

PUBLIC REVIEW DRAFT

LEONA HEIGHTS
SULFUR MINE REMEDIATION
INITIAL STUDY/MITIGATED NEGATIVE
DECLARATION



LSA

March 2014

**NOTICE OF CREEK PROTECTION PERMIT APPLICATION AND
NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION
FOR THE LEONA HEIGHTS SULFUR MINE REMEDIATION PROJECT**

PROJECT TITLE: Leona Heights Sulfur Mine Remediation Project
CASE NO. CP13186; ER130016
PROJECT SPONSOR: Dr. Collin Mbanugo
PROJECT LOCATION: Eastern terminus of McDonnell Avenue (APN 037A-3151-002-06)
DATE OF PUBLIC NOTICE: April 2, 2014

Project Description: The project site is located in the City of Oakland in Alameda County, California. The approximately 2.0-acre project site is located one-half mile northeast of the intersection of I-580 and State Route 13, and southeast of the eastern terminus of McDonnell Avenue which provides roadway access to the site. It is generally bounded by undeveloped land to the north and south, Merritt College approximately one-quarter mile to the east, and McDonnell Avenue and single-family homes to the west. The project site is not included on a list of hazardous waste sites compiled pursuant to Government Code Section 65962.5 (“Cortese List”).

The purpose of the proposed project is to remediate the steeply sloping piles of leftover mining waste rock, or tailings, and stabilize the Leona Creek channel to improve water quality at the abandoned Leona Heights Sulfur Mine in the Oakland Hills. The water quality on the site is impaired due to contact between the mining waste and surface water run-off. The California Regional Water Quality Control Board, San Francisco Bay Region, issued a Cleanup and Abatement Order in May 2013 and this project implements the Order.

Creek Protection Permit Application: An application for a Creek Protection Permit (Category IV) has been filed with the City of Oakland for the above project. The Zoning Manager will make a decision on the Creek Protection Permit application following the end of the public review and comment period (described below). The Zoning Manger’s decision on the Creek Protection Permit is appealable within ten (10) calendar days from the date of the decision.

Environmental Review: An Initial Study (IS) has been prepared under the requirements of the California Environmental Quality Act (CEQA) for review and action by the City. The Initial Study evaluates the potential environmental impacts of the proposed project. Based on the results of the Initial Study, it has been determined that the project will not have a significant effect on the environment. Therefore, an Environmental Impact Report (EIR) is not required, and a proposed Mitigated Negative Declaration (MND) has been prepared. The project has been modified to incorporate mitigation measures that will reduce any potential environmental impact to a less-than-significant level. The City of Oakland, Department of Planning and Building, is hereby releasing this IS/MND, finding it to be accurate and complete and ready for public review.

Public Review and Comment: The Creek Protection Permit application materials and proposed IS/MND are available for review at the Department of Planning and Building, Planning and Zoning Division, 250 Frank H. Ogawa Plaza, Suite 3315, Oakland, California, 94612, 8:30 a.m. to 4:30 p.m. The proposed IS/MND may also be reviewed on the City’s website: <http://www2.oaklandnet.com/Government/o/PBN/OurServices/Application/DOWD009157>

Any interested party may comment on the project or the proposed IS/MND. There is no fee for commenting and all comments received will be considered by the City prior to finalizing the IS/MND and making a decision on the project. Comments should focus on the sufficiency of the proposed IS/MND in discussing

possible impacts on the physical environment and ways in which potential adverse effects might be minimized in light of the IS/MND's purpose to provide useful and accurate information about such factors. Comments must be received no later than **4:00 p.m. on May 2, 2014**, and should be sent in writing to the following address:

**Darin Ranelletti, Deputy Director
City of Oakland
Department of Planning and Building
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, CA 94612
Fax: (510) 238-6538
Email: dranelletti@oaklandnet.com**

If you wish to be notified of the decision of this case, please indicate the **case number and submit a self-addressed stamped envelope** to the above address. If you challenge the environmental document or project in court you may be limited to raising only those issues raised in written correspondence received by the Department of Planning and Building during the public review and comment period listed above. For further information, please contact **Darin Ranelletti** at **(510) 238-3663** or **dranelletti@oaklandnet.com**.

PUBLIC REVIEW DRAFT

LEONA HEIGHTS
SULFUR MINE REMEDIATION
INITIAL STUDY/MITIGATED NEGATIVE
DECLARATION

Submitted to:

City of Oakland
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, California 94612

Prepared by:

LSA Associates, Inc.
2215 Fifth Street
Berkeley, California 94710
510.540.7331

LSA

March 2014

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GENERAL PROJECT INFORMATION

1. Project Title and Reference

Leona Heights Sulfur Mine Remediation Project
Case #: CP13186
Environmental Review Case File #: ER130016

2. Lead Agency Name and Address:

City of Oakland
Department of Planning and Building
Planning and Zoning Division
250 Frank H Ogawa Plaza, Suite 3315
Oakland, CA 94612

3. Primary Report Preparers:

LSA Associates, Inc.
Judith Malamut and Kelly Bray
2215 Fifth Street
Berkeley, CA 94710

4. Contact Person

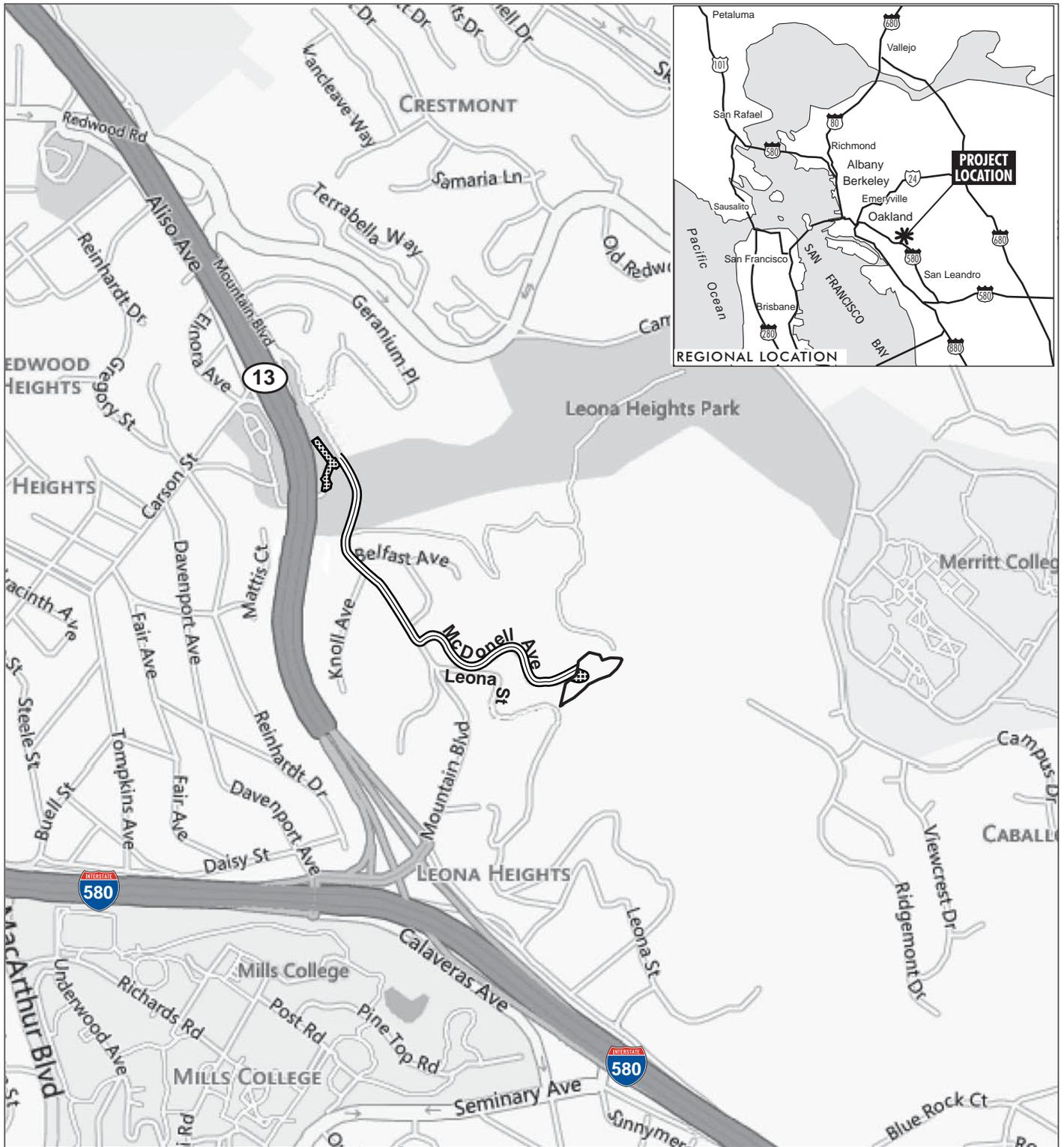
Darin Ranelletti, Deputy Director
510-238-3663
dranelletti@oaklandnet.com

5. Project Location

The project area is located in the Oakland hills region of the City of Oakland, Alameda County, as shown in Figure 1. The site is approximately one-half mile northeast of the intersection of I-580 and State Route 13, and southeast of the eastern terminus of McDonell Avenue which provides roadway access to the site. It is generally bounded by open space to the north and south, Merritt College to the east, and McDonell Avenue and residential areas to the west. The project area, referred to as the remediation site, includes a portion of Leona Creek and adjacent slopes and consists of an approximately 2-acre, irregularly shaped area, located in a small steep ravine. Access to the remediation site and the primary staging area for construction equipment and materials would be located on an approximately 0.13-acre portion of the McDonell Avenue cul-de-sac right-of-way (called the "primary staging area"). The project also includes the temporary use of an approximately 1-acre portion of the overflow parking lot for Leona Lodge, located about 0.6 miles from the project site and owned by City of Oakland. The overflow parking lot at Leona Lodge (called the "lodge staging area") will be used for the temporary staging of materials, equipment and worker parking, as needed. Figure 2 shows McDonell Avenue which will be used as the haul route and the location of the staging areas.

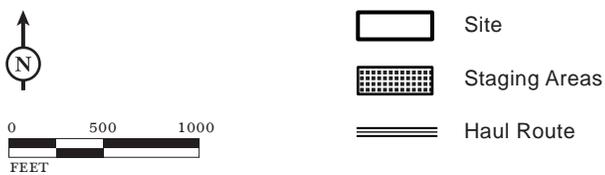
6. Project Sponsor's Name and Address

Dr. Collin Mbanugo
3300 Webster Street, #900
Oakland, CA 94619



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FIGURE 1



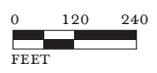
Leona Creek Restoration and Leona Heights Sulfur Mine Remediation Project IS/MND Project Location

SOURCES: BING MAPS; LSA ASSOCIATES, INC., 2014.



FIGURE 2

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SOURCE: ALAMEDA COUNTY ASSESSOR'S OFFICE, 2014.
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*Leona Creek Restoration and Leona Heights
 Sulfur Mine Remediation Project IS/MND
 Project Haul Route and Staging Areas*

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7. General Plan Designation

The Leona remediation site and primary staging area is located within the Resource Conservation Land Use designation. The lodge staging area is located within the Resource Conservation area.

8. Zoning

The remediation site and primary staging area is located within the Residential Hillside (RH-1) Zoning District. The lodge staging area is located within the Open Space/Special Use OS (SU) Zoning District.

9. Description of Project

The purpose of the proposed project is to improve the water quality of Leona Creek onsite and downstream of the closed Leona Heights Sulfur Mine in the Oakland hills by remediating (capping and revegetating) the mining waste (also referred to as mine tailings¹) and stabilizing the Leona Creek channel. Currently, the water quality in Leona Creek, at the remediation site, is degraded due to acid mine drainage which is being caused by contact between water from Leona Creek, on-site runoff and piles of mining waste.

In May 2013, the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board) issued an amended Cleanup and Abatement Order (CAO) which defined actions that must be taken by the project applicant in order to satisfy the order, see Appendix A.

a. Surrounding Land Uses. The remediation site is located along the western edge of a large, undeveloped property under the ownership of Dr. Collin Mbanugo. The site is bordered on the west and northwest by private residences, and those directly adjacent to the site are irregularly spaced along the hillside. To the north and south are areas of expansive open space owned by the project applicant and totaling approximately 135 acres. Located north of the project applicant's property is additional open space owned by the City of Oakland. Merritt College is located east of Campus Drive, approximately one-quarter mile east of the site, and is a branch of the Peralta Community College District. A site ownership parcel map is provided in Figure 3.

b. Site History and Environmental Concerns. The project area is mostly wooded and elevations vary widely. Within the boundary of the remediation site, the lowest portion is approximately 350 feet above mean sea level (msl) at the southwest corner, rising to approximately 550 feet msl at the northeast corner. The Leona Heights Sulfur Mine operated at the project site from about 1900 through the 1930s to extract pyrite (iron sulfide) crystals from the volcanic bedrock for the production of sulfuric acid. The closed mine is located in the upper reach of the Leona Creek watershed, and sulfur-bearing mining waste lines the ravine in which Leona Creek flows. The tailings occur in the form of deep localized accumulations or as thin localized pockets overlying bedrock. The site consists of upper and lower mine tailings piles. In the upper portion of the former mine site, the intermittent creek has eroded downward into underlying basement rock through the mine tailings, forming a deeply incised channel. The tailings piles are more porous than the native bedrock, which allows water to erode the material. In the lower portion of the site, the creek generally skirts around the southern edge of the mine tailings.

¹ In this document mining waste to be remediated at the site is also referred to as "tailings."

The areas where extensive mine tailings are present are nearly devoid of any vegetation, while the remaining areas of the site are covered with mainly oak and eucalyptus trees. The tailings do not extend into the wooded areas and there are extensive bedrock outcrops in the wooded areas with well-developed soil profiles. In areas of transition where the mine tailings appear as a thin veneer, the vegetation is stressed and there are little to no grasses and/or shrubs present (see Figures 4a, 4b, and 4c). The calculated volume of tailings present in the project area is estimated at 14,500 cubic yards.²

Several site investigations previously performed by Levine Fricke (LFR) (1989, 1991, and 1992)³ identified environmental concerns at the site. Water flowing over and through the tailings dissolves sulfur, producing acid mine drainage that flows into Leona Creek. In the dry season, the main source of water to the creek is seep discharge on the property. During rain events, runoff from the watershed above the site forms an ephemeral stream that combines with the seep discharge to significantly increase flows, and therefore, increases acid mine drainage to the creek. Water samples from the site were reported at low pH values (about 3.0),⁴ resulting in the leaching of heavy metals into the creek.⁵ The creek within the remediation site has the characteristic orange color associated with acid mine drainage, and water samples have demonstrated elevated levels of cadmium, copper, mercury, nickel, lead, zinc and arsenic.⁶

Shallow groundwater generally flows toward the southwest, and water samples have indicated that groundwater upstream and downstream does not appear to be affected by the dissolved metals. The creek ultimately flows into Aliso Lake (also known as Mills College Lake), located approximately 1,400 feet downstream of the property boundary. The creek channel reappears on the eastern edge of the lake and ultimately discharges to San Francisco Bay, which is located about 4 miles to the southwest.

c. Background. The following includes a discussion of the remediation efforts planned for the site to date, and a description of the regulatory agencies and requirements that are applicable to the clean-up effort.

(1) Remediation and Restoration Effort Background. In 1992, the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board) adopted Waste Discharge Requirements (Order No. 92-105) identified a list of “dischargers,” including mine owners and operators, some of whom are no longer living, and current and former property owners (see Appendix A) who are primarily liable for the site. In 1998, the Water Board issued a Cleanup and Abatement Order (CAO) requiring the responsible parties (dischargers) to address the source of acid mine drainage and improve water quality at the project site. The CAO was later amended in 2003 to require a corrective action plan (CAP) and provide a schedule for corrective actions.

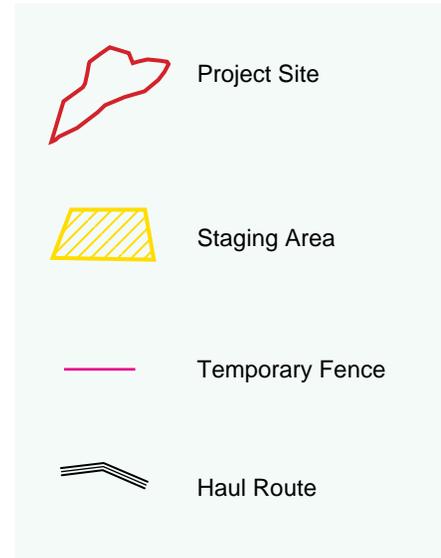
² E2C, 2013. *Leona Heights Sulfur Mines Remediation Creek Restoration 90% Design Report*. October 15.

³ Ibid.

⁴ Geosyntec, 2013. *Leona Heights Sulfur Mine Plan- Remedial Design Plan*. October 15.

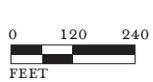
⁵ Ibid.

⁶ San Francisco Bay Area Regional Water Quality Control Board, 2006. *Updated Fact Sheet*. May.



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FIGURE 3



SOURCE: ALAMEDA COUNTY ASSESSOR'S OFFICE, 2014.

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Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project
Parcel Map



Upper Tailings Pile (looking northeast)



Upper Tailings Pile (looking east)

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FIGURE 4a

*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Upper Tailings Pile*



Looking downhill from Upper Tailings Pile (top of Lower Tailings Pile in background)



Lower Tailings Pile (looking northeast)

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FIGURE 4b

*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Lower Tailings Pile*



Upper Tailings



Acid Mine Drainage

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FIGURE 4c

*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Upper Tailings and Acid Mine Drainage*

SOURCE: E2C REMEDIATION, 2013.

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LFR submitted a CAP in 2003, and a design report and construction documents in 2004. Following subsequent discussions with the City of Oakland and the Water Board, a revised design was prepared by Moju Environmental Technologies, Inc. and submitted in April 2006. A subsequent work plan was developed by Insight Environmental, Engineering, and Construction, Inc. to implement the design. The revised design was conditionally approved by the Water Board in its letter dated July 5, 2006.⁷

On May 9, 2013, the Water Board rescinded Order No. 92-105 (because no cleanup activity had been initiated) and declared the amended CAO (Orders NOS. 98-004 and R2-2013-0021) as the superseding document. This order establishes new compliance dates, clarifies the tasks necessary to meet the criteria of a sufficient CAP, incorporates requirements for creek restoration, and names Ocean Industries Inc. as an additional discharger, and therefore, primarily liable with all other named dischargers. The proposed project for the restoration of Leona Creek and remediation of the mine tailings would satisfy the requirements of the CAO. The amended CAO is included in Appendix A.

(2) Regulatory Background. The Water Board is the agency overseeing the remediation at the project site. The U.S. Army Corps of Engineers (Corps), U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and City of Oakland regulate other aspects of the project. To comply with the CAO and City of Oakland requirements as Lead Agency under the California Environmental Quality Act (CEQA), the project applicant must also obtain a Category IV Creek Protection Permit, a Tree Removal and Protection Permit, and Grading, and other construction-related permits from the City. The City also requires an environmental evaluation be prepared pursuant to CEQA. A list of permits and approvals is included at the end of this section.

In addition, it should be noted that the Leona Heights Sulfur Mine site was previously recognized on the Cortese List (Section 65962.5 of the Government Code), but was removed from the list in 2007 because the site does not contain hazardous materials.⁸

d. Proposed Project. The overall project goal is to eliminate acid mine drainage and improve water quality in Leona Creek. To achieve this goal, the project must meet the following project objectives:

- Prevent further erosion of the mine tailings;
- Remove mining waste from the creek;
- Encapsulate the mine tailings in a manner which isolates the mining waste from storm water runoff and contact with groundwater;
- Provide a design for field implementation of creek restoration activities;
- Meet regulatory terms for permitting; and
- Minimize secondary environmental impacts.

As previously described, the proposed project consists of remediation efforts for Leona Creek as required by the Water Board's CAO. Criteria set forth in the amended CAO state that the project must

⁷ Ibid.

