67	1.38	14.50	9.68	5.0	7.99	3.28	**32.0**
OUFALL 1 - 10 YEAR STORM							**14.49**	**1.00**				
I-1-05	413.00	406.50	3.71		0.71	2.65	3.71	2.65	5.0	5.00	4.06	**10.8**
I-1-04	396.60	390.10	2.57		0.74	1.90	6.28	4.55	5.0	5.39	3.96	**18.2**
I-1-03	372.30	365.80	(N/A)		(N/A)	0.00	6.28	4.55	5.0	5.67	3.89	**17.8**
I-1-02	365.00	358.00	1.61		0.74	1.19	7.89	5.74	5.0	5.81	3.85	**22.3**
I-1-01	335.00	327.50	4.84		0.74	3.58	12.73	9.32	5.0	6.07	3.78	**35.5**
							12.73	**1.00**				

Notes
(1) ft = feet, in/hr = inches/hour rainfall, cfs = cubic feet per second
(2) Discharge is from the Rational Method, Q = CIA

TABLE A6
OAK KNOLL DEVELOPMENT
10-YR & 25-YR YEAR STORM HYDRAULICS, PIPE OUTPUT

Pipe #	Upstream Node	Downstream Node	Total Discharge (cfs) [1]	Capacity @ Constructed Slope (cfs)	Pipe Size (inches)	Length (feet)	Constructed Slope (ft/ft)	Pipe Roughness (Mannings n)	Invert Elevation [3]		Ground/Rim Elevation		HGL Elevation		**Upstream Freeboard [2] (feet)**	Upstream Cover (feet)	Velocity (ft/s)
									Upstream	Downstream	Upstream	Downstream	Upstream	Downstream			
OUTFALL OS3 - 10 YEAR STORM																	
P-OS3-2	I-OS3-2	I-OS3-1	**61.1**	111.5	36	92.6	0.032	0.014	292.00	289.00	300.00	297.00	294.52	293.07	**5.5**	5.0	16.1
P-OS3-1	I-OS3-1	OS-3	**60.7**	0.0	36	50.3	0.000	0.014	289.00	289.00	297.00	297.00	292.25	291.51	**4.8**	5.0	8.6
OUTFALL OS2 - 10 YEAR STORM																	
P-OS2-5	I-OS2-5	I-OS2-4	**86.1**	73.7	36	141.4	0.014	0.014	352.00	350.00	375.00	375.00	361.38	358.65	**13.6**	20.0	12.2
P-OS2-4	I-OS2-4	I-OS2-3	**85.4**	66.0	36	123.4	0.011	0.014	350.00	348.60	375.00	375.00	356.97	354.62	**18.0**	22.0	12.1
P-OS2-3	I-OS2-3	I-OS2-2	**84.8**	64.6	36	101.1	0.011	0.014	348.60	347.50	375.00	366.00	352.77	350.88	**22.2**	23.4	12.0
P-OS2-2	I-OS2-2	I-OS2-1	**84.3**	134.2	36	255.4	0.047	0.014	347.50	335.50	366.00	345.00	350.31	342.16	**15.7**	15.5	20.1
P-OS2-1	I-OS2-1	OS-2	**83.6**	0.0	36	172.7	0.000	0.014	335.50	335.50	345.00	345.00	341.54	338.30	**3.5**	6.5	11.8