⁸ State Water Resources Control Board, 2007. Written communication to Curtis T. Scott, Chief, California Regional Water Quality Control Board Chief. April 4.

prevent further erosion of the mine tailings, encapsulate the mine tailings in a manner which isolates the mining waste from stormwater runoff and contact with groundwater, and provide a design for field implementation of creek restoration actions.⁹ In order to meet the project objectives, the proposed project would implement the following:

- Remove mine tailings from the creek channel and other adjacent areas where erosion from waste piles has produced a thin veneer of waste;
- Grade and compact tailings and install a subsurface drainage system beneath the compacted tailings to increase stability;
- Cover the consolidated tailings with a geomembrane liner, and a vegetative layer that will isolate the tailings from water;
- Reroute the seep discharge from its current location inside the tailings, to a new discharge point within the creek channel;
- Reinforce steep slopes adjacent to the creek channel to improve stability; and
- Restore the creek channel to accommodate a 100-year design storm, incorporating drop structures reminiscent of natural creek designs on steep slopes that provide for the natural transport of sediment through the creek, minimizing erosion onsite and downstream.

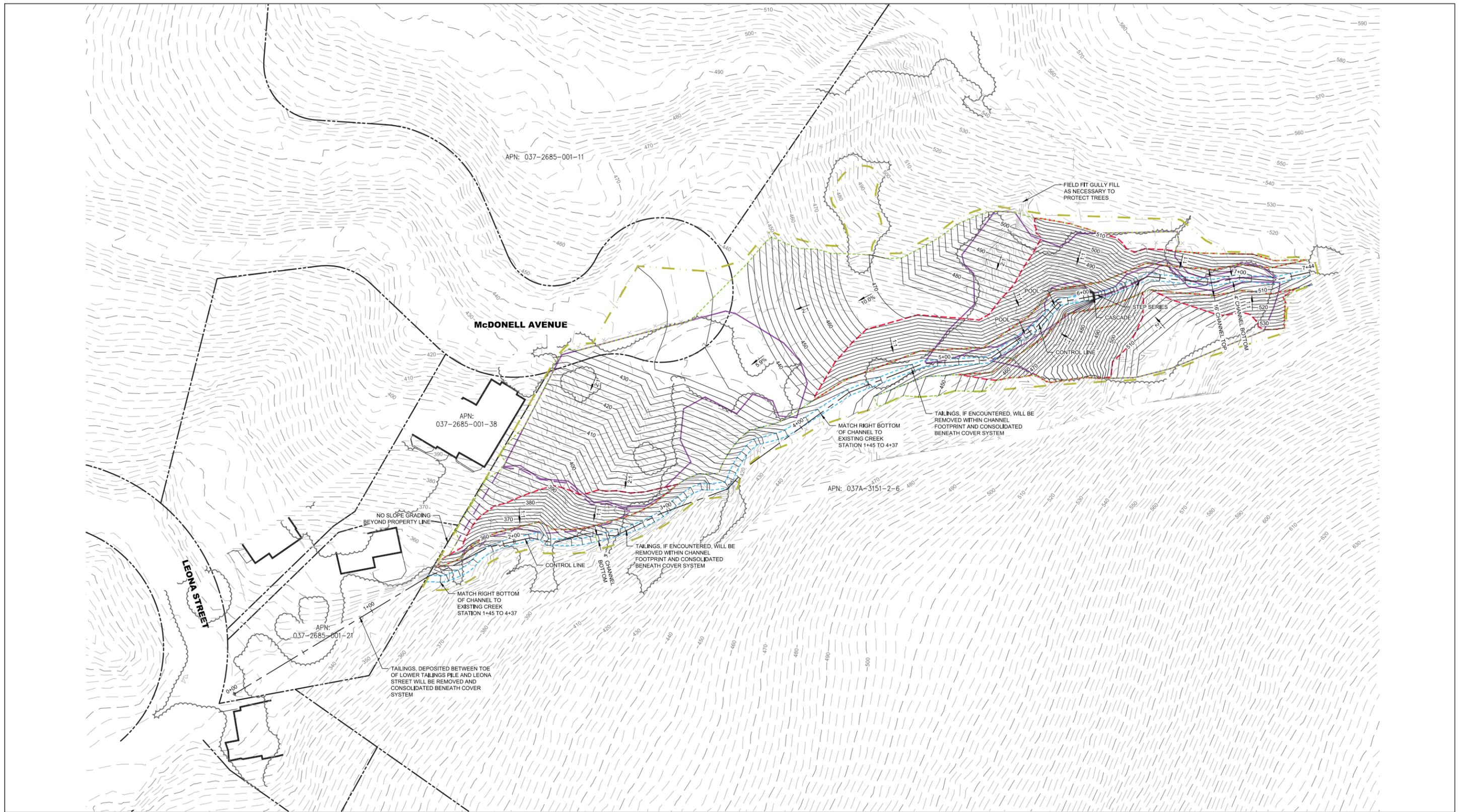
The proposed consolidation, capping, revegetation, and drainage improvements at the site would minimize contact between storm water runoff and tailings, thereby eliminating acid mine drainage and reducing the metal and sediment load in Leona Creek. Grading, compaction and slope reinforcement of the tailings pile would improve slope stability, and allow for the successful restoration of the creek channel. The following discussion provides additional information regarding each design element.

e. Grading and Slope Stabilization. The grading plan (see Figure 5) is intended to improve the overall stability of the tailings materials and also allow placement of the final cover over the tailings. The grading design was developed considering: slope stability requirements, surrounding topography, property boundaries, existing trees, potential seismic activity and McDonell Avenue. Beyond these factors, specific elements of the grading plans include:

- A reduced construction footprint (from the previous designs considered by the design team and submitted to the Water Board since 2004) to reduce impacts to existing trees; and
- Limited earthwork along the western edge of the lower pile to minimize impacts to the adjacent residential structures.

To reduce the footprint of grading and minimize tree removal, in some areas, steeper slopes would be constructed adjacent to the creek channel due to the relative topography and residences to the west. A majority of those slopes occur in the upper tailings pile. Figure 6 illustrates the grading plan for the upper tailings pile and Figure 7 illustrates the grading plan for the lower tailings pile taking into account the proximity of the pile to existing homes.

⁹ California Regional Water Quality Control Board, 2013. San Francisco Bay Region, *Text from Order No. R2-2013-002*. July 10.



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LEGEND			
	APPROXIMATE EXTENT OF WASTE PILE		LIMIT OF COVER SYSTEM
	APPROXIMATE EXTENT OF POTENTIAL TAILING/SCREE		FINAL GRADE (10-FT CONTOUR)
	LIMIT OF POTENTIAL EARTHWORK		FINAL GRADE (2-FT CONTOUR)
	LIMIT OF REINFORCED SOIL SLOPE		EXISTING GRADE (10-FT CONTOUR)
	CHANNEL BOTTOM		EXISTING GRADE (2-FT CONTOUR)
	CHANNEL TOP		PROPERTY LINE

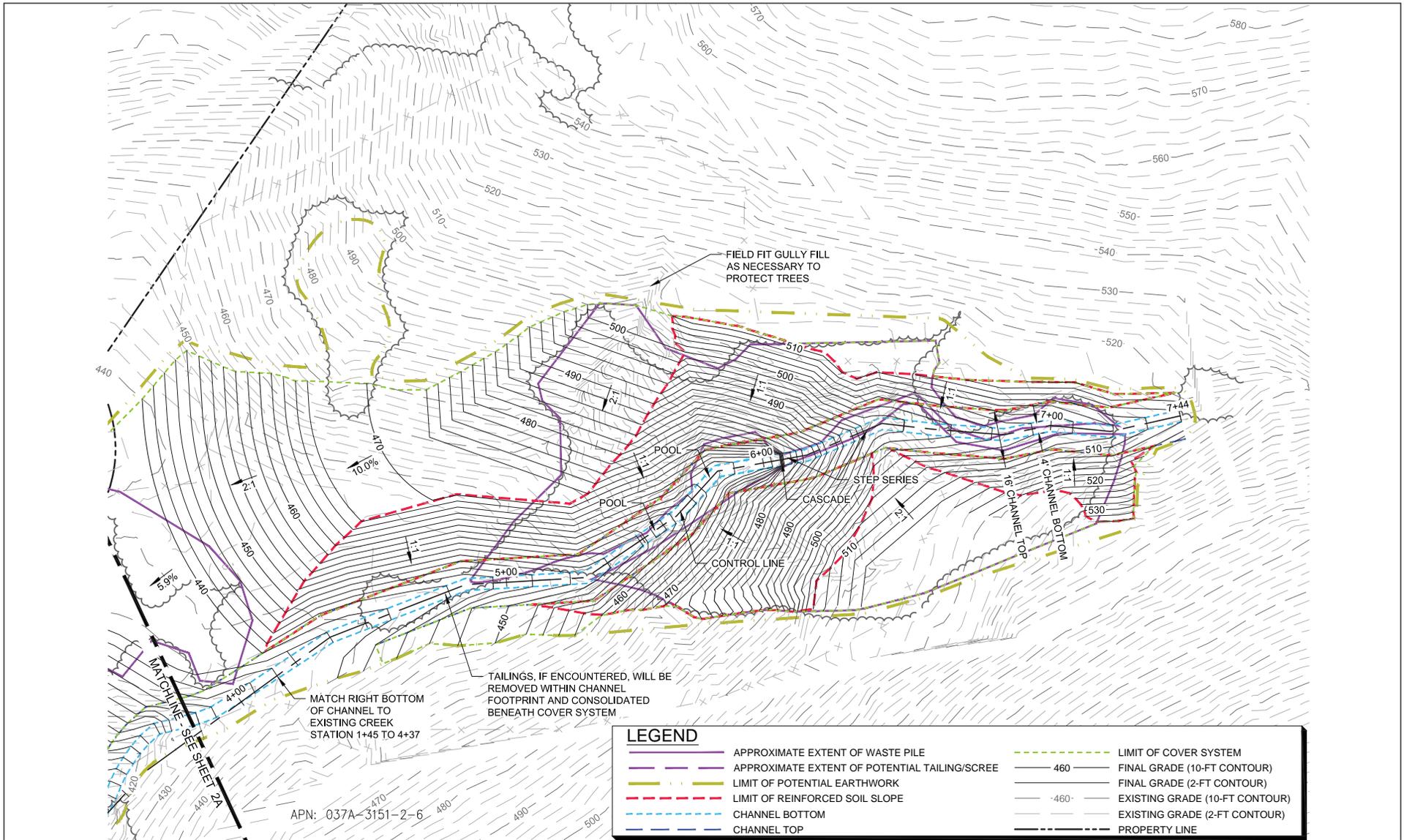
FIGURE 5

Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Final Grading Plan

SOURCE: E2C REMEDIATION, JANUARY 21, 2014.

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FIGURE 6



*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Final Grading Plan - Northeast
Upper Tailings Pile*

SOURCE: E₂C REMEDIATION, JANUARY 21, 2014

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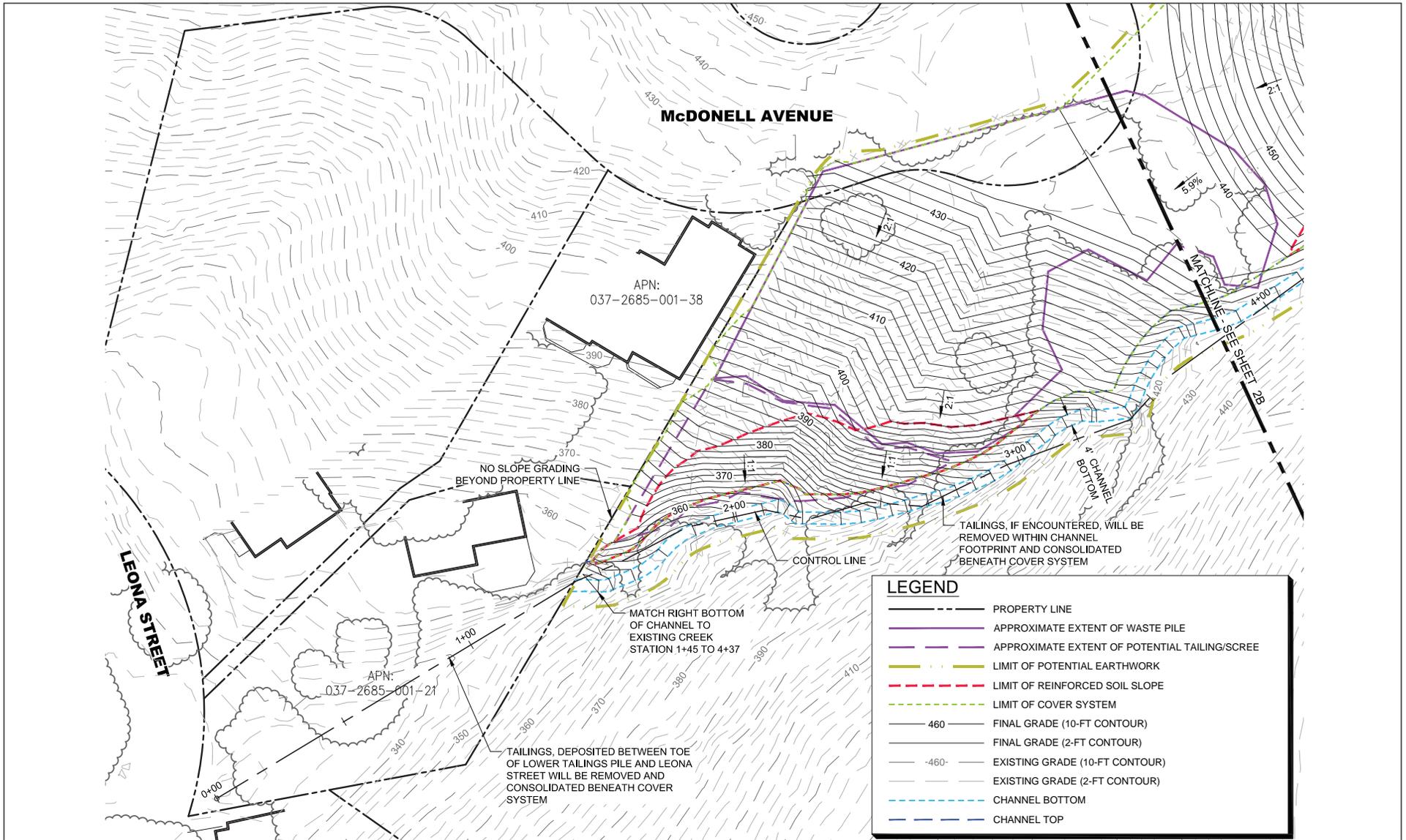


FIGURE 7

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*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Final Grading Plan - Southwest
Lower Tailings Pile*

SOURCE: E₂C REMEDIATION, JANUARY 21, 2014.

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Proposed grading and cover is intended to minimize or eliminate the possibility of surface water contacting the mine tailings. Previous site investigations indicate that the typical soil strata at the project site consist of up to 25 feet of tailings material, underlain by rhyolite bedrock, siltstone, and claystone.¹⁰ Excess excavation of underlying native rock would be kept to a minimum to reduce unnecessary impacts to the environment. In locations where competent native soil/bedrock is found to be absent at the designed base elevation of the reinforced soil slope, a sub-base foundation would be constructed as shown in Figure 8.

The proposed re-grading plan would provide a balanced cut-and-fill allowing space for imported vegetative soil, clean fill and stabilizing boulders to avoid off-haul and disposal of waste tailings offsite, and associated truck trips and air quality and noise impacts. The steep reinforced slope construction would be divided into segments to minimize the hauling of tailings. The excavated tailings from each segment would be placed at the adjacent segment to be used as backfill and compacted to construct the next slope segment.

Stability of the newly graded steeper slopes adjacent to the creek channel would be maintained through the use of layers of closely spaced geogrid reinforcement extending horizontally into the steeper slopes, a drainage system behind the reinforced zone to prevent buildup of water pressure, and incorporation of the cover system at the slope face, including both a geomembrane liner and vegetative soils. The geogrid reinforcement and geomembrane liner are composed of polyethylene product that is resistant to chemical and mechanical breakdown.¹¹

E2C prepared the engineering and grading plans for the remediation site and calculated that approximately 1.3 acres of land would be disturbed and re-graded (in Figure 5, see the area described as the “limit of potential earthwork”). Due to the sloped surface, the three-dimensional disturbed surface area would be approximately 1.5 acres.

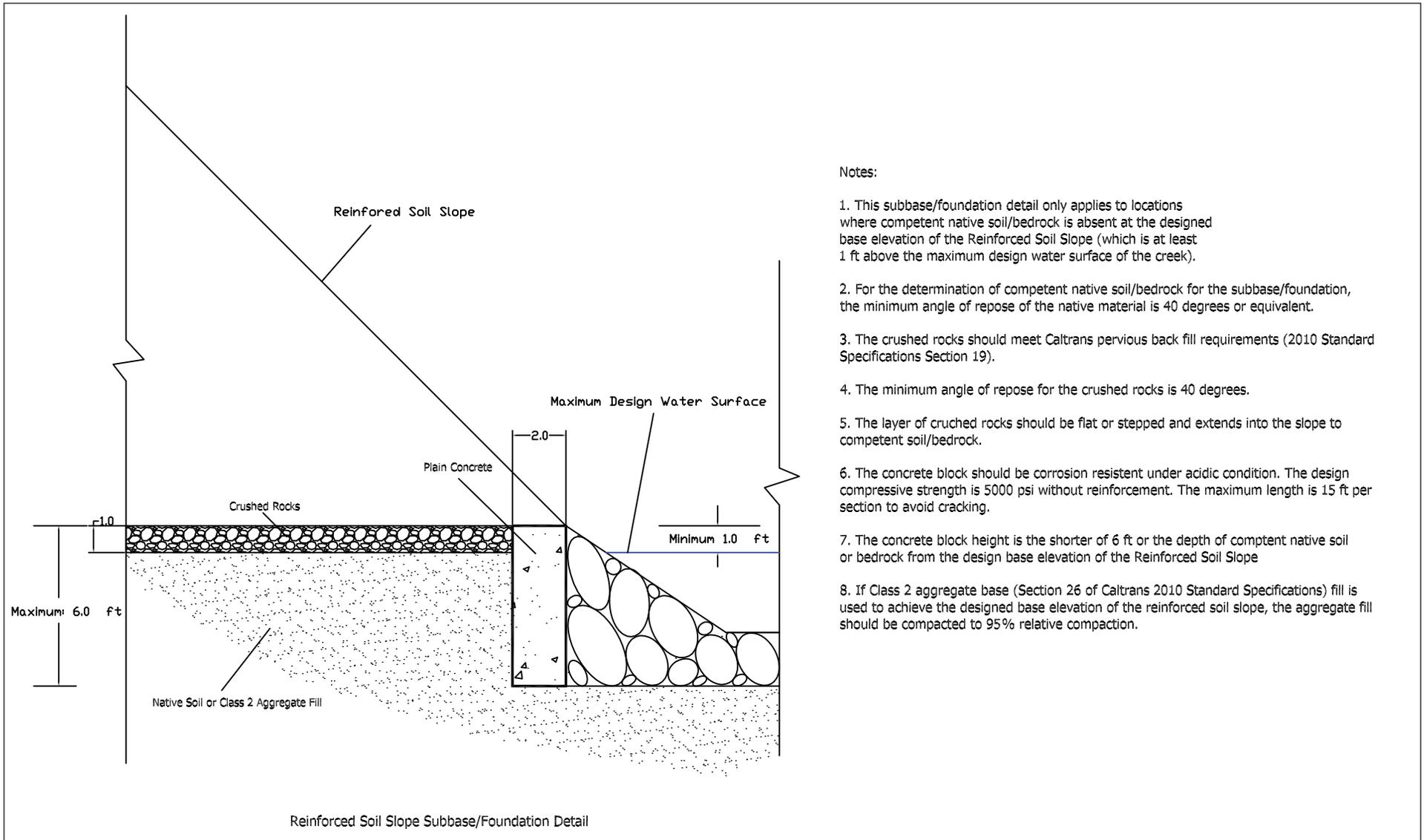
f. Cover System. After grading is completed, a cover system would be placed over the tailing piles. The extent of the tailings shown on Figures 6 and 7 is based on recent geological field mapping. Areas of tailings on the northwest slope of the site, and wherever encountered within the channel alignment, would be removed and consolidated within the existing piles beneath the cover. Figure 9 provides a diagram of the tailings cover system details, and Figure 10 shows the location of the reinforced slopes after construction. As currently proposed, the final cover system consists of the following for slopes with gradient less than 2H:1V from top to bottom:

- 12-inch thick vegetative soil layer;
- 12 ounces per square yard (oz/sy) nonwoven filter geotextile;
- 60-mil¹² double-sided textured linear low density polyethylene (LLDPE) Agru Super Gripnet® geomembrane (with spikes facing down and studs up); and
- Compacted foundation (compacted tailings).