OUTFALL OS1 - 10 YEAR STORM																	
P-OS1-4	I-OS1-4	I-OS1-3	**24.8**	27.1	24	120	0.017	0.014	377.50	375.50	388.00	383.00	381.47	379.80	**6.5**	8.5	7.9
P-OS1-3	I-OS1-3	I-OS1-2	**24.4**	34.9	24	126.9	0.028	0.014	375.50	372.00	383.00	380.00	378.67	376.97	**4.3**	5.5	7.8
P-OS1-2	I-OS1-2	I-OS1-1	**23.9**	216.5	36	285.5	0.122	0.014	372.00	337.10	380.00	345.60	373.58	339.67	**6.4**	5.0	20.2
P-OS1-1	I-OS1-1	OS-1	**23.5**	0.0	36	198	0.000	0.014	337.10	337.10	345.60	345.60	339.48	338.66	**6.1**	5.5	3.3
OUTFALL 10 - 10 YEAR STORM																	
P-10-01	I-10-01	O-10	**11.7**	9.8	18	99.6	0.010	0.014	215.50	214.50	222.00	221.00	217.32	215.80	**4.7**	5.0	6.6
OUTFALL 9 - 10 YEAR STORM																	
P-9-L09-02	I-9-L09-02	I-9-L09-01	**9.0**	33.5	18	203.6	0.118	0.014	332.00	308.00	340.00	316.00	333.16	309.70	**6.8**	6.5	16.1
P-9-L09-01	I-9-L09-01	I-9-09	**13.3**	26.7	18	53.5	0.075	0.014	308.00	304.00	316.00	310.00	309.36	304.79	**6.6**	6.5	15.1
P-9-12	I-9-12	I-9-11	**1.7**	3.3	12	153.6	0.010	0.014	304.00	302.50	310.00	310.00	304.55	303.30	**5.4**	5.0	4.2
P-9-11	I-9-11	I-9-10	**3.9**	9.9	18	67.8	0.010	0.014	302.50	301.80	310.00	310.00	303.26	302.75	**6.7**	6.0	5.3
P-9-10	I-9-10	I-9-09	**4.8**	9.7	18	121	0.010	0.014	301.80	300.60	310.00	310.00	302.64	302.48	**7.4**	6.7	5.5
P-9-09	I-9-09	I-9-08	**18.5**	25.9	24	65.7	0.015	0.014	300.60	299.60	310.00	307.60	302.15	301.27	**7.9**	7.4	9.0
P-9-08	I-9-08	I-9-07	**18.9**	40.1	24	249.8	0.036	0.014	299.60	290.50	307.60	298.50	301.17	292.19	**6.4**	6.0	12.6
P-9-07	I-9-07	I-9-06	**20.4**	40.1	24	247.5	0.036	0.014	290.50	281.50	298.50	289.50	292.12	283.56	**6.4**	6.0	12.8
P-9-06	I-9-06	I-9-05	**21.8**	40.1	24	123.2	0.037	0.014	281.50	277.00	289.50	285.00	283.17	279.44	**6.3**	6.0	13.1
P-9-05	I-9-05	I-9-04	**23.9**	46.1	24	283.9	0.048	0.014	277.00	263.30	285.00	271.30	278.73	265.23	**6.3**	6.0	14.8
P-9-04	I-9-04	I-9-03	**27.8**	46.2	24	282.8	0.048	0.014	263.30	249.60	271.30	257.60	265.12	252.37	**6.2**	6.0	15.4
P-9-03	I-9-03	I-9-02	**34.9**	46.3	24	156.5	0.049	0.014	249.60	242.00	257.60	250.00	251.52	244.92	**6.1**	6.0	16.2
P-9-02	I-9-02	I-9-01	**38.0**	69.8	24	181	0.110	0.014	242.00	222.00	250.00	230.00	243.94	227.35	**6.1**	6.0	22.7
P-9-01	I-9-01	O-9	**37.6**	0.0	24	36.9	0.000	0.014	222.00	222.00	230.00	230.00	225.15	223.94	**4.8**	6.0	12.0
OUTFALL 8 - 10 YEAR STORM																	
P-8-05	I-8-05	I-8-04	**9.9**	19.0	18	188	0.038	0.014	323.50	316.40	330.00	322.90	324.71	317.96	**5.3**	5.0	10.9
P-8-04	I-8-04	I-8-03	**15.4**	18.9	18	188.5	0.038	0.014	316.40	309.30	322.90	315.80	317.81	312.06	**5.1**	5.0	11.9
P-8-03	I-8-03	I-8-02	**19.8**	19.4	18	242.8	0.040	0.014	309.30	299.70	315.80	306.70	311.48	301.52	**4.3**	5.0	11.2
P-8-02	I-8-02	I-8-01	**23.9**	49.1	24	177.3	0.055	0.014	299.70	290.00	306.70	297.00	301.43	293.39	**5.3**	5.0	15.5
P-8-01	I-8-01	O-8	**25.5**	0.0	24	40.4	0.000	0.014	290.00	290.00	297.00	297.00	292.50	291.77	**4.5**	5.0	8.1
OUTFALL 7 - 10 YEAR STORM																	
P-7-08	I-7-08	I-7-07	**1.7**	7.0	12	102.3	0.045	0.014	289.00	284.40	295.00	290.90	289.56	285.65	**5.4**	5.0	7.4
P-7-07	I-7-07	I-7-06	**8.0**	20.2	18	196.4	0.043	0.014	284.40	276.00	290.90	283.00	285.49	277.67	**5.4**	5.0	10.7
P-7-06	I-7-06	I-7-05	**20.0**	42.3	24	197.3	0.041	0.014	276.00	268.00	283.00	275.00	277.61	270.32	**5.4**	5.0	13.3
P-7-05	I-7-05	I-7-04	**29.4**	40.9	24	200.9	0.038	0.014	268.00	260.40	275.00	267.40	269.85	262.37	**5.1**	5.0	14.2
P-7-04	I-7-04	I-7-03	**29.0**	40.2	24	197	0.037	0.014	260.40	253.20	267.40	260.20	262.25	255.37	**5.1**	5.0	13.9
P-7-03	I-7-03	I-7-02	**28.5**	40.1	24	143	0.036	0.014	253.20	248.00	260.20	255.00	255.04	250.48	**5.2**	5.0	13.9
P-7-02	I-7-02	I-7-01	**28.2**	42.6	24	145.6	0.041	0.014	248.00	242.00	255.00	250.00	249.83	245.84	**5.2**	5.0	14.5
P-7-01	I-7-01	O-7	**55.1**	0.0	36	56.2	0.000	0.014	242.00	242.00	250.00	250.00	245.16	244.41	**4.8**	5.0	7.8