¹⁰ Geosyntec, 2013. *Leona Heights Seismic Hazard Evaluation*. July.

¹¹ Polyethylene is the most common plastic and it is widely used in the production of plastic bottles, plastic films and geomembranes.

¹² One mil=.001 inch



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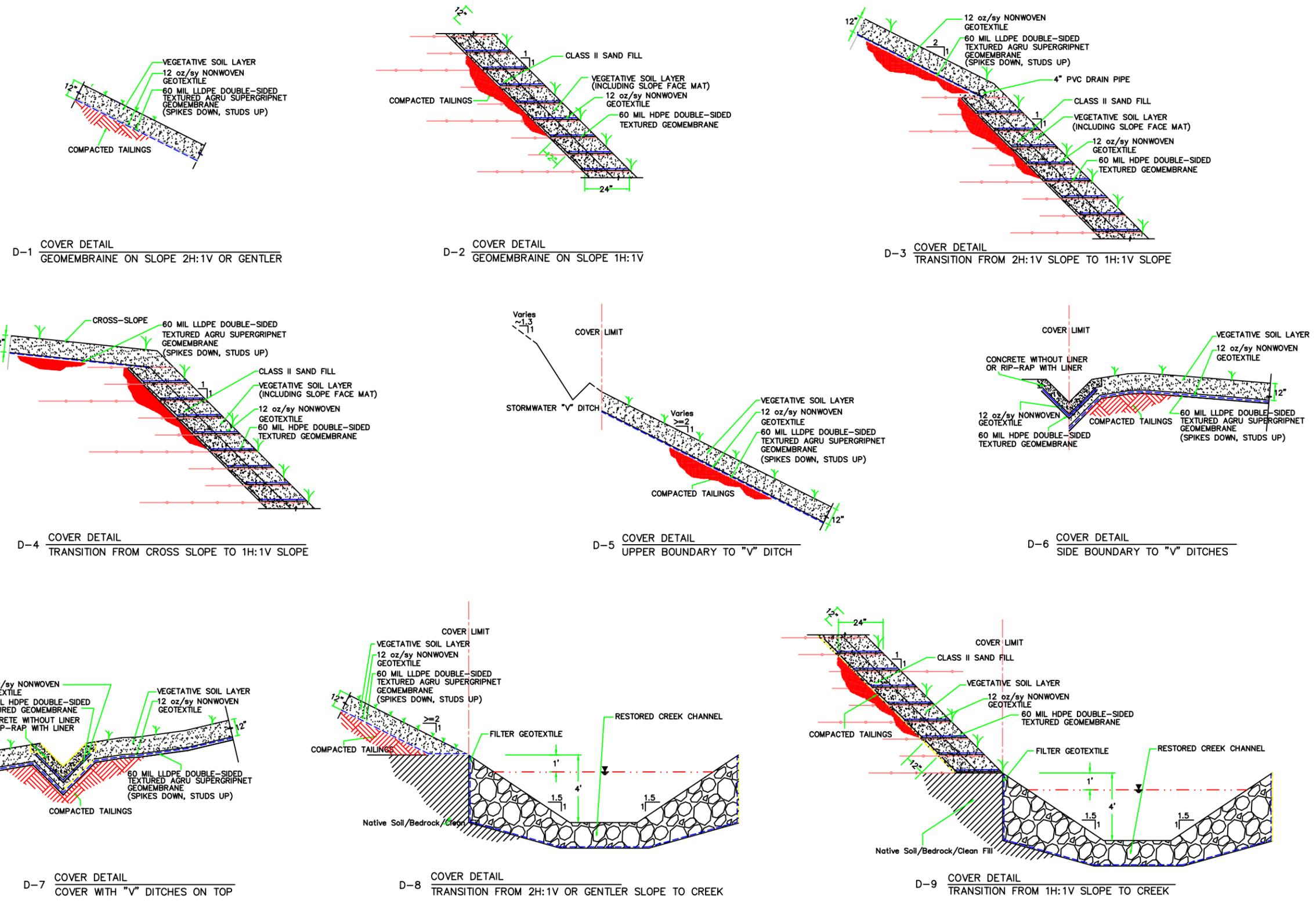
FIGURE 8

NOT TO SCALE

SOURCE: E₂C REMEDIATION, NOVEMBER 21, 2013.

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*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Subbase/Foundation Detail*



LSA

FIGURE 9

NOT TO SCALE

SOURCE: E₂C REMEDIATION, JANUARY 24, 2014.

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Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Tailings Cover System Detail

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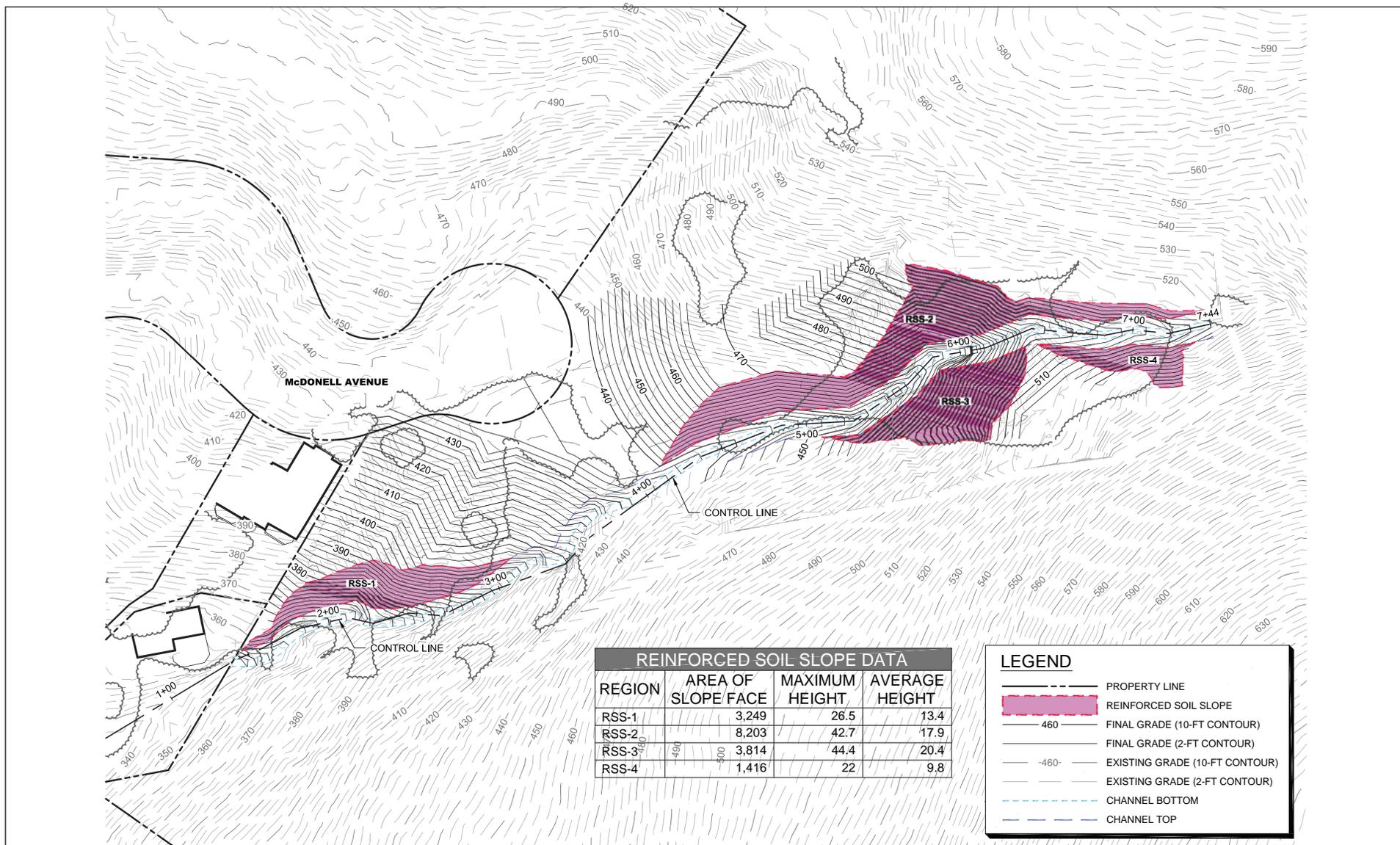


FIGURE 10

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*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Reinforced Soil Slope Locations*

SOURCE: E₂C REMEDIATION, JANUARY 21, 2014.

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On the reinforced 1H:1V slopes the cover system (see Figure 9) is comprised of the following from top to bottom:

1. 12-inch thick vegetative soil layer (both below and above face erosion control mat);
2. Well-graded clean sand fill;
3. 12 ounces per square yard (oz/sy) nonwoven filter geotextile;
4. 60-mil double-sided textured high-density polyethylene (HDPE) geomembrane, and
5. Compacted mine tailings with geogrid reinforcement.

The filter geotextile and the geomembrane are strips of material that will be placed along the reinforced slope face with over-lapping layers separated up to 1 foot vertically (see Figure 9). The design specifications for these materials can be viewed as part of the project files at the Planning and Zoning Division offices.

Soil would be brought to the site to construct the cover system. Existing trees, including their root systems, within the footprint of the cover would be removed to allow placement of the cover. Once the cover is installed and the channel has been restored, the remediation site would be re-vegetated to prevent erosion and enhance the visual and habitat quality of the area. Revegetation would occur on the cover, on the slopes, and in all areas of soil disturbance.

g. Revegetation Plan. A revegetation plan has been prepared for the project area (see Figure 11 and Appendix B).¹³ The revegetation plan was prepared in accordance with project objectives, including the desire by the City and Water Board to establish appropriate native vegetation on the site; the need to maintain the impermeability of the geomembrane layer beneath the 12-inch layer of soil; the need for low to no irrigation to maintain the stability of the slopes on the geomembrane layer; the desire to have low annual maintenance requirements for the site after construction; and the concern that highly invasive plants (e.g., broom, pampas grass and fennel) from surrounding areas could overtake the site.

Due to the limited soil moisture available within the 12-inch-thick layer of topsoil, and the need to reduce irrigation, a hydroseeding¹⁴ process would be utilized in order to revegetate the cover. A mix of native grasses, wildflowers and herbaceous plants are proposed. To the extent practicable, seeds would be obtained from local native nurseries. The hydroseeding process would occur in a series of applications. The first layer would consist largely of a seed mix, which would establish good seed to soil contact. Each subsequent layer would utilize a progressively heavier blend of mulch and “tackifier agent” to ensure appropriate adhesion to slopes (see Figure 11 and Appendix B for additional information).

Ideally, seeding should be scheduled to occur immediately prior to the rainy season to allow for germination of ground cover and herbaceous plant establishment while reducing the potential for soil

¹³ Olberding Environmental, Inc., 2014. *Revegetation Plan for the Leona Heights Sulfur Mine Remediation and Creek Restoration Project*. March.

¹⁴ Hydroseeding is a planting process that uses a slurry of seed and mulch. The slurry is transported in a tank, either truck-or trailer-mounted and sprayed over prepared ground.

erosion. Additionally, early and strong establishment of the site with native grasses and wildflowers is essential to inhibit the proliferation of nuisance species.

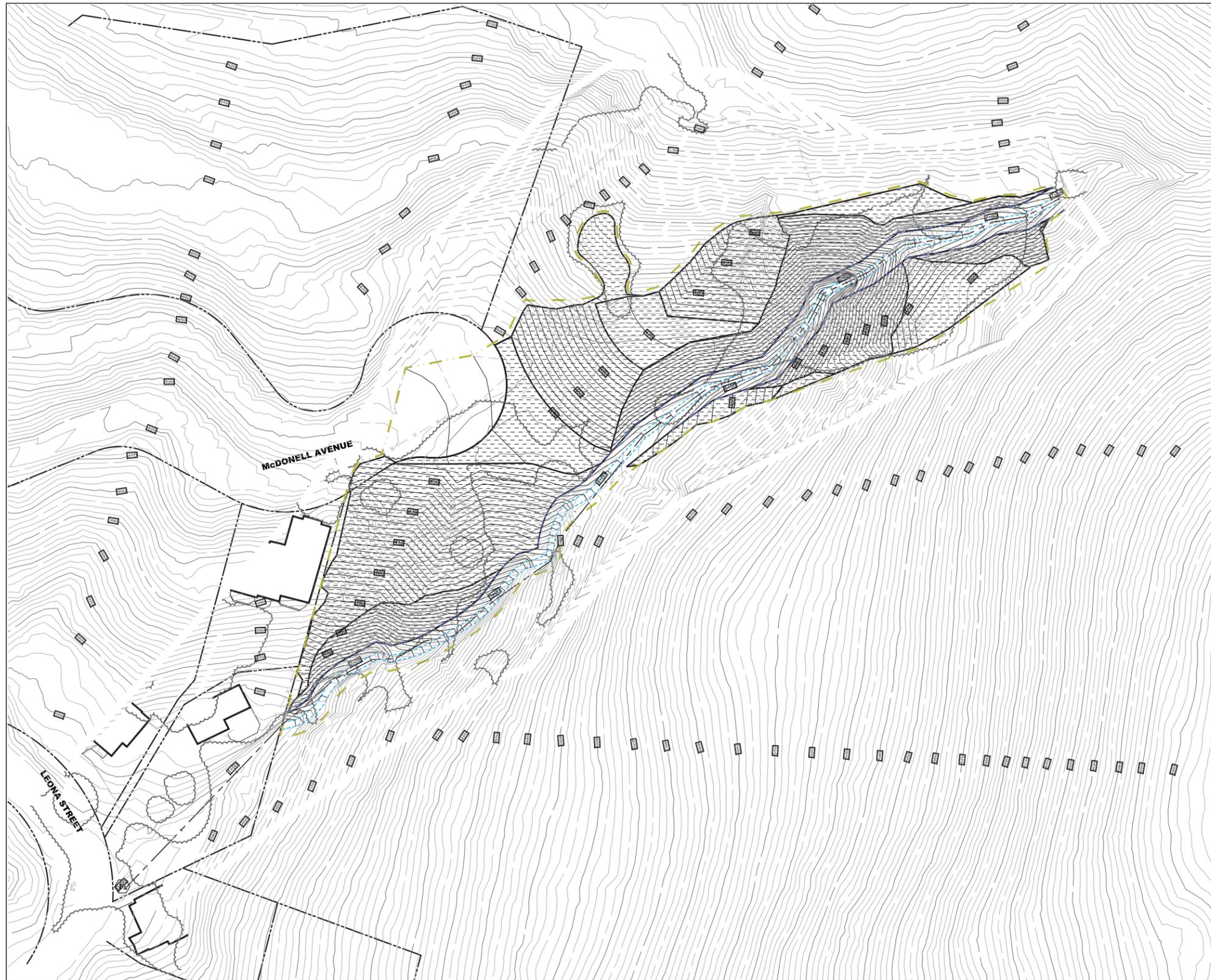
Due to the potential for non-native invasive plant colonization, the revegetation plan recommends inspection at least three times during the first year in order to dig out or cut down any nuisance vegetation. Nuisance species include all woody species (e.g., tree and shrub seedlings) and herbaceous species rated as “high” for invasiveness by the California Invasive Plant Council. In the absence of a similar maintenance program on adjacent parcels, any long-term maintenance plan for the project site beyond the initial 12-month period is not recommended, as the project site would be continuously subject to invasions from the weed species on those adjacent parcels. Further, in light of the protections provided by the geomembrane layer from tap root penetration by the types of nuisance species surrounding the project site, the geomembrane layer may serve as its own long-term maintenance plan. A report would be prepared and submitted to the Water Board and the City of Oakland at the end of the first year following installation which describes the results of site inspections and provides a summary of maintenance actions. Appendix B contains more information on the maintenance activities proposed for the site and Appendix C contains a Preliminary Maintenance and Monitoring Plan for the project site.

h. Creek Channel Remediation. The existing creek channel would be restored to allow continued flow of Leona Creek through the site and to provide natural sediment transport along the creek. Figure 12 shows the proposed longitudinal streambed profile which illustrates the planned final grade of the streambed. The first task in the creek restoration would be to clean the existing channel by removing any mine tailings in the channel. The removed tailings would be stockpiled in the primary staging area and then added to the consolidated tailings piles for eventual compaction and cover. Once all tailings materials have been removed from the existing channel, the portion of the creek channel within the remediation site boundaries would be restored in accordance with the design drawings. Steps and drops would be constructed utilizing existing competent bedrock, where encountered, or by placing and embedding cobbles¹⁵ and, or large boulders. The large boulders would be individually stabilized and interlocked with one another. Cobbles, gravels and coarse sands would fill the gaps among the large boulders (see Figure 13). The redesigned channel is intended to accommodate the 100-year, design storm event.

Key design considerations related to the creek channel restoration include: hydraulics and hydrology; reinforced soil slope; sub-drainage below tailings; groundwater seep diversion; and, additional design considerations. Each of these is discussed in greater detail below.

(1) Hydraulics and Hydrology. The restored creek channel would primarily follow the existing channel alignment with minor adjustments to accommodate the proposed channel size, which is slightly wider than the existing channel. In the steepest segments, a cascade (approximately 10-foot drop) and channel steps with 4- to 5-foot drops would be formed. Immediately following the steepest segments, in the more level areas, step pools, or step pools in series would be utilized. If incompetent creek bed materials are found at the drop steps, these mini pools would be constructed by embedding individually stabilized boulders, cobbles, and gravel. For segments with high average stream velocity and incompetent creek bed materials, large boulders (up to 3 to 5 foot in the longest dimension) would

¹⁵ Cobbles are rounded stones of a specific size range.



NOTES

1. TOPOGRAPHY OUTSIDE THE PROJECT LIMITS WERE BASED ON AERIAL LIDAR PERFORMED IN 2006 AND PROVIDED BY THE ALAMEDA COUNTY DEPARTMENT OF PUBLIC WORKS. COORDINATES BASED ON CALIFORNIA STATE PLANE COORDINATE SYSTEM, ZONE 3, NAD 83 AND VERTICAL DATUM NAVD88.
2. TOPOGRAPHY WITHIN AND ADJACENT TO PROJECT LIMITS BASED ON A COMBINATION OF AERIAL SURVEY IN EXPOSED OPEN AREAS AND GROUND FIELD SURVEY IN TREE-COVERED AREAS. AERIAL SURVEY PERFORMED BY AERIAL PHOTOMAPPING SERVICES OF CLOVIS, CA, ON 5 AUGUST 2013; FIELD SURVEY PERFORMED BY MID COAST ENGINEERS OF WATSONVILLE, CA ON 30 JULY 2013 THROUGH 1 AUGUST 2013.
3. COORDINATES BASED ON CALIFORNIA STATE PLANE COORDINATE SYSTEM, ZONE 3, NAD 83 AS ESTABLISHED BETWEEN NGS HT0281 (M554) AND NGS AA3818 (HPGN D CA 04 GH).
4. BENCHMARK FOR THIS SURVEY IS NGS HT0281 WITH ELEVATION =14.20 FEET (NAVD 88 DATUM).
5. SEEDING SHOULD BE SCHEDULED TO OCCUR IN LATE SUMMER OR EARLY FALL (I.E. AUGUST TO SEPTEMBER) IN ORDER TO OCCUR AS CLOSE AS POSSIBLE TO THE ONSET OF THE RAINY SEASON IN OCTOBER OR NOVEMBER.