TABLE A6
OAK KNOLL DEVELOPMENT
10-YR & 25-YR YEAR STORM HYDRAULICS, PIPE OUTPUT

Pipe #	Upstream Node	Downstream Node	Total Discharge (cfs) [1]	Capacity @ Constructed Slope (cfs)	Pipe Size (inches)	Length (feet)	Constructed Slope (ft/ft)	Pipe Roughness (Mannings n)	Invert Elevation [3]		Ground/Rim Elevation		HGL Elevation		**Upstream Freeboard [2] (feet)**	Upstream Cover (feet)	Velocity (ft/s)
									Upstream	Downstream	Upstream	Downstream	Upstream	Downstream			
OUTFALL 6 - 10 YEAR STORM																	
P-6-L09-01	I-6-L09-01	I-6-09	**1.8**	7.2	12	106.8	0.047	0.014	488.50	483.50	495.00	490.00	489.07	485.07	**5.9**	5.5	7.6
P-6-L08-01	I-6-L08-01	I-6-08	**1.5**	7.7	12	101.9	0.054	0.014	466.00	460.50	472.50	467.50	466.52	462.24	**6.0**	5.5	7.6
P-6-L03-01	I-6-L03-01	I-6-03	**5.1**	3.8	12	134.2	0.010	0.012	366.00	364.70	375.00	375.00	369.30	366.93	**5.7**	8.0	6.5
P-6-L01-01	I-6-L01-01	I-6-01	**10.8**	22.8	18	146.2	0.055	0.014	343.50	335.50	350.00	345.00	344.76	339.44	**5.2**	5.0	12.7
P-6-14	I-6-14	I-6-13	**0.9**	7.4	12	238	0.050	0.014	584.00	572.00	590.00	578.00	584.39	572.80	**5.6**	5.0	6.4
P-6-13	I-6-13	I-6-12	**2.6**	7.5	12	318.4	0.052	0.014	572.00	555.50	578.00	562.00	572.70	556.51	**5.3**	5.0	8.7
P-6-12	I-6-12	I-6-11	**6.3**	21.9	18	318.7	0.050	0.014	555.50	539.50	562.00	546.00	556.47	541.42	**5.5**	5.0	10.7
P-6-11	I-6-11	I-6-10	**12.0**	35.1	18	312.5	0.129	0.014	539.50	499.10	546.00	505.60	540.81	500.94	**5.2**	5.0	18.0
P-6-10	I-6-10	I-6-09	**14.8**	35.0	18	121.2	0.129	0.014	499.10	483.50	505.60	490.00	500.50	485.40	**5.1**	5.0	19.0
P-6-09	I-6-09	I-6-08	**19.8**	32.4	18	208.4	0.110	0.014	483.50	460.50	490.00	467.50	484.97	462.33	**5.0**	5.0	19.2
P-6-08	I-6-08	I-6-07	**23.1**	63.1	24	138.4	0.090	0.014	460.50	448.00	467.50	455.00	462.21	449.94	**5.3**	5.0	18.5
P-6-07	I-6-07	I-6-06	**24.5**	61.7	24	156.4	0.086	0.014	448.00	434.50	455.00	441.50	449.75	436.58	**5.3**	5.0	18.5
P-6-06	I-6-06	I-6-05	**26.2**	61.9	24	348.3	0.087	0.014	434.50	404.30	441.50	411.30	436.29	406.73	**5.2**	5.0	18.9
P-6-05	I-6-05	I-6-04	**29.7**	61.8	24	313.5	0.086	0.014	404.30	377.20	411.30	384.20	406.16	379.58	**5.1**	5.0	19.5
P-6-04	I-6-04	I-6-03	**32.7**	72.2	24	105.7	0.118	0.014	377.20	364.70	384.20	375.00	379.10	367.54	**5.1**	5.0	22.4
P-6-03	I-6-03	I-6-02	**36.5**	65.0	24	109.4	0.070	0.012	364.70	357.00	375.00	366.00	366.63	359.63	**8.4**	8.3	21.3
P-6-02	I-6-02	I-6-01	**38.9**	71.2	24	254.9	0.084	0.012	357.00	335.50	366.00	345.00	358.95	339.50	**7.1**	7.0	23.2
P-6-01	I-6-01	O-6	**46.7**	38.7	36	174.5	-0.003	0.012	335.50	336.00	345.00	345.00	339.33	338.23	**5.7**	6.5	6.6
OUTFALL 5 - 10 YEAR STORM																	