Table 1. Leona Heights Native Seed Mix Plant Palette

Scientific Name	Common Name	Seed Rates (pounds per acre)
<i>Achillea millefolium</i>	yarrow	1
<i>Acnispion americanus</i>	Pursh's lotus	1
<i>Agrostis pallens</i>	bentgrass	1
<i>Bromus carinatus</i>	California brome	2
<i>Bromus laevipes</i>	woodland brome	2
<i>Deschampsia caespitosa</i>	tufted hairgrass	1
<i>Eschscholtzia californica</i>	California poppy	1
<i>Elymus glaucus</i>	blue wildrye	3
<i>Elymus multisetus</i>	big squirreltail	2
<i>Festuca californica</i>	California fescue	2
<i>Festuca rubra</i>	red fescue	1
<i>Grindelia hirsutula</i>	gumplant	1
<i>Hordeum brachyantherum</i>	meadow barley	1
<i>Koeleria macrantha</i>	junegrass	3
<i>Lupinus bicolor</i>	sky lupine	2
<i>Lupinus albus</i>	bush lupine	2
<i>Melica torreyana</i>	Torrey melic	2
<i>Mimulus aurantiacus</i>	sticky monkeyflower	1
<i>Muhlenbergia rigens</i>	deergrass	1
<i>Poa secunda</i>	Sandberg's bluegrass	1
<i>Sisyrinchium bellum</i>	blue-eyed grass	1
<i>Stipa lepida</i>	foothill needlegrass	2
<i>Stipa pulchra</i>	purple needlegrass	2
<i>Symphoricarion chilense</i>	common aster	1
<i>Trifolium wildenovii</i>	tomcat clover	1
<i>Urtica dioica</i>	stinging nettles	1
<i>Wyethia angustifolia</i>	narrowleaf mules-ears	1
TOTAL POUNDS PER ACRE		40

NOTE: Numbers provided for seed rates are in pounds per acre and will need to be extrapolated to meet design and as-built conditions.

LEGEND

- REVEGETATION AREA
- CHANNEL BOTTOM
- CHANNEL TOP
- FINAL GRADE (10-FT CONTOUR)
- FINAL GRADE (2-FT CONTOUR)
- EXISTING GRADE (10-FT CONTOUR)
- EXISTING GRADE (2-FT CONTOUR)
- PROPERTY LINE
- LIMIT OF POTENTIAL EARTHWORK

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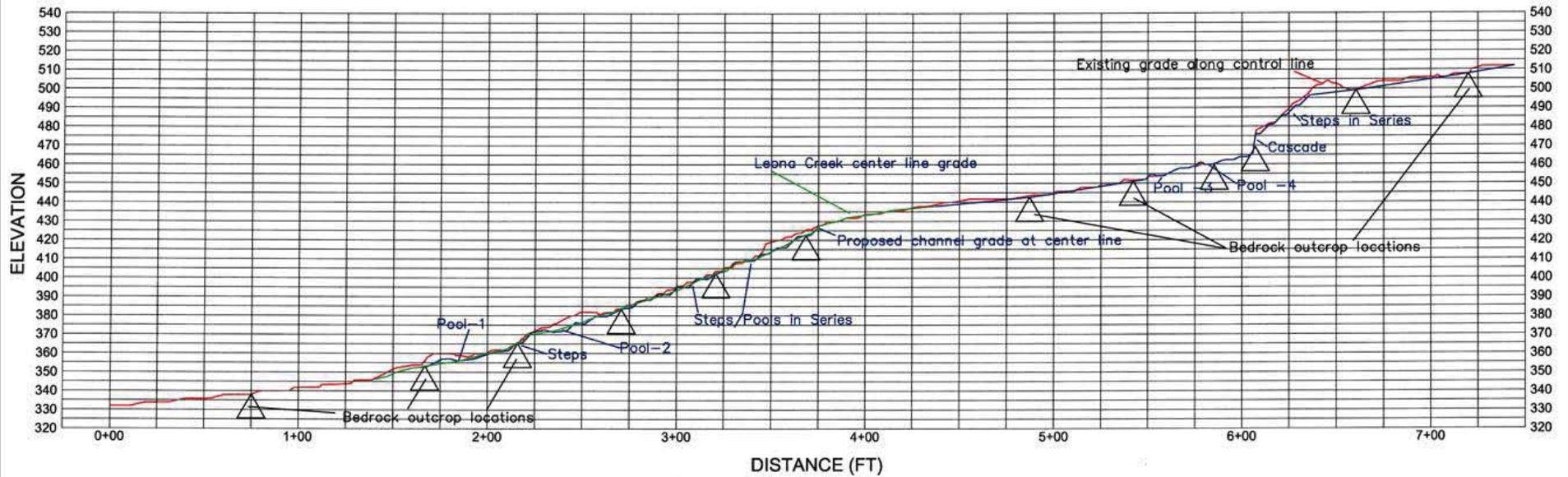
FIGURE 11

Leona Creek Restoration and Leona Heights Sulfur Mine Remediation Project IS/MND
Revegetation Plan

SOURCE: OLBERDING ENVIRONMENTAL, MARCH 24, 2014.

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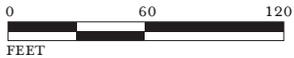
PROPOSED LONGITUDINAL STREAMBED PROFILE



NOTES:
 Elevations are based on survey performed by Mid Coast Engineers in August 2013
 Dimensions of streambed features may be adjusted upon engineer's approval



LSA



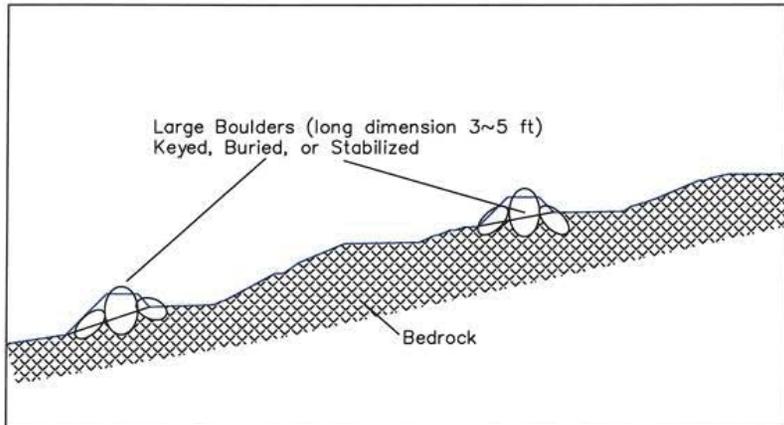
LEGEND	
	Existing Grade along Central Line
	Leona Creek Center Line Grade
	Bedrock Outcrop Locations

FIGURE 12

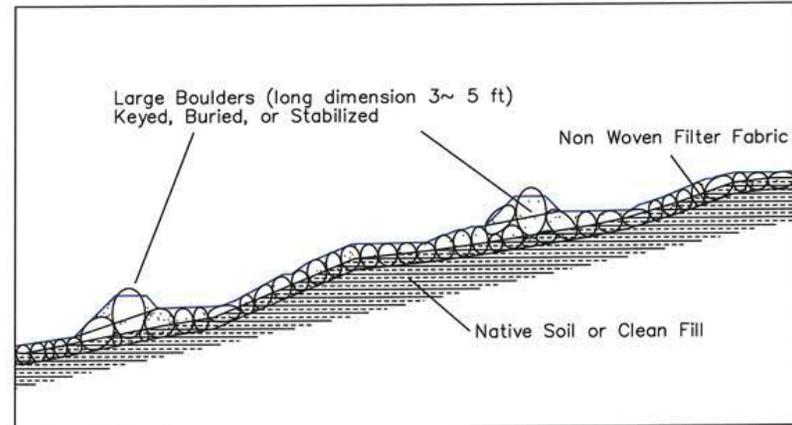
*Leona Creek Restoration and Leona Heights
 Sulfur Mine Remediation Project IS/MND
 Proposed Longitudinal Streambed Profile*

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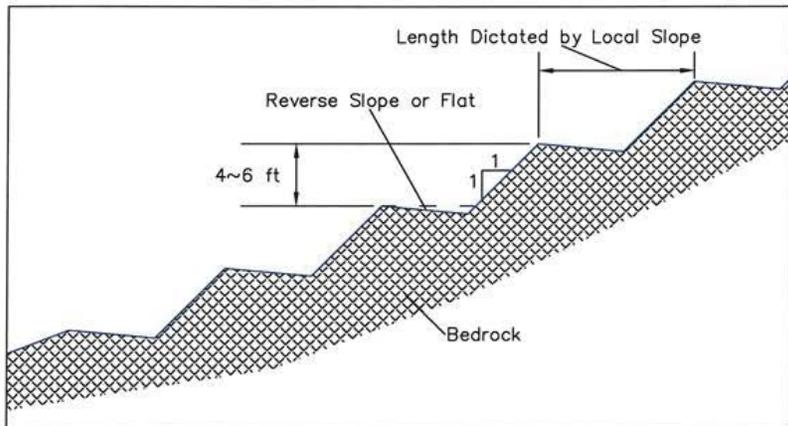
TYPICAL STEP/POOL PROFILE DETAILS
FOR CREEK CHANNEL RESTORATION



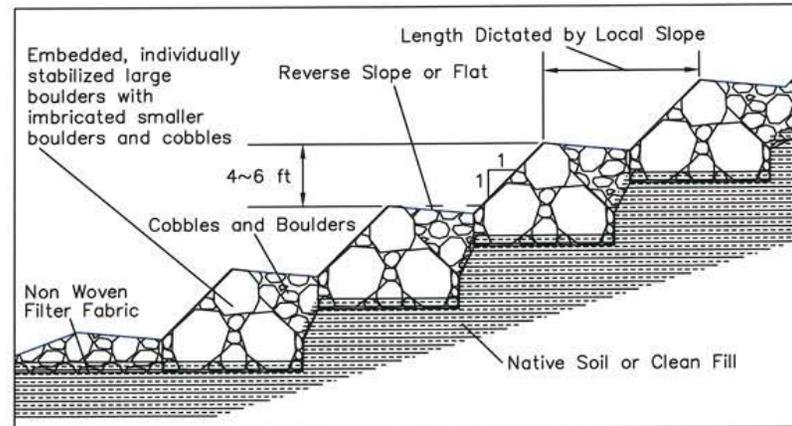
A. Typical Step Pool Profile in Competent Bedrock



B. Typical Step Pool Profile in Native Soil or Clean Fill



C. Typical Step (Pool) Profile in Competent Bedrock



D. Typical Step (Pool) Profile in Native Soil or Clean Fill

LSA

FIGURE 13

NOT TO SCALE

SOURCE: E₂C REMEDIATION, OCTOBER 2013.

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*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Typical Step/Pool Profile Details*

be embedded in the creek channel to protect the creek bed from erosion and scour¹⁶ (see Figure 14). Smaller sized cobbles, gravels and fill sand would be used to fill the gaps between the boulders. In addition, the creek walls would also be protected with large boulders properly stabilized either by keying in place or partial burial.¹⁷

(2) Reinforced Soil Slope. As described previously, slope stability would be achieved with geogrid reinforcement. The geogrid would be embedded on top of re-compacted tailings to a depth equal to 70 percent of the reinforced slope height as necessary to maintain slope stability.

To ensure area-wide stability, the base for the reinforced slope would be either competent bedrock or treated foundation. If weak soil is found at the base, an appropriately designed concrete or gravel footing would be used for supporting the slope and providing scour protection. Leona Creek stability and water quality will be monitored according to requirements of the Water Board's CAO.

(3) Sub-Drainage Beneath Capped Tailings Piles. Sub-drains, comprised of perforated and non-reactive PVC drain pipe, would be installed beneath the compacted and capped tailings. The sub-drain piping would be placed on intervals along the slope from the covered pile top to the base of the capped waste pile (see Figure 15). The sub-drain pipes would be wrapped with filter fabric to prevent clogging. At the base of the covered waste pile, a collection pipe would be connected to the sub-drain pipes. The collection pipe would be conveyed to the creek channel base and would terminate at an erosion control feature. Flows in the sub-drain system are anticipated to be minimal; however, the sub-drains are intended to prevent pressure build-up behind the reinforced and capped slopes.

(4) Groundwater Seep Diversions. A groundwater seep currently occurs in the lower portion of the upper tailings pile, flows through and over mine wastes and drains into the creek channel. The previous LFR design indicated that there is a drain already in place for this seep under the tailings.¹⁸ The project proposes to expose the existing groundwater seep and construct (or reconstruct) a collection structure to intercept the seepage (see Figure 16). A plumbing conveyance (PVC pipe appropriately-sized to convey flows out of the seep) would be attached to the collection structure to convey flow away from the seep and discharge at the base of the creek channel bank into the restored channel in a location with competent erosion protection and directed downstream.

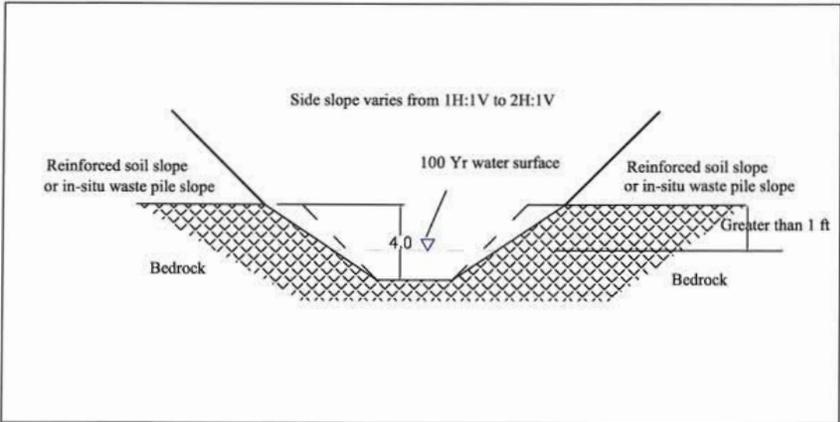
i. Additional Design Considerations. There are several issues and potential constraints at the remediation site that would require on-site evaluation during the construction phase of this project. These constraints are, for the most part, related to the unknown location, depth and stability of bedrock/competent native materials. Because the tailings piles, particularly the upper tailings, are located on top of steep slopes and access to these steep slopes is currently unavailable, a design-build approach is required during the construction phase of this project. These constraints and the design build approach are discussed below.

¹⁶ Scour occurs in areas of swift moving water and results in erosion of the surrounding channel walls.

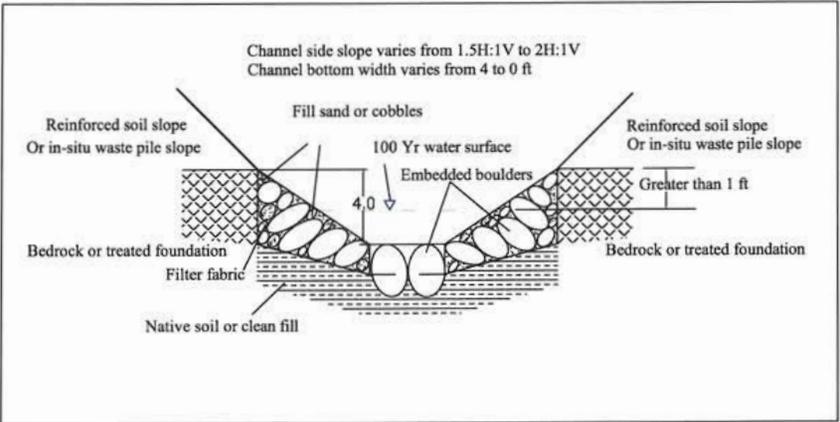
¹⁷ E2C, 2013, op. cit.

¹⁸ Ibid.

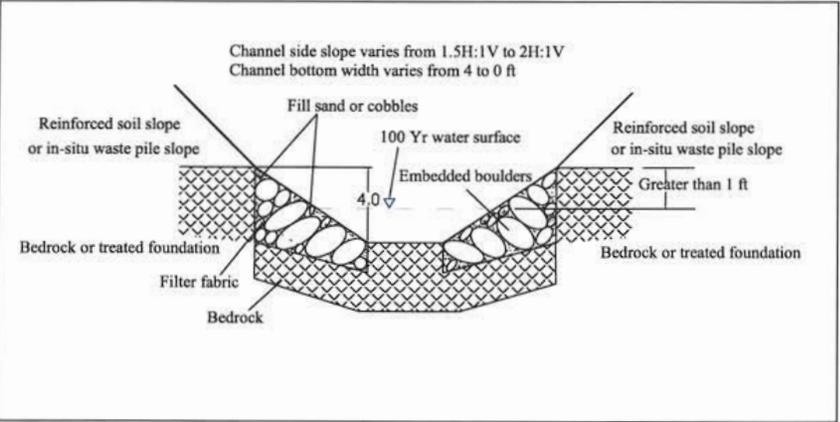
TYPICAL CROSS SECTION DETAILS
FOR CREEK CHANNEL RESTORATION



A. Typical Cross-Section in Competent Bedrock



C. Typical Cross-Section with Embedded Boulders
For Segments with Incompetent Bedrock or Clean Fill



B. Typical Cross-Section with Embedded Boulders
For Segments with Competent Streambed and Incompetent Stream Banks

Notes:

Boulders sized to resist 100-yr design flow
Fill Cobbles sized to resist 5-yr design flow

For segments with high scour potential, large boulders will be embedded, individually stabilized, with imbricated smaller boulders and cobbles.

Minimum thickness of boulders or cobbles: 2 ft or the shortest dimension of key particles, which ever is larger.



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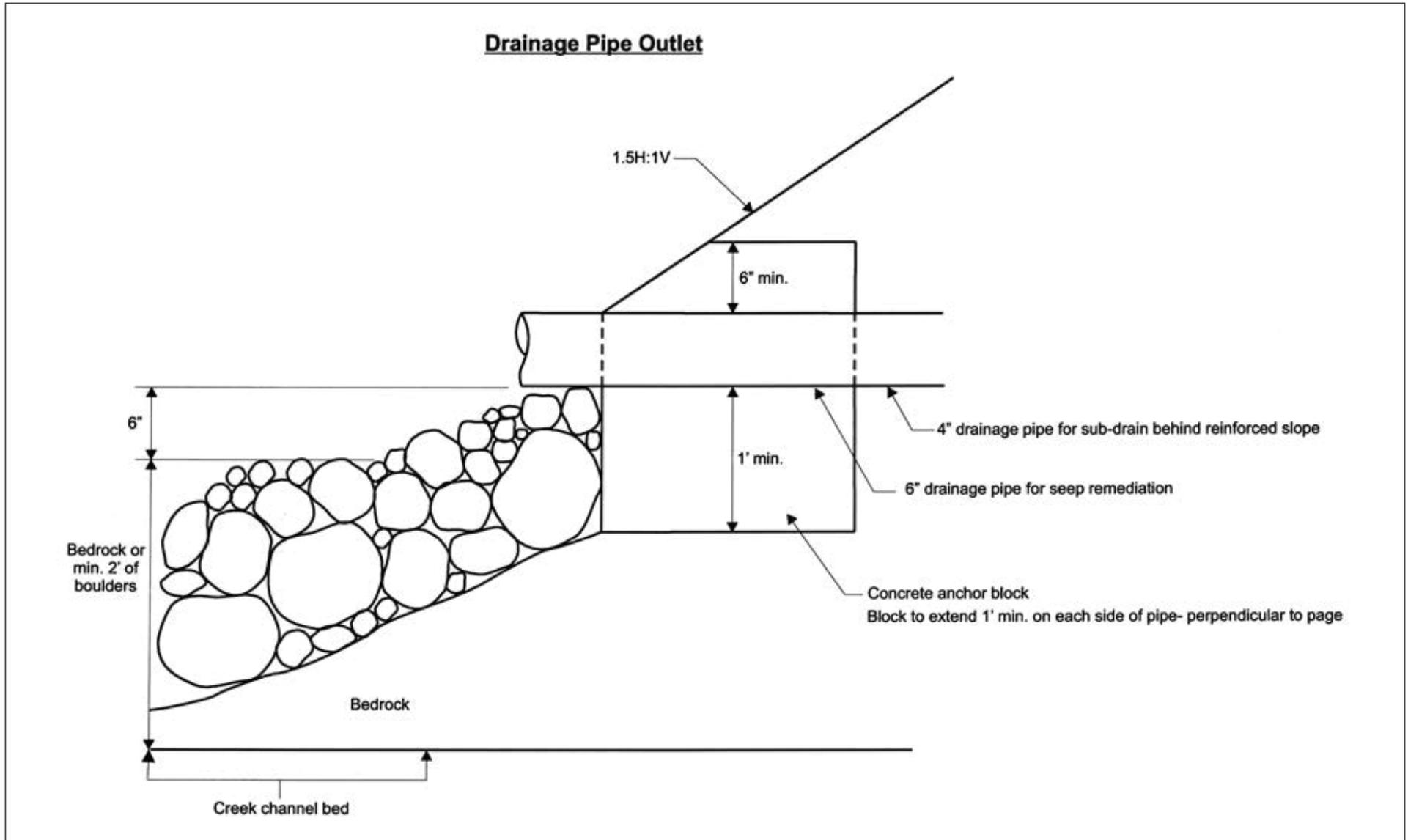
FIGURE 14

NOT TO SCALE

Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Typical Cross Section Details

SOURCE: E₂C REMEDIATION, OCTOBER 2013.