P-5-L05-03	I-5-L05-03	I-5-L05-02	**3.2**	4.7	12	173.3	0.020	0.014	343.00	339.50	349.00	346.00	343.77	340.60	**5.2**	5.0	6.4
P-5-L05-02	I-5-L05-02	I-5-L05-01	**5.3**	12.7	18	236.1	0.017	0.014	339.50	335.50	346.00	342.00	340.39	338.62	**5.6**	5.0	6.9
P-5-L05-01	I-5-L05-01	I-5-05	**10.6**	8.9	18	241.9	0.008	0.014	335.50	333.50	342.00	340.00	338.46	335.62	**3.5**	5.0	6.0
P-5-L03-03	I-5-L03-03	I-5-L03-02	**9.2**	12.7	18	147.2	0.017	0.014	331.50	329.00	338.00	336.00	333.46	332.14	**4.5**	5.0	5.2
P-5-L03-02	I-5-L03-02	I-5-L03-01	**18.6**	20.0	24	220.7	0.009	0.014	329.00	327.00	336.00	334.00	331.65	329.92	**4.4**	5.0	5.9
P-5-L03-01	I-5-L03-01	I-5-03	**22.3**	20.8	24	256	0.010	0.014	327.00	324.50	334.00	332.00	329.76	326.88	**4.2**	5.0	7.1
P-5-05	I-5-05	I-5-04	**14.2**	18.5	18	86	0.036	0.014	333.50	330.40	340.00	336.90	334.89	332.17	**5.1**	5.0	11.6
P-5-04	I-5-04	I-5-03	**14.0**	25.2	18	88.5	0.067	0.014	330.40	324.50	336.90	332.00	331.78	326.87	**5.1**	5.0	14.6
P-5-03	I-5-03	I-5-02	**34.9**	53.9	30	105	0.020	0.014	324.50	322.40	332.00	329.90	326.51	325.07	**5.5**	5.0	11.7
P-5-02	I-5-02	I-5-01	**51.3**	75.9	30	136.1	0.040	0.014	322.40	317.00	329.90	325.00	324.72	321.15	**5.2**	5.0	16.6
P-5-01	I-5-01	O-5	**61.2**	0.0	36	53.9	0.000	0.014	317.00	317.00	325.00	325.00	320.31	319.52	**4.7**	5.0	8.7
OUTFALL 4 - 10 YEAR STORM																	
P-4-07	I-4-07	I-4-06	**15.7**	19.2	18	197	0.039	0.014	323.50	315.90	330.00	322.40	324.92	317.65	**5.1**	5.0	12.1
P-4-06	I-4-06	I-4-05	**16.5**	19.2	18	97.7	0.039	0.014	315.90	312.10	322.40	318.60	317.33	313.90	**5.1**	5.0	12.2
P-4-05	I-4-05	I-4-04	**16.3**	20.4	18	93.9	0.044	0.014	312.10	308.00	318.60	315.00	313.53	309.83	**5.1**	5.0	12.8
P-4-04	I-4-04	I-4-03	**19.6**	41.5	24	99.8	0.039	0.014	308.00	304.10	315.00	311.10	309.59	305.87	**5.4**	5.0	13.0
P-4-03	I-4-03	I-4-02	**19.4**	41.4	24	100.2	0.039	0.014	304.10	300.20	311.10	307.20	305.68	302.31	**5.4**	5.0	13.0
P-4-02	I-4-02	I-4-01	**19.2**	77.3	24	36.9	0.136	0.014	300.20	295.20	307.20	302.20	301.78	298.35	**5.4**	5.0	20.4
P-4-01	I-4-01	O-4	**24.7**	0.0	24	36.1	0.000	0.014	295.20	295.20	302.20	302.00	297.59	296.95	**4.6**	5.0	7.9
OUTFALL 3 - 10 YEAR STORM																	
P-3-04	I-3-04	I-3-03	**2.8**	5.1	12	286.5	0.023	0.014	329.00	322.30	335.00	328.30	329.72	323.25	**5.3**	5.0	6.6
P-3-03	I-3-03	I-3-02	**4.2**	5.2	12	288.5	0.025	0.014	322.30	315.20	328.30	321.70	323.16	316.88	**5.1**	5.0	7.4
P-3-02	I-3-02	I-3-01	**12.6**	27.5	18	84.1	0.080	0.014	315.20	308.50	321.70	315.00	316.54	311.21	**5.2**	5.0	15.2
P-3-01	I-3-01	O-3	**12.9**	0.0	18	30.3	0.000	0.014	308.50	308.50	315.00	315.00	310.46	309.85	**4.5**	5.0	7.3