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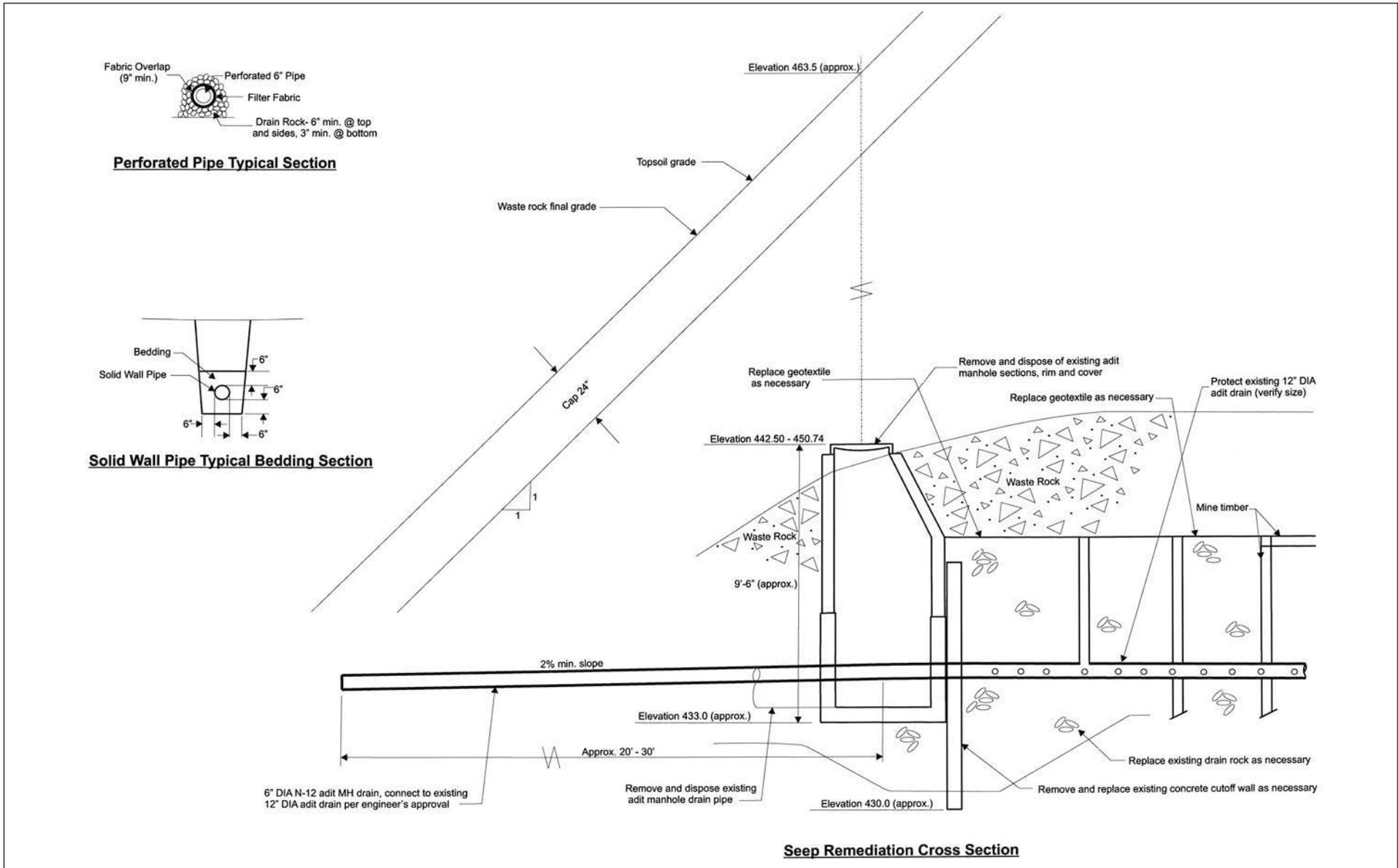
FIGURE 15

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*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Drainage Pipe Outlet Details*

SOURCE: E₂C REMEDIATION, OCTOBER 2013.

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FIGURE 16

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SOURCE: E2C REMEDIATION, OCTOBER 2013.

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*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Seep Remediation Cross Section Details*

(1) Bedrock Locations and Depth in Creek Channel. In the creek channel and creek channel banks, visible bedrock outcroppings are somewhat limited. Therefore, the exact depth and locations of bedrock along the entirety of the channel is not currently known. As a result of this constraint, restored creek bed elevation and stabilization measures likely would be adjusted based on field findings during construction; therefore the final geometry of the channel may deviate slightly from the proposed geometry.

(2) Depth of Native Slopes and Mine Shafts. The native slope surface beneath the tailings piles is unknown (particularly in the upper tailings pile). The depth to competent bedrock below the native slopes under the tailings pile is also unknown. After removal of tailings, in preparation for the construction of the reinforced slopes, the exposed native slope may be found to have significant fractures in the bedrock. In that event, the native slope stability would be evaluated and/or tested. Based upon the results of this evaluation and/or testing, removal of loose and broken material may be necessary. Alternatively, temporary reinforcement measures may be employed as needed (see Figure 8).

Two former mine adits¹⁹ and three former mine airshafts have been described previously by LFR [2004]. The entrance of the identified adit located near the toe of the upper pile would be exposed and sealed prior to excavation and compaction of tailings in the area. The groundwater seep associated with this adit would be collected and discharged in the restored creek channel. If other adits or mine shafts are encountered during construction, they would be sealed as directed by the engineer-of-record. Safety measures would have to be taken to stabilize the shaft openings.

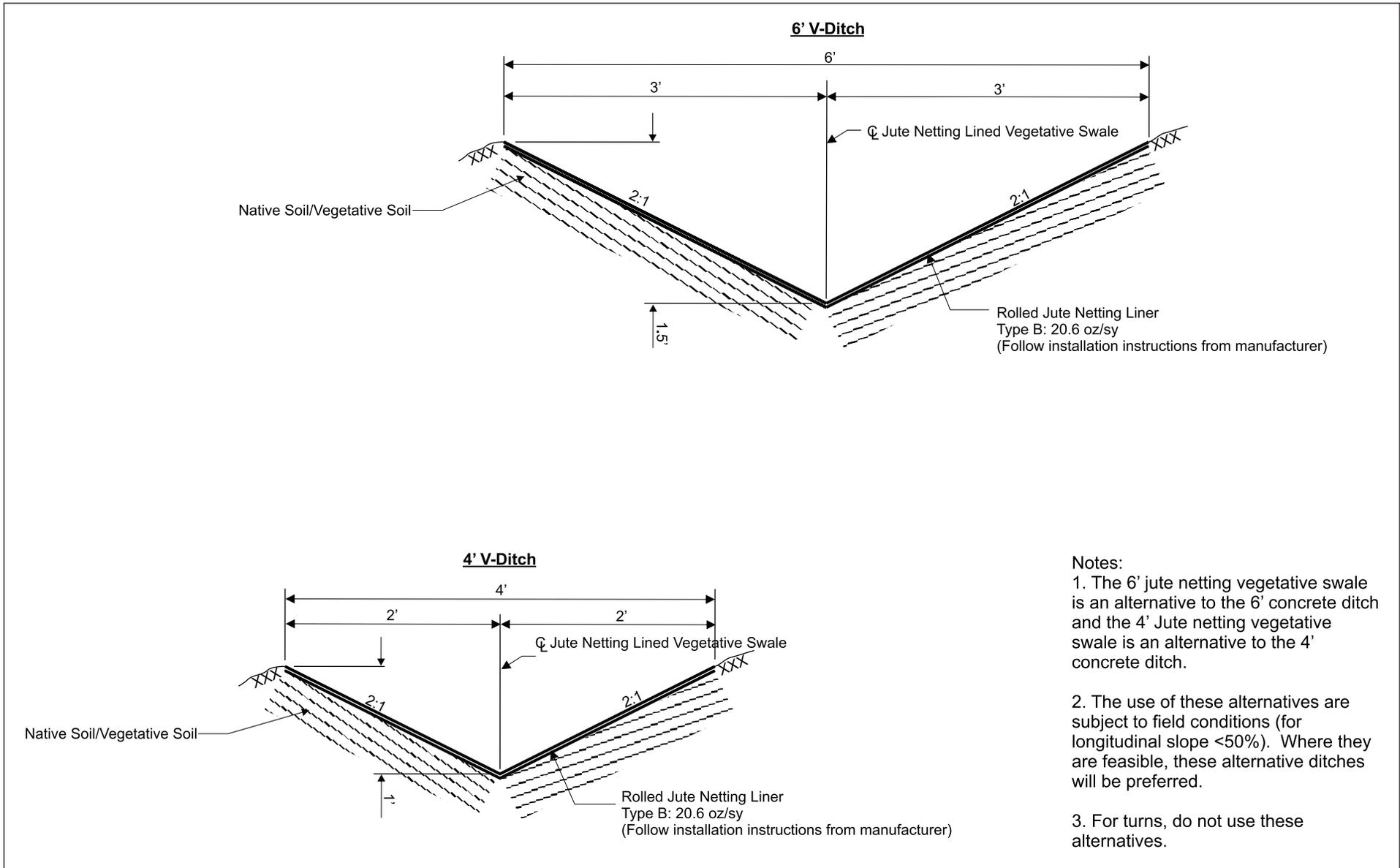
(3) Proximity to Residences. Several residences are immediately adjacent to the remediation site (see Figure 7). One of the nearest properties to the remediation work is located directly adjacent to the creek channel, and downstream of the site. It is anticipated that construction workers would need to access the property in order to remove tailings that have been deposited into the creek channel. However, the home, deck and property would not otherwise be physically affected by the restoration work.

Care would be taken during the construction period to ensure that impacts to neighboring residences are reduced to the greatest extent possible. The project would implement City of Oakland Standard Conditions of Approval as well as any additional mitigation measures outlined in this IS/MND in order to limit the potential for noise and dust disturbance to the nearby residences.

(4) Surface Water Drainage Maintenance. A project area drainage plan has been prepared with the post-remediation objectives of avoiding contact of stormwater and groundwater with tailings piles, reducing erosion from concentrated stormwater flows and enhancing reinforced soil slope performance. The overall site drainage management would include a series of appropriately-sized surface water conveyance features to divert drainage flows from areas at higher elevation away from the cover system, and route flows to the creek channel. The drainage diversion/conveyance features would be native soil covered by jute net and vegetation v-ditches sized to convey a 5-year flow (see Figure 17).²⁰ Figures 18, 19 and 20 show the sub-surface and surface drainage plan for the whole site and the upper and lower tailings piles.

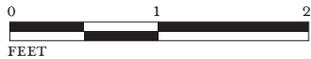
¹⁹ An adit is an entrance to a horizontal mine shaft.

²⁰ E2C, 2014. Goalwin, Phil, Remediation Consultant. Personal Communication with LSA Associates, Inc. February.



LSA

FIGURE 17



SOURCE: E₂C REMEDIATION, FEBRUARY 2014.

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*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
V-Ditch Typical*

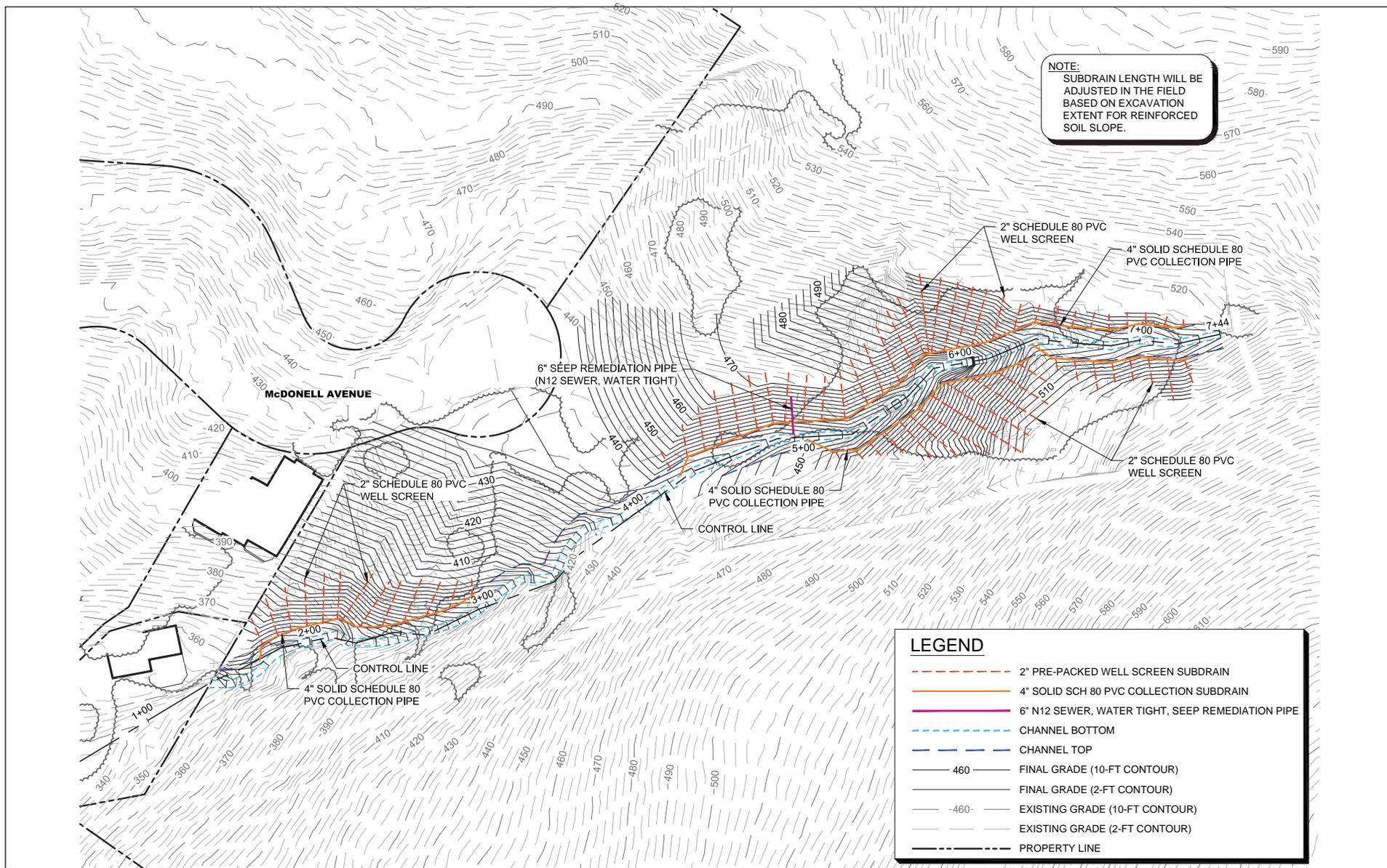
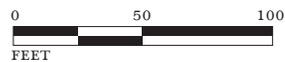


FIGURE 18

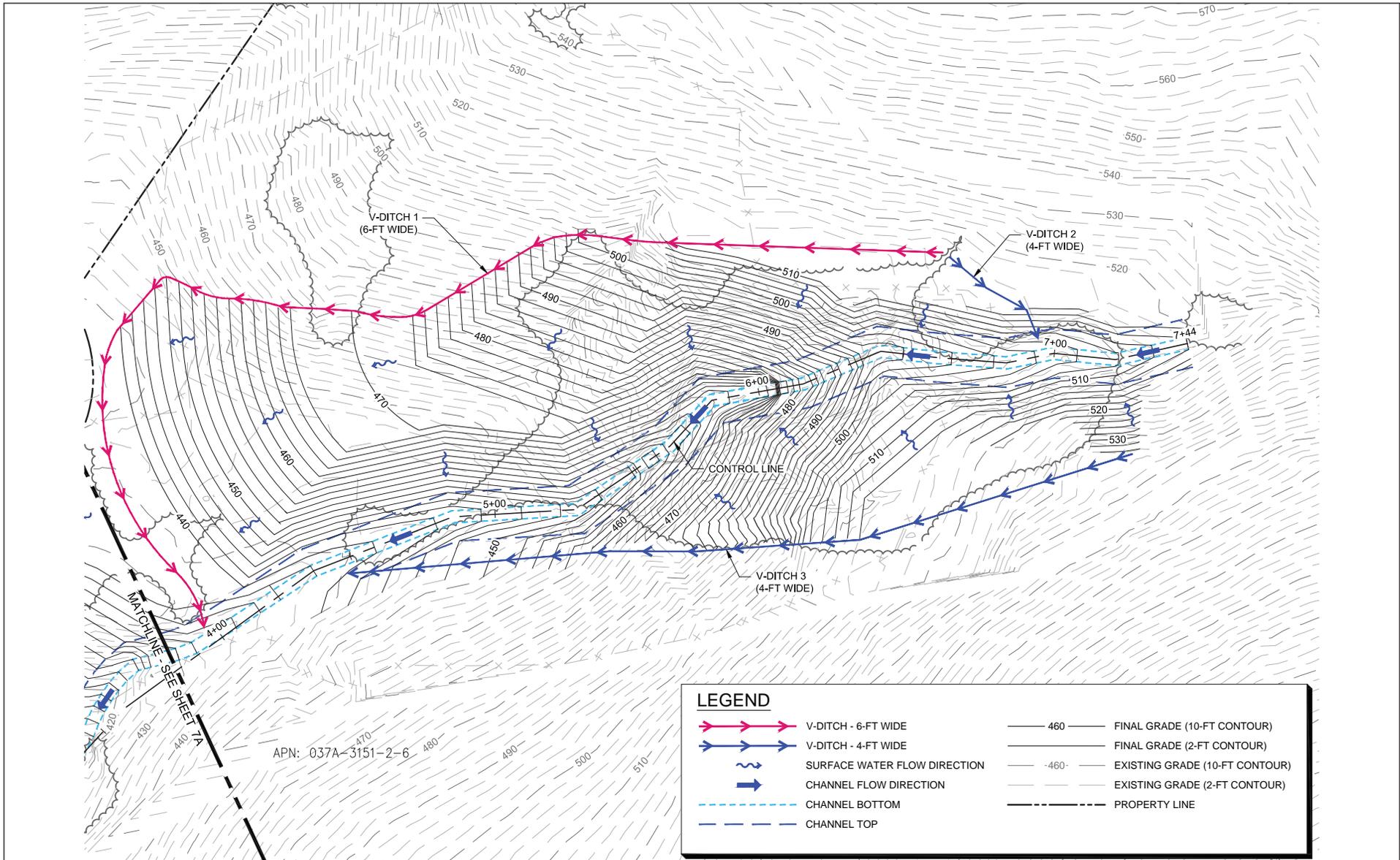
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SOURCE: E₂C REMEDIATION, JANUARY 21, 2014.

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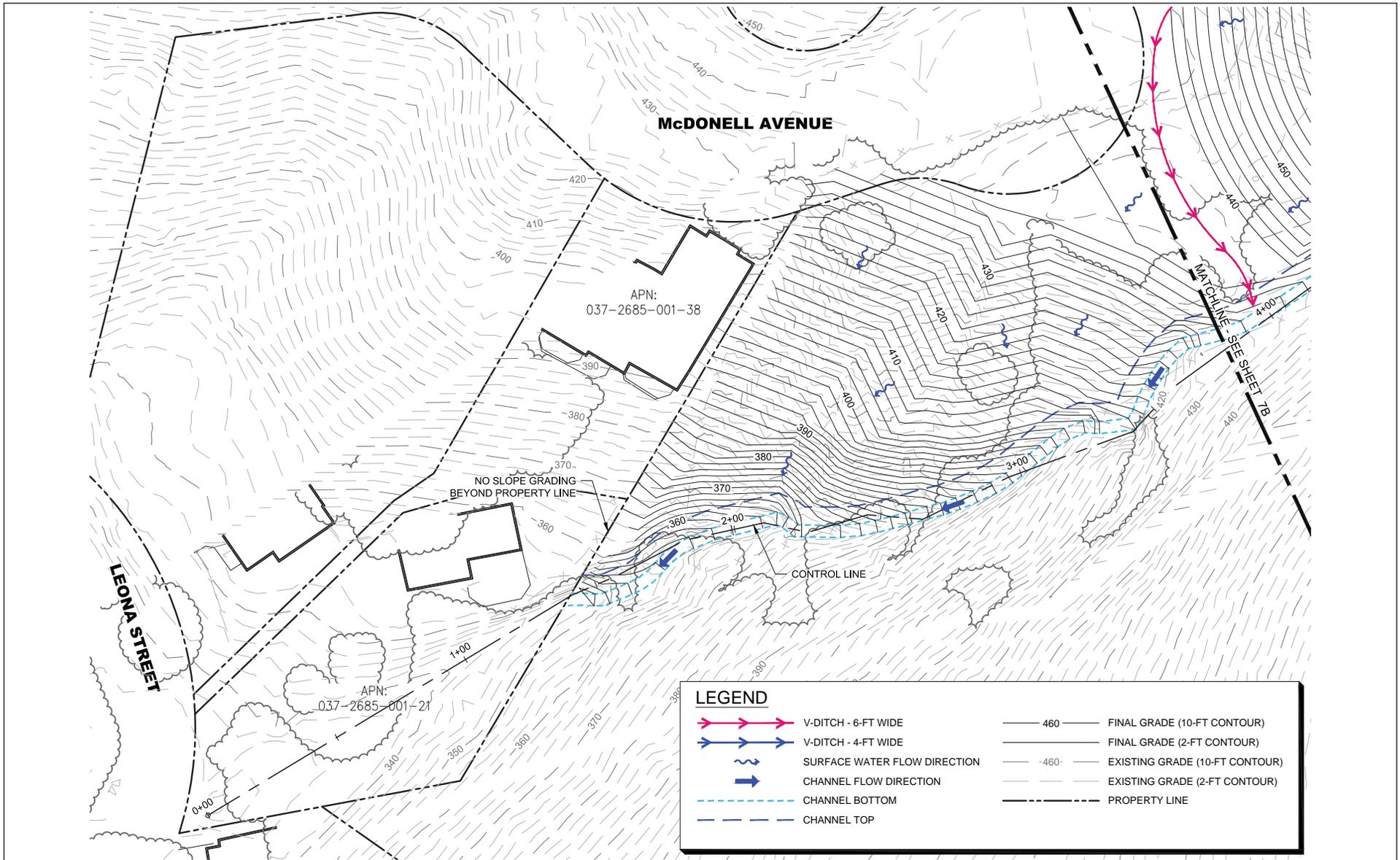
*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Sub-Surface Drainage Plan*



LSA FIGURE 19

*Leona Creek Restoration and Leona Heights
 Sulfur Mine Remediation Project
 Site Drainage Management Plan - Northeast
 Upper Tailings Pile*

SOURCE: E2C REMEDIATION, JANUARY 21, 2014.
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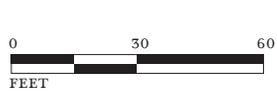


FIGURE 20

*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Site Drainage Management Plan - Southwest
Lower Tailings Pile*

SOURCE: E₂C REMEDIATION, JANUARY 21, 2014.

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j. Construction Access and Planning. Access to the remediation site for construction of the project and activities during construction are described in this section. The remedial closure and creek restoration activities are planned for the 2014 dry season. It is estimated that the project construction period would last approximately five months. E2C Remediation has been selected to implement the designs in accordance with applicable local, State, and federal regulations, as well as specific requirements and conditions established under the approved permits for the project and this IS/MND. The following discussion is summarized from the Draft Construction Workplan prepared by E2C Remediation. The plan describes the proposed construction procedures and protocols to implement the remedial design and creek restoration at the site.²¹

(1) Staging Areas, Signage, Mobilization, Fencing. Prior to the mobilization of construction equipment, materials and supplies, construction signage would be posted and temporary staging areas would be prepared, site security features would be installed, tree protection and removal would be implemented and noise reduction features would be installed. The contractor would establish and maintain temporary facilities and controls in the project area as follows:

- Temporary facilities will be located at the primary staging area (McDonell Avenue cul-de-sac) and would include sanitary facilities for workers, and equipment storage units;
- Perimeter fencing around the project work area, including temporary security fencing and high-visibility work and exclusionary fencing;
- Temporary construction office consisting of a portable trailer, located at McDonell Ave cul-de-sac staging area. Work area closure signs at the entrance to the project work area at the end of the McDonell Ave cul-de-sac ;
- Temporary fencing of the materials staging area at the overflow parking lot of Leona Lodge (lodge staging area);
- Stormwater management, erosion control, and sediment tracking control measures for construction;
- Monitoring, survey and haul route control points; and
- Tree removal, clearing and grubbing activities.

General descriptions of these activities are provided below.

Staging Areas. The project sponsor proposes to establish a primary and a temporary staging area at the Leona Lodge overflow parking lot, called the lodge staging area. Figure 2 shows the location of the staging areas and Figures 21 and 22 provide photographs showing the primary staging area and vicinity. The primary staging area is located on the northeast side of the McDonell Avenue cul-de-sac. This area is currently fenced off and partially covered by a small grove (approximately 10 to 12) six-to-twelve-inch diameter eucalyptus trees, brush and sloughed tailings, but is partially within the limits of the mapped cul-de-sac right-of-way. The primary staging area is located within several feet of the upper tailings pile and the remediation site is easily accessible. The proposed primary staging area is relatively flat and would be used for a temporary office trailer, storing construction equipment and handling materials that would be brought to the site. These materials would include

²¹ E2C, 2013. *Draft Leona Heights Sulfur Mines Remediation Creek Restoration Construction Workplan*. November 14.

geomembrane liner, geogrid slope reinforcement materials, drain pipe, clean fill sand, cobbles and boulders and vegetative soil. These materials will be initially delivered, in stages, to the lodge staging area. These materials will then be ferried up to the primary staging area using smaller 10-wheel trucks in phases as needed for construction. It is anticipated that this staging of materials will occur four times during construction. Each stage will last approximately five days.

Chipped and grubbed vegetation, including the eucalyptus trees, to be removed in the early stages of the project to clear the primary staging area, will not be stored in the primary staging area. They will be hauled off-site for recycling prior to actual construction activities.

The McDonell Avenue cul-de-sac would be improved after the construction period (see Figure 23). The improvement would include re-grading the cul-de-sac by removal of mine tailings, placing and compacting 8- inches of Class 2 aggregate followed by placement of 3- inches of hot mixed asphalt.

The Leona Lodge overflow parking area, located approximately 0.3 miles northwest of the intersection of Mountain Boulevard and McDonell Avenue would also be used for approximately 30 days for the temporary storage and staging of imported materials. The area is nearly flat, was previously covered in asphalt and compacted dirt and gravel and is in relatively good condition (see Figure 24).

McDonell Avenue Access. The project applicant proposes to use McDonell Avenue as the primary haul route for construction of the project. McDonell Avenue is a paved, local road which terminates at the base of the upper tailings pile in a cul-de-sac where access to the project site is adequate. The road is in good condition, and is wide enough to allow trucks of sufficient size to access the primary staging area.²² Limited preparation including trimming any low-hanging tree limbs may be necessary. The existing fence at the southern edge of the cul-de-sac along the site boundary will be relocated and replaced with a temporary gated fence. The roadway allows for one-way vehicular access but contains turnout areas that could be utilized in an emergency. To maintain one-way traffic, the construction manager will utilize traffic controls such as traffic monitors, GPS units and radio communications.

Perimeter Fencing. Temporary, high visibility construction fencing would be provided around the active work area, the primary staging area, the materials staging area to delineate work areas and prevent unauthorized entry. Fencing will be placed along the perimeters of the staging areas. Fencing for the active working area would be adjusted during construction based upon field conditions. Once construction activities are completed, the temporary facilities would be removed and access restored. The fenced compounds would serve to protect the primary mobile office trailer, vehicle and equipment staging areas, construction materials stockpile and storage area, and decontamination facilities for personnel and outbound vehicles. Fencing would also serve to keep construction equipment and personnel inside the construction area and away from protected trees.

²² The project engineers, E2C, confirmed that McDonell Avenue has sufficient width and load bearing capacity to allow for the ferrying of construction materials to the site. Personal communication with LSA Associates, Inc., February 2014.



Cul-de-sac, looking northwest



Cul-de-sac, looking southeast

LSA

FIGURE 21

*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
McDonnell Avenue Cul-de-Sac*



Primary Staging Area McDonell Avenue cul-de-sac, looking southeast

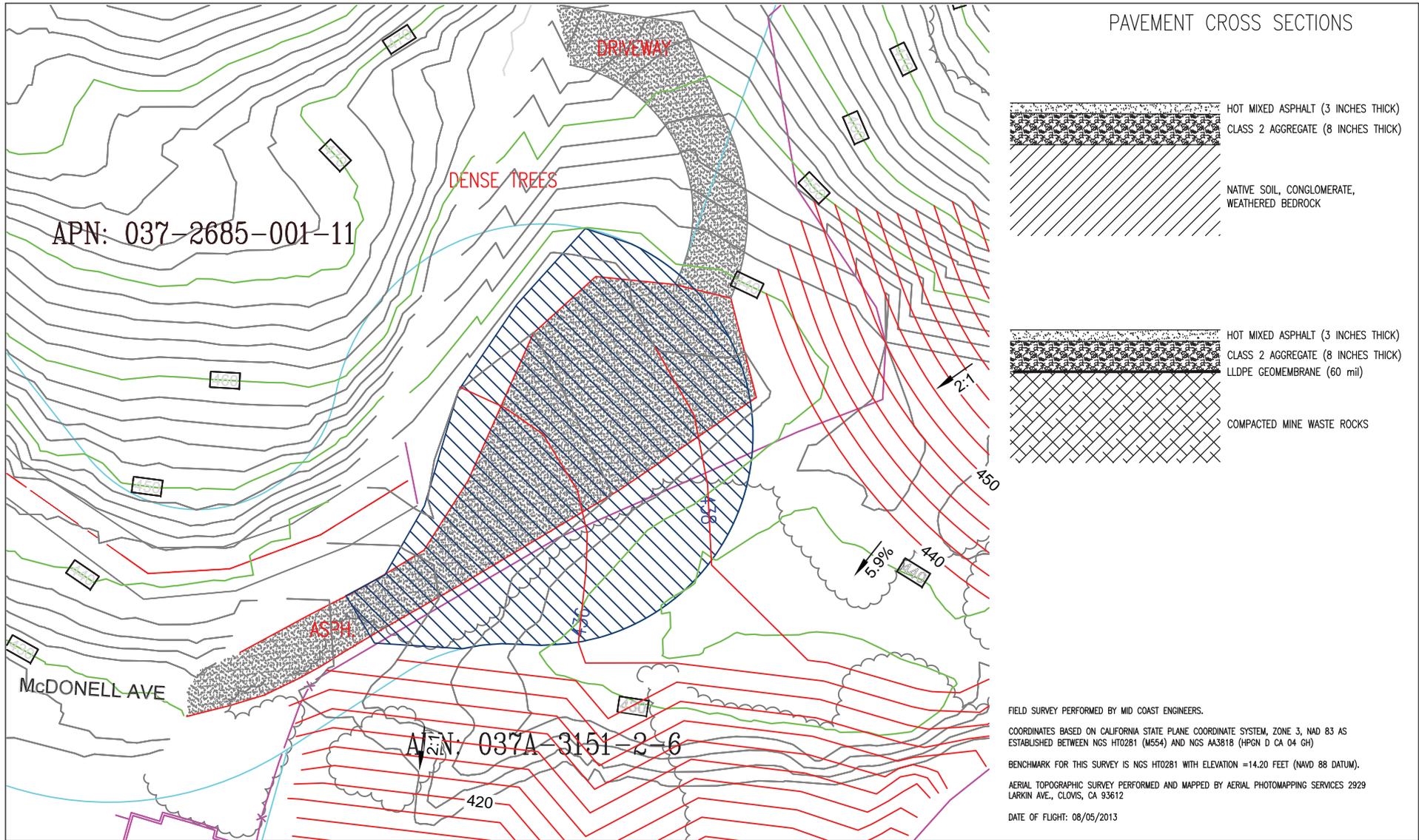


McDonell Avenue cul-de-sac, looking south

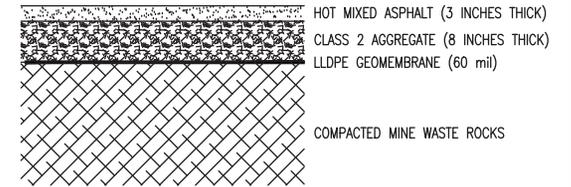
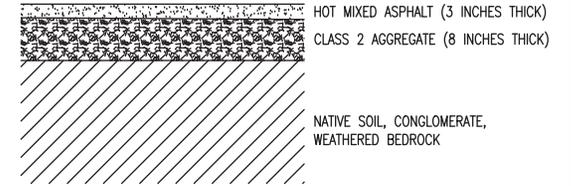
LSA

FIGURE 22

*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Primary Staging Area and Access*

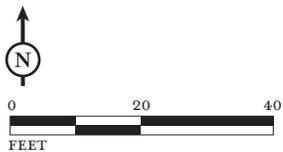


PAVEMENT CROSS SECTIONS



FIELD SURVEY PERFORMED BY MID COAST ENGINEERS.
COORDINATES BASED ON CALIFORNIA STATE PLANE COORDINATE SYSTEM, ZONE 3, NAD 83 AS ESTABLISHED BETWEEN NGS HT0281 (M554) AND NGS AA3818 (HPGN D CA 04 GH)
BENCHMARK FOR THIS SURVEY IS NGS HT0281 WITH ELEVATION =14.20 FEET (NAVD 88 DATUM).
AERIAL TOPOGRAPHIC SURVEY PERFORMED AND MAPPED BY AERIAL PHOTOMAPPING SERVICES 2929 LARKIN AVE., CLOVIS, CA 93612
DATE OF FLIGHT: 08/05/2013

LSA



LEGEND

- BOUNDARY LINE
- MAJOR CONTOUR
- MINOR CONTOUR
- TREE DRIP LINE
- DIRT TRAIL
- FENCE LINE
- ASPHALT PAVEMENT
- SPOT ELEVATION (FIELD SURVEY)
× 443.59
- PROPOSED GRADE
- PROPOSED ASPHALT PAVEMENT AREA (APPROX. 4,900 SQFT)

FIGURE 23

*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
McDonnell Avenue Cul-de-Sac Improvements*

SOURCE: E₂C REMEDIATION, JANUARY 28, 2014.

I:\OC11301 leona mines 2\figures\Fig_23.ai (2/25/14)



View north



View south

LSA

FIGURE 24

*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
Lodge Staging Area*

Traffic Plan, and Signage. During the periods when construction materials and equipment are being delivered to the primary staging area, access along McDonell Avenue would be temporarily restricted to those people (and their visitors) that live in homes along the road. This access limitation would occur 4 to 5 times during the total construction period and would last approximately 5 days. Normal access would be restored immediately after each 4-5 day delivery event. At the completion of the construction project, demobilization of equipment and materials will be necessary, and access may be temporarily restricted for approximately 5 days in order to remove construction equipment from the site and complete improvements to the cul-de-sac.

During the restricted periods, the construction management team would utilize flagmen and radios in order to allow neighborhood traffic to access McDonell Avenue. Additionally, a traffic control plan has been submitted to the City of Oakland for approval. The traffic control plan illustrates the locations of traffic control, control device placement, sign type and locations, and worker parking. At no time would emergency vehicle access to McDonell Avenue and/or the fire road be restricted. However, public access and parking near the McDonell Avenue cul-de-sac would not be allowed during the restricted access times. The Merritt College entrance to the trail would need to be utilized during these times.

Trail Closure and Signage. The fire road is currently used as a trail by the public for hiking, jogging, biking and dog-walking. Trail visitors park at the end of the McDonell Avenue cul-de-sac or at the Merritt College parking lots. During staging and construction activities, the fire road trail may need to be closed to the public at the McDonell Avenue entrance and no parking allowed on McDonell Avenue to reduce circulation conflicts with construction activities and equipment. The trail could still be accessed and used from Merritt College. The trail closure at McDonell Avenue and Merritt College would be posted at least one month prior to construction and throughout the five-month construction period. Signs would be placed at all entrance locations and on the trail to notify users of the closure of the McDonell Avenue access. Barricades and signage would be erected at the end of McDonell Avenue prior to and throughout construction. Additionally, a traffic control plan would be submitted to the City of Oakland for approval.

Tree Removal and Clearing. In order to access the project site and complete the creek remediation project, trees on the site would need to be removed. Tree trimming and tree removal would be required to facilitate site access, allow material and equipment access, allow excavation and compaction of tailings, and placement of the cover. To the extent practical and possible, the current grading and remediation plan has reduced tree removal, particularly oaks, to an absolute minimum. Most of the trees to be removed are located along the perimeter of upper tailings piles.

The removal and protection of trees would be permitted and mitigated in accordance with the City of Oakland's Protected Tree Ordinance based upon the quantity, species, type and height of individual trees.²³ A Tree Mitigation Plan is being prepared for the project area in coordination with the City, and will identify protected trees to be removed as well as mitigation for trees that are removed.

²³ Oakland, City of, 2013. *Municipal Code of Ordinances-Chapter 12.36 Protected Trees.*

Table 1: Trees in the Survey Area

<i>Species/Common Name</i>	Diameter at Breast Height	Quantity
Protected Trees to Remain Within the Work Area		
<i>Quercus agrifolia</i> /Coast live oak	>30"	18
	20"-30"	28
	10"-20"	48
	<10"	41
Total		135
Protected Trees to be Removed Within the Work Area		
<i>Quercus agrifolia</i> /Coast live oak	>30"	8
	20"-30"	6
	10"-20"	18
	<10"	19
Total		51

Source: LSA Associates Inc, see Appendix E: Leona Heights Sulfur Mine Remediation Site Tree Survey and Protection Plan and E2C, 2014.

Erosion Control Measures. An Erosion Control Plan (ECP) has been prepared for the proposed project by E2C.²⁴ The ECP was prepared in order to comply with local, State, and federal regulatory requirements associated with the protection of water quality and soil resources. The plan describes measures to mitigate soil erosion and potential discharges off-site during construction activities through the use of Best Management Practices (BMPs) that are recommended by the California Stormwater Quality Association’s Stormwater Best Management Practice Handbook Portal: Construction (2009). Reduction or elimination of sediment related pollutants in stormwater will be achieved through the implementation of BMPs related to erosion control, sediment control, tracking control, and wind erosion control. Additional, BMPs will be implemented in order to reduce non-stormwater related contamination from vehicles and materials.

Upon completion of the project, post-construction BMPs will be installed which will reduce or eliminate pollutant discharges after final grading activities are complete. The proposed BMPs include the following:

- Hydraulic Mulch
- Hydroseeding
- Geotextiles and Mats

The site will be restored to stable conditions, and prepared for long-term operation and monitoring of the remedial action and restoration activities. The staging areas would be restored to pre-construction conditions and fencing would be removed. Any site equipment would be decontaminated before being moved or transported off site. Any remaining construction materials would be removed and any wastes would be disposed of properly.

²⁴ E2C, 2014. *Erosion Control Plan Leona Heights Sulfur Mine.*

Fire Safety Plan. The Oakland Fire Department has identified the need for removal of grass, brushy vegetation including acacia and broom, and dead trees within a minimum of 10 feet of the construction areas in order to reduce the potential for fire. The applicant will submit a Fire Safety Plan, which will require confirmation and approval by the Fire Department prior to the start of construction which incorporates the above brush clearing with additional wildfire reduction measures, and provides clear direction for emergency access to the site during construction. Additionally, some tree pruning may be required to allow construction vehicles to travel along McDonell Avenue as they carry materials to and from the lodge staging area to the remediation site. Vegetation would be cleared as necessary to perform the work and as directed by the site construction manager. Grubbed material would be placed in a designated waste material pile on the primary staging area prior to chipping and disposal.