TABLE A6
OAK KNOLL DEVELOPMENT
10-YR & 25-YR YEAR STORM HYDRAULICS, PIPE OUTPUT

Pipe #	Upstream Node	Downstream Node	Total Discharge (cfs) [1]	Capacity @ Constructed Slope (cfs)	Pipe Size (inches)	Length (feet)	Constructed Slope (ft/ft)	Pipe Roughness (Mannings n)	Invert Elevation [3]		Ground/Rim Elevation		HGL Elevation		**Upstream Freeboard [2] (feet)**	Upstream Cover (feet)	Velocity (ft/s)
									Upstream	Downstream	Upstream	Downstream	Upstream	Downstream			
OUTFALL 2 - 10 YEAR STORM																	
P-2-L02-05	I-2-L02-05	I-2-L02-04	**1.2**	4.9	12	82.9	0.022	0.014	429.00	427.20	435.00	435.00	429.45	427.89	**5.6**	5.0	5.1
P-2-L02-04	I-2-L02-04	I-2-L02-03	**2.3**	8.0	12	259.3	0.058	0.014	427.20	412.10	435.00	418.60	427.84	413.10	**7.2**	6.8	8.7
P-2-L02-03	I-2-L02-03	I-2-L02-02	**5.5**	7.3	18	341.9	0.006	0.014	412.10	410.20	418.60	416.70	413.08	411.51	**5.5**	5.0	4.5
P-2-L02-02	I-2-L02-02	I-2-L02-01	**9.0**	29.0	18	259.7	0.089	0.014	410.20	387.20	416.70	393.70	411.36	388.60	**5.3**	5.0	14.5
P-2-L02-01	I-2-L02-01	I-2-02	**11.7**	22.8	18	278.6	0.055	0.014	387.20	372.00	393.70	380.00	388.50	374.15	**5.2**	5.0	13.0
P-2-11	I-2-11	I-2-10	**0.7**	8.1	12	82.9	0.060	0.014	479.00	474.00	485.00	480.50	479.36	474.57	**5.6**	5.0	6.4
P-2-10	I-2-10	I-2-09	**1.5**	7.7	12	159.7	0.054	0.014	474.00	465.40	480.50	471.90	474.52	466.21	**6.0**	5.5	7.6
P-2-09	I-2-09	I-2-08	**2.8**	7.7	12	316.6	0.054	0.014	465.40	448.30	471.90	454.80	466.12	449.36	**5.8**	5.5	9.0
P-2-08	I-2-08	I-2-07	**5.3**	7.7	12	313	0.054	0.014	448.30	431.40	454.80	437.90	449.23	432.95	**5.6**	5.5	10.6
P-2-07	I-2-07	I-2-06	**7.8**	9.0	12	461.3	0.073	0.014	431.40	397.50	437.90	405.00	432.38	399.03	**5.5**	5.5	12.9
P-2-06	I-2-06	I-2-05	**11.1**	29.2	18	89.4	0.089	0.014	397.50	389.50	405.00	397.00	398.78	391.03	**6.2**	6.0	15.4
P-2-05	I-2-05	I-2-04	**11.6**	38.3	18	77.7	0.154	0.014	389.50	377.50	397.00	385.00	390.80	379.15	**6.2**	6.0	19.0
P-2-04	I-2-04	I-2-03	**11.7**	15.5	18	79.7	0.025	0.014	377.50	375.50	385.00	383.00	378.80	377.43	**6.2**	6.0	9.6
P-2-03	I-2-03	I-2-02	**12.1**	16.2	18	126.2	0.028	0.014	375.50	372.00	383.00	380.00	376.82	374.17	**6.2**	6.0	10.1
P-2-02	I-2-02	I-2-01	**27.9**	71.4	24	302	0.116	0.014	372.00	337.10	380.00	345.60	373.83	343.63	**6.2**	6.0	21.3
P-2-01	I-2-01	O-2	**32.0**	0.0	24	201.8	0.000	0.012	337.10	337.10	345.60	345.60	342.45	338.99	**3.2**	6.5	10.2
OUTFALL 1 - 10 YEAR STORM																	
P-1-05	I-1-05	I-1-04	**10.8**	22.8	18	300	0.055	0.014	406.50	390.10	413.00	396.60	407.76	391.74	**5.2**	5.0	12.8
P-1-04	I-1-04	I-1-03	**18.2**	28.5	18	283.8	0.086	0.014	390.10	365.80	396.60	372.30	391.55	367.91	**5.1**	5.0	17.1
P-1-03	I-1-03	I-1-02	**17.8**	24.0	18	128.4	0.061	0.014	365.80	358.00	372.30	365.00	367.25	360.02	**5.1**	5.0	14.9
P-1-02	I-1-02	I-1-01	**22.3**	67.5	24	295.8	0.103	0.014	358.00	327.50	365.00	335.00	359.68	330.74	**5.3**	5.0	19.3
P-1-01	I-1-01	O-1	**35.5**	0.0	30	41.9	0.000	0.014	327.50	327.50	335.00	335.00	330.13	329.52	**4.9**	5.0	7.2