(2) Monitoring and Maintenance. The CAO requires that a Monitoring and Maintenance Plan, acceptable to the Executive Officer, be prepared and submitted to the Water Board by October 30, 2014. A preliminary Maintenance and Monitoring Plan has been prepared by E2C and is included in Appendix C. The Plan details how the site would be monitored and maintained to ensure water quality improves and the remedial and creek restoration construction is stable. The Plan must include:

- A proposed list of monitoring parameters and a plan for monitoring them in the creek;
- Periodic inspections of the capped mine tailings piles;
- Monitoring of the geomorphic integrity of the restored channel, including bed and banks;
- Monitoring the successful establishment of the banks adjacent to the restored creek channel; and
- Monitoring of the stability of the capped mine tailings, and hillsides above the banks of the restored channel.

10. Requested Actions and Required Approvals:

This Initial Study and Mitigated Negative Declaration is intended to provide CEQA clearance for all discretionary permits and approvals required for the project, including without limitation, as follows:

- Army Corps of Engineers Section 404 Clean Water Act Permit
- U.S. Fish and Wildlife Service Section 7 of the Endangered Species Act
- CA Department of Fish and Wildlife Stream Bed Alteration Agreement
- CA Endangered Species Act Compliance- Incidental Take Permit
- RWQCB Section 401 Water Quality Certification
- City of Oakland Category IV Creek Protection Permit
- City of Oakland Tree Removal and/or Protection Permit
- City of Oakland Grading Permit
- City of Oakland Permit for Private Work in the Public Right-of-Way (“P-Job Permit”)
- City of Oakland Encroachment Permit

PURPOSE OF DOCUMENT

The purpose of this Initial Study Environmental Review Checklist (referred to throughout this document as “Initial Study” or “IS”) is to present the environmental analysis and certain supporting technical information that the City of Oakland considered leading to the decision to prepare a Mitigated Negative Declaration (MND) pursuant to CEQA Guidelines Section 15162. Specifically, the project-level analysis in this Initial Study compares the potential environmental effects that may result from the proposed project to the existing conditions. The document also identifies Standard Conditions of Approval and/or mitigation measures designed to reduce impacts to less than significant levels.

In accordance with CEQA Guidelines Section 15063, the scope of this Initial Study includes the following:

1. All phases of project planning and implementation.
2. Expert opinion supported by facts, technical studies or other substantial evidence to document its findings.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

Environmental factors which may be affected by the Proposed Project are listed alphabetically below. Factors marked with a filled-in block (■) have been determined to be potentially affected by the Project. There are no “Potentially Significant Impacts” as indicated by the checklist on the following pages. Unmarked factors (□) were determined to be either not significantly affected by the Proposed Project or fully mitigated through the implementation of Standard Conditions of Approval adopted by the City of Oakland and/or mitigation measures.

- | | | |
|--|--|--|
| <input type="checkbox"/> Aesthetics Shadow, and Wind | <input type="checkbox"/> Agricultural and Forestry Resources | <input type="checkbox"/> Air Quality/ Greenhouse Gas Emissions |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology/Soils |
| <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Hydrology/Water Quality | <input type="checkbox"/> Land Use/Planning |
| <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Noise | <input type="checkbox"/> Population/Housing |
| <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation | <input type="checkbox"/> Transportation/Traffic |
| <input type="checkbox"/> Utilities/Service Systems | <input type="checkbox"/> Mandatory Findings of Significance | |

DETERMINATION

On the basis of this initial evaluation, although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because mitigation measures and Uniformly Applied Development Standards have been imposed as Standard Conditions of Approval on the Proposed Project. A MITIGATED NEGATIVE DECLARATION will be prepared.

CEQA EVALUATION

The following sections provide an evaluation of whether the project will have any new significant effects on the environment.

- If an environmental issue would not be affected by the project it is identified in the following evaluation as **“No Impact”**.
- A **“Less Than Significant”** response indicates that while there may be potential for an environmental impact, features of the project as proposed would limit the extent of this impact to a level of less than significant.
- If an environmental issue may cause a significant effect on the environment, but the Lead Agency has devised Standard Conditions of Approval that, if implemented, would reduce this impact to a less than significant level, it is identified in the following evaluation as **“Less Than Significant with Standard Conditions of Approval”** and these conditions are specifically identified.
- Responses that indicate that the impact of the project would be **“Potentially Significant Unless Mitigation Incorporated”** indicate that mitigation measures, identified in the subsequent discussion, will be required as a condition of project approval in order to effectively reduce potential project-related environmental effects to a level below significance thresholds.
- If an environmental issue may cause a significant effect on the environment and could not be mitigated to a level of less than significant with Standard Conditions of Approval or Mitigation Measures identified in this document, it would be identified in the following evaluation as **“Potentially Significant”** and would need to be analyzed in a project-level EIR.

ENVIRONMENTAL CHECKLIST

I. AESTHETICS, SHADOW, AND WIND	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
Would the project:					
1. Have a substantial adverse effect on a scenic vista? [NOTE: Only impacts to scenic views enjoyed by members of the public generally (but not private views) are potentially significant.]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings located within a State or locally designated scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Create a new source of substantial light or glare which would substantially and adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Introduce landscape that would now or in the future cast substantial shadows on existing solar collectors (in conflict with California Public Resource Code Section 25980-25986)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Cast shadow that substantially impairs the function of a building using passive solar heat collection, solar collectors for hot water heating, or photovoltaic solar collectors?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Cast a shadow that substantially impairs the beneficial use of the any public or quasi-public park, lawn, garden, or open space?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Cast shadow on an historic resource, as defined by CEQA Guidelines Section 15064.5(a), such that the shadow would materially impair the resource's historic significance by materially altering those physical characteristics of the resource that convey its historical significance and that justify its inclusion on or eligibility for listing in the National Register of Historic Places, California Register of Historical Resources, Local Register of historic resources or a historical resource survey form (DPR Form 523) with a rating of 1-5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

I. AESTHETICS, SHADOW, AND WIND	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
9. Require an exception (variance) to the policies and regulations in the General Plan, Planning Code, or Uniform Building Code, and the exception causes a fundamental conflict with policies and regulations in the General Plan, Planning Code, and Uniform Building Code addressing the provision of adequate light related to appropriate uses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Create winds exceeding 36 mph for more than 1 hour during daylight hours during the year? [NOTE: The wind analysis only needs to be done if the project's height is 100 feet or greater (measured to the roof) and one of the following conditions exist: (a) the project is located adjacent to a substantial water body (i.e., Oakland Estuary, Lake Merritt or San Francisco Bay); or (b) the project is located in Downtown. Downtown is defined in the Land Use and Transportation Element of the General Plan (page 67) as the area generally bounded by West Grand Avenue to the north, Lake Merritt and Channel Park to the east, the Oakland Estuary to the south and I-980/Brush Street to the west. The wind analysis must consider the project's contribution to wind impacts to on- and off-site public and private spaces. Only impacts to public spaces (on- and off-site) and off-site private spaces are considered CEQA impacts. Although impacts to on-site private spaces are considered a planning-related non-CEQA issue, such potential impacts still must be analyzed.]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The project area is located in the Oakland Hills and consists of an approximately 2-acre, irregularly shaped remediation and creek restoration area in a small steep ravine approximately one-half mile northeast of the intersection of I-580 and State Route 13. The project area is mostly wooded and elevations vary widely. Within the boundary of the remediation site, the lowest portion is approximately 350 feet above mean sea level (msl) at the southwest corner, rising to approximately 550 feet msl at the northeast corner. The site is bordered on the west and by irregularly spaced private residences along the hillside. To the north and south are areas of expansive open space owned by the project applicant and totaling approximately 135 acres. Located north of the project applicant's property is additional open space owned by the City of Oakland. Merritt College is located east of Campus Drive, approximately one-quarter mile east of the remediation site, and is a branch of the Peralta Community College District.

SCENIC VISTAS

Would the project:

1. *Have a substantial adverse effect on a scenic vista?*

Expansive views of the East Bay Hills, natural areas along the shoreline of San Francisco Bay, and the San Francisco city skyline and other landmarks adjacent to the Bay are generally considered scenic views. The City of Oakland General Plan encourages the protection of views of the Oakland Hills from the flatlands through the use of development review and careful zoning.²⁵

The mine tailings and Leona Creek channel are located on private property, in a densely wooded ravine, and are surrounded by mostly undeveloped land and a few down-slope residences. Due to its location in a ravine, the site is not visible from surrounding areas and does not contribute to a public scenic vista. Construction equipment including dump trucks, excavators, loaders, dozers, backhoes and compactors would be temporarily located in the project area and in temporary construction staging areas. However, the use and staging of construction equipment would be temporary, and would not permanently adversely affect views in the area. There would be a *less-than-significant* impact to scenic vistas and visual resources as a result of this project.

SCENIC RESOURCES WITHIN A STATE SCENIC HIGHWAY

Would the project:

2. *Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings located within a State or locally designated scenic highway?*

In Alameda County, segments of I-580 are designated by the State Department of Transportation (Caltrans) as California Scenic Highways, which requires the protection of the scenic resources visible from the roadway. No scenic vistas or scenic resources are located within the project area and none of the nearby roadways are designated as State scenic highways.²⁶ The project area is located approximately 1,300 feet from I-580, but is not visible from the highway. Therefore, the proposed project would have *no impact* on scenic resources associated with a State scenic highway.

VISUAL CHARACTER AND QUALITY

Would the project:

3. *Substantially degrade the existing visual character or quality of the site and its surroundings?*

The Leona Heights Sulfur Mine operated at the project site from about 1900 through the 1920s to extract pyrite (iron sulfide) crystals from the volcanic bedrock for the production of sulfuric acid. The closed mine is located in the upper reach of the Leona Creek watershed, and sulfur-bearing mining waste now fills the stream channel. The mining waste occurs in the form of deep localized accumulations or as thin localized pockets overlying bedrock. The site consists of upper and lower mine

²⁵ Oakland, City of, 1996. *Open Space, Conservation and Recreation Element*. June.

²⁶ California Department of Transportation, 2013. California Scenic Highway System. Website: www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm (accessed November 4).

tailings piles. In the upper portion of the former mine site, the intermittent creek has eroded downward through the mine tailings, forming a deeply incised channel. The tailings piles are more porous than the native bedrock, which allows water to migrate easily through the material. In the lower portion of the site, the creek generally skirts around the southern edge of the mine tailings. The areas where extensive mine tailings are present are nearly devoid of any vegetation, while the remaining areas of the site are covered with mainly oak and eucalyptus trees. The tailings do not extend into the wooded areas and there are extensive bedrock outcrops in the wooded areas with well-developed soil profiles. In areas of transition where the mine tailings appear as a thin veneer, the vegetation is stressed and there are little to no grasses and/or shrubs present. Additionally, the creek within the remediation site has the characteristic orange color associated with acid mine drainage, and water samples have demonstrated high levels of cadmium, copper, mercury, nickel, lead, zinc and arsenic.²⁷

The purpose of the project is to remediate and stabilize the slopes and Leona Creek channel to improve water quality on the site. The project proposes to grade the mine tailings to provide greater stability, cover and revegetate the graded tailings as prescribed in the project's landscape plan which includes the installation of native grasses, wildflowers, and herbaceous plants to give the site a natural appearance, restore the existing creek channel to a similar alignment as its natural trajectory and improve the site drainage to eliminate the poor water quality.

Visual simulations were prepared for the project, and Figure 25 identifies the view locations. As illustrated in Figures 26, 27 and 28, the comparison between current views of the project site with post construction views, indicate that the grading and replanting of the site would result in views of a graded grass-covered site integrated with the natural surroundings. The revised views are more visually appealing than the lack of vegetation and sulfur-colored tailings and creek that now characterize the site. The project would result in a beneficial aesthetic effect.

The project would replace man-made eroding tailings piles with an engineered man-made structure covered with grasses. As such, the proposed project would not substantially degrade the visual quality or character of the site or its surroundings; rather, it would generally improve the visual character and quality of the creek by replacing the poorly vegetated mine tailings and eroded creek channel with a restored creek and vegetated upland areas. Therefore, the proposed project would result in a *less-than-significant* impact to the existing visual character of the site.

LIGHT AND GLARE

Would the project:

4. *Create a new source of substantial light or glare which would substantially and adversely affect day or nighttime views in the area?*

The proposed project would result in the remediation of mine tailings and the restoration of the Leona Creek channel. The proposed project does not contain elements that would be a source of light or glare, and therefore would have *no impact* on the day or nighttime views of the area.

²⁷ San Francisco Bay Area Regional Water Quality Control Board, 2013. *Updated Fact Sheet*. March.



LSA

FIGURE 25

*Leona Creek Restoration and Leona Heights
Sulfur Mine Remediation Project IS/MND
View Locations*

SOURCE: ANDREW McNICHOL, 2014.



View 1: Before



View 1: Visual simulation of proposed project



View 2: Before



View 2: Visual simulation of proposed project



View 3: Before



View 3: Visual simulation of proposed project

SHADOWS

Would the project:

5. *Introduce landscape that would now or in the future cast substantial shadows on existing solar collectors (in conflict with California Public Resource Code Section 25980-25986)?*
6. *Cast shadow that substantially impairs the function of a building using passive solar heat collection, solar collectors for hot water heating, or photovoltaic solar collectors?*
7. *Cast a shadow that substantially impairs the beneficial use of the any public or quasi-public park, lawn, garden, or open space?*
8. *Cast shadow on an historic resource, as defined by CEQA Guidelines Section 15064.5(a), such that the shadow would materially impair the resource's historic significance by materially altering those physical characteristics of the resource that convey its historical significance and that justify its inclusion on or eligibility for listing in the National Register of Historic Places, California Register of Historical Resources, Local Register of historic resources or a historical resource survey form (DPR Form 523) with a rating of 1-5?*

The proposed project does not contain elements that would be a source of shadows, and therefore would have **no impact** on existing solar collectors nor impede the function of passive solar heat collection. Similarly, the proposed project is not adjacent to any public or quasi-public park, lawn, garden or open-space, or historic resource and would not create shadows upon such uses. The proposed project would have **no impact** upon specified public uses.

EXCEPTIONS (VARIANCES) AFFECTING ADEQUATE LIGHT

Would the project:

9. *Require an exception (variance) to the policies and regulations in the General Plan, Planning Code, or Uniform Building Code, and the exception causes a fundamental conflict with policies and regulations in the General Plan, Planning Code, and Uniform Building Code addressing the provision of adequate light related to appropriate uses?*

The proposed project is not in conflict with any regulations in the General Plan, Planning Code, or Uniform Building Code and therefore would not require a variance. The project would have **no impact** upon the provision of adequate light.

WIND

Would the project:

10. *Create winds exceeding 36 mph for more than 1 hour during daylight hours during the year?*

The proposed project does not contain elements which would create excessive winds and is neither located close to a substantial water body nor is located Downtown, therefore the project would not contribute wind impacts to surrounding uses. The project would have **no impact** upon wind in the project area.

II. AGRICULTURAL AND FORESTRY RESOURCES	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
Would the project:					
1. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to a non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The project area is located in the Oakland hills region of the City of Oakland, Alameda County, as shown in Figure 1. The site is approximately one-half mile northeast of the intersection of I-580 and State Route 13, and southeast of the eastern terminus of McDonell Avenue. It is generally bounded by open space to the north and south, Merritt College to the east, and McDonell Avenue and residential areas to the west.

AGRICULTURE

Would the project:

1. *Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to a non-agricultural use?*
2. *Conflict with existing zoning for agricultural use, or a Williamson Act contract?*

The remediation site is located on private, wooded and undeveloped property that is zoned Residential Hillside (RH-1) and no agricultural resources are located on or near the project area. Similarly, the

project area is classified as “Urban and Built-Up Land” and “Other Land” by the State Department of Conservation²⁸ and is not subject to any contracts under the Williamson Act.²⁹ Therefore, the proposed project would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use. The project would have **no impact** upon farmland.

FOREST LAND

Would the project:

3. *Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?*
4. *Result in the loss of forest land or conversion of forest land to non-forest use?*
5. *Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?*

The remediation site is located in an urban area within the City of Oakland which is zoned Residential Hillside (RH-1), and is not zoned for forest land or timberland. Therefore, development of the proposed project would not conflict with existing zoning for forest land or result in the rezoning of forest land or other land used for the production of timber.

The proposed project would result in the remediation of mine tailings and the restoration of the Leona Creek channel. Although trees are dispersed around the project site and some would be removed or otherwise affected by project construction, these trees are located in an urban hillside within the City of Oakland, which does not constitute forest land. The removal of trees would be permitted and mitigated in accordance with the City of Oakland’s Tree Protection ordinance based upon the quantity, species, type and height of individual trees.³⁰ (see Section IV.e) Therefore, the proposed project would not result in the loss of forest land or conversion of forest land to non-forest uses. The project would have **no impact** upon forest land.

Development of the proposed project would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use. Therefore, the proposed project would have **no impact** upon agricultural or forestry resources.

²⁸ California Department of Conservation, 2013. *Division of Land Resource Protection, Farmland Mapping and Monitoring Program*. Website: <ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2010/ala10.pdf> (accessed September 17).

²⁹ California Department of Conservation, 2013. *Williamson Act Maps*. Website: ftp://ftp.consrv.ca.gov/pub/dlrp/wa/alameda_12_13_WA.pdf (accessed November 1).

³⁰ Oakland, City of, 2013. *Municipal Code of Ordinances-Chapter 12.36 Protected Trees*.

III. AIR QUALITY AND GREENHOUSE GAS EMISSIONS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
AIR QUALITY					
Would the project:					
1. During project construction result in average daily emissions of 54 pounds per day of ROG, NO _x , or PM _{2.5} or 82 pounds per day of PM ₁₀ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. After construction phase result in average daily emissions of 54 pounds per day of ROG, NO _x , or PM _{2.5} or 82 pounds per day of PM ₁₀ ; or result in maximum annual emissions of 10 tons per year of ROG, NO _x or PM _{2.5} or 15 tons per year of PM ₁₀ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. After construction phase contribute to carbon monoxide (CO) concentrations exceeding the California Ambient Air Quality Standards (CAAQS) of nine parts per million (ppm) averaged over eight hours and 20 ppm for one hour?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. For new sources of Toxic Air Contaminants (TACs), during either project construction or project operation expose sensitive receptors to substantial levels of TACs under project conditions resulting in (a) an increase in cancer risk level greater than 10 in one million, (b) a non-cancer risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average PM _{2.5} of greater than 0.3 micrograms per cubic meter; or, under cumulative conditions, resulting in (a) a cancer risk level greater than 100 in a million, (b) a non-cancer risk (chronic or acute) hazard index greater than 10.0, or (c) annual average PM _{2.5} of greater than 0.8 micrograms per cubic meter? [NOTE: Pursuant to the BAAQMD CEQA Guidelines, when siting new TAC sources consider receptors located within 1,000 feet. For this threshold, sensitive receptors include residential uses, schools, parks, daycare centers, nursing homes, and medical centers. The cumulative analysis should consider the combined risk from all TAC sources.]	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

III. AIR QUALITY AND GREENHOUSE GAS EMISSIONS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
5. Expose new sensitive receptors to substantial ambient levels of Toxic Air Contaminants (TACs) resulting in (a) a cancer risk level greater than 100 in a million, (b) a non-cancer risk (chronic or acute) hazard index greater than 10.0, or (c) annual average PM _{2.5} of greater than 0.8 micrograms per cubic meter? [NOTE: Pursuant to the BAAQMD CEQA Guidelines, when siting new sensitive receptors consider TAC sources located within 1,000 feet including, but not limited to, stationary sources, freeways, major roadways (10,000 or greater vehicles per day), truck distribution centers, airports, seaports, ferry terminals, and rail lines. For this threshold, sensitive receptors include residential uses, schools, parks, daycare centers, nursing homes, and medical centers.]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Frequently and for a substantial duration, create or expose sensitive receptors to substantial objectionable odors affecting a substantial number of people? [NOTE: For this threshold, sensitive receptors include residential uses, schools, daycare centers, nursing homes, and medical centers (but not parks).]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
GREENHOUSE GAS EMISSIONS					
Would the project:					
1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, specifically:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
a) For a project involving a stationary source, produce total emissions of more than 10,000 metric tons of CO ₂ e annually? [NOTE: Stationary sources are projects that require a BAAQMD permit to operate.]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

III. AIR QUALITY AND GREENHOUSE GAS EMISSIONS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
<p>b) For a project involving a land use development, produce total emissions of more than 1,100 metric tons of CO₂e annually AND more than 4.6 metric tons of CO₂e per service population annually? [NOTE: Land use developments are projects that do not require a BAAQMD permit to operate. The service population includes both the residents and the employees of the project. The project's impact would be considered significant if the emissions exceed BOTH the 1,100 metric tons threshold and the 4.6 metric tons threshold. Accordingly, the impact would be considered less than significant if the project's emissions are below EITHER of these thresholds.]</p> <p>[NOTE: The project's expected greenhouse gas emissions during construction should be annualized over a period of 40 years and then added to the expected emissions during operation for comparison to the threshold. A 40-year period is used because 40 years is considered the average life expectancy of a building before it is remodeled with considerations for increased energy efficiency. The thresholds are based on the BAAQMD thresholds. The BAAQMD thresholds were originally developed for project operation impacts only. Therefore, combining both the construction emissions and operation emissions for comparison to the threshold represents a conservative analysis of potential greenhouse gas impacts.]</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>2. Fundamentally conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing greenhouse gas emissions.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

INTRODUCTION

This section has been prepared using the methodologies contained in the Bay Area Air Quality Management District's (BAAQMD) *Air Quality CEQA Guidelines*³¹ and describes the potential effects of the project construction on air quality, including the effects of the project construction phase on regional pollutant levels and health risks.