Notes
(1) ft = feet, cfs = cubic feet per second, ft/s = feet per second
(2) Freeboard is HGL (Hydraulic Grade Line) below Rim of Inlet
(3) Outfall invert elevation set to 90.92' minimum. Mean Lower Water (MLW) plus 16-inches of Sea Level Rise.

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ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE % Auto		MT		HT		VEHICLE SPEED Auto k/h		MT k/h		HT k/h		NOISE LEVEL (dBA) Auto	MT	HT	CALCULATED NOISE LEVEL 15 meters from	Receptor Dist. from Roadway	Adjusted Noise Level	Distance from Roadway to 65 dBA	Distance from Roadway to 65 dBA
Calveno Peak																							
	from:	to:		%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)
Keller	580	Canyon O	772	97	748.84	2	15.44	1	7.72	35	56	35	56	35	56	63.1	55.9	59.6	65.2	40	61.0	15.8	51.8
Keller	Cyn Oaks	Campus	586	97	568.42	2	11.72	1	5.86	35	56	35	56	35	56	61.9	54.7	58.4	64.0	40	59.8	12.0	39.3
Keller	Campus	Surrey	436	97	422.92	2	8.72	1	4.36	35	56	35	56	35	56	60.6	53.4	57.1	62.7	40	58.5	8.9	29.2
Mountai	Main	Overpass	816	97	791.52	2	16.32	1	8.16	35	56	35	56	35	56	63.3	56.2	59.9	65.5	40	61.2	16.7	54.7
Mountain	Sequoya	Calafia	788	97	764.36	2	15.76	1	7.88	35	56	35	56	35	56	63.1	56.0	59.7	65.3	40	61.0	16.1	52.8
98th	Stanley	580	2437	97	2363.9	2	48.74	1	24.37	30	48	30	48	30	48	66.1	59.9	64.0	68.8	40	64.5	35.9	117.8
Sequoya	Mountain	Keller	169	97	163.93	2	3.38	1	1.69	25	40	25	40	25	40	52.2	47.0	51.7	55.6	40	51.4	1.7	5.7

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ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE % Auto		MT		HT		VEHICLE SPEED Auto k/h		MT k/h		HT k/h		NOISE LEVEL (dBA) Auto	MT	HT	CALCULATED NOISE LEVEL 15 meters from	Receptor Dist. from Roadway	Adjusted Noise Level	Distance from Roadway to 65 dBA	Distance from Roadway to 65 dBA
Calveno Peak																							
	from:	to:		%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)
Keller	580	Canyon O	943	97	914.71	2	18.86	1	9.43	35	56	35	56	35	56	63.9	56.8	60.5	66.1	40	61.8	19.3	63.2
Keller	Cyn Oaks	Campus	621	97	602.37	2	12.42	1	6.21	35	56	35	56	35	56	62.1	55.0	58.7	64.3	40	60.0	12.7	41.6
Keller	Campus	Surrey	454	97	440.38	2	9.08	1	4.54	35	56	35	56	35	56	60.7	53.6	57.3	62.9	40	58.7	9.3	30.4
Mountai	Main	Overpass	1095	97	1062.2	2	21.9	1	10.95	35	56	35	56	35	56	64.6	57.4	61.1	66.7	40	62.5	22.4	73.4
Mountain	Sequoya	Calafia	981	97	951.57	2	19.62	1	9.81	35	56	35	56	35	56	64.1	57.0	60.7	66.3	40	62.0	20.1	65.8
98th	Stanley	580	2546	97	2469.6	2	50.92	1	25.46	30	48	30	48	30	48	66.3	60.1	64.2	69.0	40	64.7	37.5	123.1
Sequoya	Mountain	Keller	174	97	168.78	2	3.48	1	1.74	25	40	25	40	25	40	52.4	47.2	51.8	55.8	40	51.5	1.8	5.9

Assumptions: AM peak hour traffic data from Fehr & Peers

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ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE % Auto		MT		HT		VEHICLE SPEED Auto k/h		MT k/h		HT k/h		NOISE LEVEL (dBA) Auto	MT	HT	CALCULATED NOISE LEVEL 15 meters from	Receptor Dist. from Roadway	Adjusted Noise Level	Distance from Roadway to 65 dBA	Distance from Roadway to 65 dBA
Calveno Peak																							
	from:	to:		%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)
Keller	580	Canyon O	850	97	824.5	2	17	1	8.5	35	56	35	56	35	56	63.5	56.3	60.0	65.6	40	61.4	17.4	57.0
Keller	Cyn Oaks	Campus	650	97	630.5	2	13	1	6.5	35	56	35	56	35	56	62.3	55.2	58.9	64.5	40	60.2	13.3	43.6
Keller	Campus	Surrey	490	97	475.3	2	9.8	1	4.9	35	56	35	56	35	56	61.1	53.9	57.6	63.2	40	59.0	10.0	32.9
Mountai	Main	Overpass	890	97	863.3	2	17.8	1	8.9	35	56	35	56	35	56	63.7	56.5	60.2	65.8	40	61.6	18.2	59.7
Mountain	Sequoya	Calafia	850	97	824.5	2	17	1	8.5	35	56	35	56	35	56	63.5	56.3	60.0	65.6	40	61.4	17.4	57.0
98th	Stanley	580	2700	97	2619	2	54	1	27	30	48	30	48	30	48	66.6	60.3	64.4	69.2	40	65.0	39.8	130.5
Sequoya	Mountain	Keller	200	97	194	2	4	1	2	25	40	25	40	25	40	53.0	47.8	52.4	56.4	40	52.1	2.1	6.7

Assumptions: AM peak hour traffic data from Fehr & Peers

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CALCULATED	Receptor	Adjusted	Distance	Distance

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						NOISE LEVEL (dBA)			NOISE LEVEL	Dist. from	Noise	from	from
				Auto		MT		HT		Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT	15 meters from	Roadway	Level	Roadway to 65 dBA	Roadway to 65 dBA
Calveno Peak																							
	from:	to:		%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)
Keller	580	Canyon O	1021	97	990.37	2	20.42	1	10.21	35	56	35	56	35	56	64.3	57.1	60.8	66.4	40	62.2	20.9	68.5
Keller	Cyn Oaks	Campus	685	97	664.45	2	13.7	1	6.85	35	56	35	56	35	56	62.5	55.4	59.1	64.7	40	60.4	14.0	45.9
Keller	Campus	Surrey	508	97	492.76	2	10.16	1	5.08	35	56	35	56	35	56	61.2	54.1	57.8	63.4	40	59.1	10.4	34.1
Mountai	Main	Overpass	1169	97	1133.9	2	23.38	1	11.69	35	56	35	56	35	56	64.9	57.7	61.4	67.0	40	62.8	23.9	78.4
Mountain	Sequoya	Calafia	1043	97	1011.7	2	20.86	1	10.43	35	56	35	56	35	56	64.4	57.2	60.9	66.5	40	62.3	21.3	69.9
98th	Stanley	580	2809	97	2724.7	2	56.18	1	28.09	30	48	30	48	30	48	66.7	60.5	64.6	69.4	40	65.1	41.4	135.8
Sequoya	Mountain	Keller	205	97	198.85	2	4.1	1	2.05	25	40	25	40	25	40	53.1	47.9	52.5	56.5	40	52.2	2.1	6.9