³¹ Bay Area Air Quality Management District, 2011. *Air Quality CEQA Guidelines*. May.

SETTING

Both the State and federal governments have established health-based Ambient Air Quality Standards for six air pollutants: carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead (Pb), and suspended particulate matter (PM). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. These standards are designed to protect public health and welfare with a reasonable margin of safety.

The Federal Clean Air Act governs air quality in the United States. In addition to being subject to federal requirements, air quality in California is also governed by more stringent regulations under the California Clean Air Act. At the federal level, the United States Environmental Protection Agency (U.S. EPA) administers the Clean Air Act (CAA). The California CAA is administered by the California Air Resources Board (ARB) at the State level and by the Air Quality Management Districts at the regional and local levels. The BAAQMD regulates air quality at the regional level.

The nine-county San Francisco Bay Area is considered, in air quality terms, an air basin. Overall, the air quality conditions in the San Francisco Bay Area are fairly good for a large metropolitan area due to favorable climate conditions that result in moderate temperatures and good ventilation. However, exceedances of air quality standards for ozone and respirable particulate matter pose challenges for air pollution control agencies. In addition, the ARB has identified the San Francisco Bay Area Air Basin as a transport contributor to adjacent air basins. So air pollutants emitted in the project area could contribute to air pollution problems in other areas of northern and central California.

The BAAQMD is primarily responsible for assuring that the federal and State ambient air quality standards are attained and maintained in the Bay Area. The BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, conducting public education campaigns, as well as many other activities. The BAAQMD has jurisdiction over much of the nine-county Bay Area.

1. Clean Air Plan

BAAQMD enforces rules and regulations regarding air pollution sources within the nine county San Francisco Bay Area Air Basin and is the primary agency preparing the regional air quality plans mandated under state and federal law.

The BAAQMD prepares plans to attain ambient air quality standards in the San Francisco Bay Area Air Basin. The BAAQMD prepares the Clean Air Plan (CAP) in coordination with the Metropolitan Transportation Commission and the Association of Bay Area Governments (ABAG). With respect to applicable air quality plans, the BAAQMD has adopted the 2010 Clean Air Plan to address multiple pollutants in a single integrated plan. The purpose of the 2010 Clean Air Plan is to:

1. Update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the California Clean Air Act to implement “all feasible measures” to reduce ozone.
2. Provide control strategies to reduce ozone, particulate matter (PM, air toxics, and greenhouse gases in a single plan;
3. Review progress in improving air quality in recent years; and

4. Establish emission control measures to be adopted or implemented in the 2010 to 2012 timeframe.

2. BAAQMD CEQA Guidelines

BAAQMD also prepares a document to provide guidance for lead agencies, consultants, and other parties evaluating air quality impacts in the San Francisco Bay Area Air Basin conducted pursuant to CEQA. In June 2010, BAAQMD revised their guidelines for analysis of impacts under CEQA and adopted new thresholds of significance. The BAAQMD then updated the draft guidelines and finalized them in May 2011.³² These guidelines superseded previously adopted agency air quality guidelines of 1999 and were intended to advise lead agencies on how to evaluate potential air quality impacts.

In late 2010, the Building Industry Association filed a lawsuit in Alameda Superior Court, challenging BAAQMD's CEQA Guidelines on the grounds that the agency did not comply with CEQA. On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD *CEQA Air Quality Guidelines*. The court did not determine whether the thresholds of significance were valid on their merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until the BAAQMD complied with CEQA. In May of 2012, the BAAQMD filed an appeal of the court's decision. In August of 2013 the First District Court of Appeal overturned the trial court and held that the thresholds of significance were not subject to CEQA review. The BAAQMD has not reinstated the 2011 Guidelines; however, the City notes that the Alameda County Superior Court, in ordering BAAQMD to set aside the thresholds, did not address the merits of the science or evidence supporting the thresholds. The City finds that, despite the court ruling, the science and reasoning contained in the BAAQMD 2011 *CEQA Air Quality Guidelines* provide the latest state-of-the-art guidance available. For that reason, substantial evidence supports continued use of the BAAQMD 2011 *CEQA Air Quality Guidelines*.

3. City of Oakland

The City of Oakland developed an Energy and Climate Action Plan (ECAP), which was adopted December 4, 2012. The ECAP includes a 10 year plan including more than 150 actions to reduce greenhouse gas emissions. The ECAP also includes the Three Year Priority Implementation Plan.

The City of Oakland also adopted mandatory green building standards for private development projects on October 19, 2010 (Chapter 18.02 of the Municipal Code).

City of Oakland Standard Conditions of Approval. The City of Oakland provides the following Standard Conditions of Approval (SCA) regarding air quality:

³² Ibid.

SCA AIR-1: Construction-Related Air Pollution Controls (Dust and Equipment Emissions)

During construction, the project applicant shall require the construction contractor to implement all of the following applicable measures recommended by the Bay Area Air Quality Management District (BAAQMD):

- a. Water all exposed surfaces of active construction areas at least twice daily (using reclaimed water if possible). Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.
- b. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
- c. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- d. Pave all roadways, driveways, sidewalks, etc. as soon as feasible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- e. Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).
- f. Limit vehicle speeds on unpaved roads to 15 miles per hour.
- g. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485, of the California Code of Regulations. Clear signage to this effect shall be provided for construction workers at all access points.
- h. All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- i. Post a publicly visible sign that includes the contractor's name and telephone number to contact regarding dust complaints. When contacted, the contractor shall respond and take corrective action within 48 hours. The telephone numbers of contacts at the City and the BAAQMD shall also be visible. This information may be posted on other required on-site signage.
- j. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.
- k. All excavation, grading, and demolition activities shall be suspended when average wind speeds exceed 20 mph.
- l. Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

- m. Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for one month or more).
- n. Designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress.
- o. Install appropriate wind breaks (e.g., trees, fences) on the windward side(s) of actively disturbed areas of the construction site to minimize wind-blown dust. Wind breaks must have a maximum 50 percent air porosity.
- p. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
- q. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
- r. All trucks and equipment, including tires, shall be washed off prior to leaving the site.
- s. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.
- t. Minimize the idling time of diesel-powered construction equipment to two minutes.
- u. The project applicant shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NO_x reduction and 45 percent particulate matter (PM) reduction compared to the most recent California Air Resources Board (CARB) fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as they become available.
- v. Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., BAAQMD Regulation 8, Rule 3: Architectural Coatings).
- w. All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of NO_x and PM.
- x. Off-road heavy diesel engines shall meet the CARB's most recent certification standard.

CONSTRUCTION-PERIOD EMISSIONS

Would the project:

1. *During project construction result in average daily emissions of 54 pounds per day of ROG, NO_x, or PM_{2.5} or 82 pounds per day of PM₁₀?*

During construction, short-term degradation of air quality may occur due to the release of particulate matter emissions generated by excavation, grading, hauling, and other activities. Emissions from construction equipment would include CO, NO_x, ROG, directly-emitted particulate matter (PM_{2.5} and PM₁₀), and toxic air contaminants (TACs) such as diesel exhaust particulate matter.

Construction phase activities would involve grading, creek channel restoration and slope stabilization. Construction emissions would be concentrated during the grading and slope stabilization phase because most engine emissions are associated with the excavation, handling, and transport of soils on the site. If not properly controlled, these activities would temporarily generate PM₁₀, PM_{2.5}, and to a lesser extent CO, SO₂, NO_x, and volatile organic compounds. Sources of fugitive dust would include disturbed soils at the construction sites and trucks carrying loads of soils. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM₁₀ emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM₁₀ emissions would depend on soil moisture, the silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site. These emissions would be temporary and limited to the immediate area surrounding the construction sites. Additionally, the purpose of the project is to remediate and cover the mine tailings so that dust and leaching of materials into Leona Creek does not occur in the future.

The mine tailings have not been categorized as a “hazardous material”^{33,34} and the grading and handling of the mine tailings, with the implementation of all feasible dust reduction measures, would not create a more significant hazard to human health due to inhalation of dust particulates than would occur during the handling and grading of other soils and materials.

The City of Oakland SCAs include measures for reducing fugitive dust emissions (PM_{2.5} and PM₁₀) including the use of water or other soil stabilizers which are very effective in drastically reducing windborne dust emissions from disturbed soil. According to the BAAQMD,³⁵ with the SCA measures such as frequent watering (i.e., two times per day at a minimum), fugitive dust emissions from construction activities would not result in adverse particulate matter air impacts.

The proposed construction schedule for the project is estimated to be approximately 5 months. Construction emissions were estimated using emission factors by equipment type and duration

³³ Levine Fricke, 2004. *Summary Design Report and Construction Documents-Leona Heights Mine*. March.

³⁴ State Water Resources Control Board, 2007. Written communication to Curtis T. Scott, Chief, California Regional Water Quality Control Board Chief. April 4.

³⁵ BAAQMD, op.cit.

provided by E2C with ARB’s EMFAC 2011 model and U.S. EPA’s Off-Road model. Construction-related emissions are presented in Table 2. Detailed calculations are provided in Appendix D.

As shown in Table 2, construction emissions of ozone precursors (ROG and NO_x) and particulate matter would not exceed the City’s threshold for average daily construction emissions. Therefore, the proposed project construction would have a *less-than-significant* impact upon average daily construction emissions.

Table 2: Project Construction Emissions in Pounds Per Day

Source	ROG	NO _x	Exhaust PM _{2.5}	Exhaust PM ₁₀
Equipment	1.48	15.12	1.08	1.08
Trucks	0.09	0.68	0.01	0.01
Trucks Idling	0.02	0.24	0.0	0.0
Total Emissions	1.56	16.05	1.10	1.10
Threshold	54.0	54.0	54.0	82.0
Exceed Threshold?	No	No	No	No

Source: LSA Associates, Inc., 2013

The City of Oakland requires implementation of Standard Condition of Approval **SCA AIR-1** to reduce construction impacts. This same Standard Condition of Approval would also satisfy BAAQMD’s requirement to implement Best Management Practices for reduction of construction period dust.

Resulting Level of Significance. Satisfactory compliance with the City of Oakland **SCA AIR-1** requiring implementation of dust and equipment emission controls would ensure that air quality impacts of the project during the construction period remain *less than significant with Standard Conditions of Approval*.

OPERATIONAL EMISSIONS

Would the project:

2. *After construction phase result in average daily emissions of 54 pounds per day of ROG, NO_x, or PM_{2.5} or 82 pounds per day of PM₁₀; or result in maximum annual emissions of 10 tons per year of ROG, NO_x or PM_{2.5} or 15 tons per year of PM₁₀?*

The proposed construction phase of the project consists of a five-month effort resulting in the encasement of the tailings and remediation of the creek as required by the Water Board’s CAO. Once the remediation and construction efforts are complete, the project would not generate vehicle trips, and therefore would not generate regional air emissions. The site would not be a source of other air operational emissions. Therefore, the proposed project would have *no impact* with regard to project operation emissions after the construction phase.

CARBON MONOXIDE EMISSIONS

Would the project:

3. *After construction phase contribute to carbon monoxide (CO) concentrations exceeding the California Ambient Air Quality Standards (CAAQS) of nine parts per million (ppm) averaged over eight hours and 20 ppm for one hour?*

As described above, once the remediation construction effort is complete, the proposed project would not generate air emissions, and would also therefore, not exceed any CO thresholds or contribute to increased CO concentrations in the project vicinity. Therefore, the proposed project would have *no impact* with regard to CO emissions after the construction phase.

COMMUNITY RISK AND HAZARD

Would the project:

4. *For new sources of Toxic Air Contaminants (TACs), during either project construction or project operation expose sensitive receptors to substantial levels of TACs under project conditions resulting in (a) an increase in cancer risk level greater than 10 in one million, (b) a non-cancer risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average PM_{2.5} of greater than 0.3 micrograms per cubic meter; or, under cumulative conditions, resulting in (a) a cancer risk level greater than 100 in a million, (b) a non-cancer risk (chronic or acute) hazard index greater than 10.0, or (c) annual average PM_{2.5} of greater than 0.8 micrograms per cubic meter?*

The project site is located in close proximity to existing residential uses that could be exposed to diesel emission exhaust during the construction period. To estimate the potential cancer risk associated with construction of the proposed project from equipment exhaust (including diesel particulate matter), an air dispersion model was used to translate an emission rate from the source location to a concentration at the receptor location of interest (i.e., a nearby residence).

4. Methodology

The methods used in the following analysis of health risks associated with diesel particulate matter (DPM) from project-related construction activities are consistent with CEQA Guidelines and BAAQMD health risk guidance,³⁶ which includes by reference *Air Toxics Hot Spots Program Risk Assessment Guidelines* published by the Office of Environmental Health Hazard Assessment (OEHHA 2003). The health risk assessment includes three primary calculations: 1) an estimate of construction-period DPM emissions; 2) a calculation of DPM concentrations at the maximum exposed individual; and 3) an estimate of excess cancer risk, chronic and acute health risks, and PM_{2.5} concentrations.

Construction Emissions. PM₁₀ and PM_{2.5} off-road construction equipment exhaust emissions from the proposed project were calculated using emission factors from ARB's Off-Road model in conjunction with brake horse powers (BHP) by equipment type. On-road mobile source emissions were calculated using the ARB's EMFAC2011 online system for T7 (Heavy Heavy-Duty Trucks). Modeled construction equipment emissions are based on the equipment list provided to LSA by the project sponsor that is included in Appendix D.

Following BAAQMD guidance, PM₁₀ exhaust emissions were used in the model as a surrogate for DPM. TAC emissions from construction activities were evaluated using the BAAQMD's speciation

³⁶ Bay Area Air Quality Management District, 2012. *Recommended Methods for Screening and Modeling Local Health Risks and Hazards*. May.

profile for diesel. Emissions were estimated for the five-month construction period. The construction equipment list, emission factors for construction equipment, and total project construction emissions are shown in Appendix D.

Model Use. To estimate the construction PM_{10} exhaust concentrations, the AERMOD model was used with all regulatory options selected. The model was run using the Oakland STP meteorological dataset. Terrain data from Lakes' WebGIS website was also used to evaluate terrain near the project site. Emissions from construction activities were modeled as a volume source encompassing the project site with a release height of 16.4 feet. Following BAAQMD guidance, concentrations were calculated at 0 feet. The resulting modeled concentrations were then post-processed using BAAQMD methodology.

The total construction emissions were summed using specific operational assumptions, including daily equipment usage for each phase of construction, as shown in Appendix D. The total emissions from operations were then modeled using conservative operational conditions to determine an average emission concentration. The resulting concentration represents the maximum exposure concentration to off-site receptors.

Construction Receptor Grid. A survey of the project vicinity indicated that sensitive receptors are located adjacent to the project site. A construction receptor grid was established as part of the modeling effort to capture locations representing existing off-site receptors that may be affected by emissions associated with construction of the project. The construction grid identifies nearby receptors that were then modeled in the analysis to determine if they would be adversely affected using the City's thresholds.

Exposure Assumptions. Also called dose-response assessment, exposure assumptions involve the process of characterizing the relationship between exposure to an agent and incidence of an adverse health effect in exposed populations. In a quantitative carcinogenic risk assessment such as this, the dose-response relationship is expressed in terms of a potency slope that is used to calculate the probability or risk of cancer associated with an estimated exposure. Cancer potency factors are expressed as the 95th percent upper confidence limit of the slope of the estimated dose-response curve, assuming continuous lifetime exposure to a substance at a dose of 1 milligram per kilogram of body weight per day and commonly expressed in units of inverse dose (i.e., $(\text{mg}/\text{kg}/\text{day})^{-1}$). It is assumed in cancer risk assessments that risk is directly proportional to dose and that there is no threshold for carcinogenesis. The Office of Environmental Health and Hazard (OEHHA) has compiled cancer potency factors, which are used in risk assessments.

For non-carcinogenic effects, dose-response data developed from animal or human studies are used to develop acute and chronic non-cancer Reference Exposure Levels (RELs). The acute and chronic RELs are defined as the concentration at which no adverse non-cancer adverse health effects are anticipated. The most sensitive health effect is chosen to determine the REL if the chemical affects multiple organ systems. Unlike cancer health effects, non-cancer acute and chronic health effects are generally assumed to have thresholds for adverse effects. In other words, acute or chronic injury from a pollutant will not occur until exposure to that pollutant has reached or exceeded a certain concentration (i.e., threshold). The acute and chronic RELs are intended to be below the threshold for health effects for the general population. The actual threshold for health effects in the general population is generally not known with any precision.

Risk characterization is the final step of risk assessment. Modeled concentrations and public exposure information, which are determined through exposure assessment, are combined with potency factors and RELs that are developed through dose-response assessment.

Cancer Risk. The maximum incremental cancer risk from exposure to TACs was calculated following the guidelines established by OEHHA. The following equation was used to determine life time cancer risk levels for a resident child:

Inhalation cancer risk = $(C_{\text{air}} * \text{DBR} * A * \text{EF} * \text{ED} * 1 \times 10^{-6}) / \text{AT} * \text{Inhalation Cancer Potency Factor} * \text{CRAF}$, where:

- C_{air} = concentration of PM₁₀ in air (used as a surrogate for DPM concentration)
- DBR = child daily breathing rate
- A = inhalation absorption factor
- EF = exposure frequency
- ED = exposure duration
- AT = time period over which exposure is averaged in days (25,550 days for a 70-year cancer risk)
- CRAF = cancer risk adjustment factor (an age sensitivity factor of 10 for first 2 years, 4.75 for the third year, and 3 for the fourth year)

Source: OEHHA Guidelines, August 2003 and BAAQMD Recommended Methods for Screening and Modeling Local Risks and Hazards, May 2011.

As recommended by BAAQMD, the breathing rate of 581 liters per kilogram per day was used. The exposure frequency was assumed to be 110 days per year.³⁷ The exposure duration for project construction was assumed to be 5 months. The inhalation absorption factor was based on the conservative assumption that all pollution would be absorbed, and thus was 1.0. To determine incremental cancer risk, the estimated dose through inhalation was multiplied by the OEHHA-established cancer potency slope factor for DPM, which is 1.1 (mg/kg/day)⁻¹.

Analyses conducted by the OEHHA indicate that both the prenatal and postnatal life stages can be, but are not always, much more susceptible to developing cancer than the adult life stage. The analyses also indicate that the age sensitivity factors (ASFs) for these age windows vary by chemical, gender and species. ASFs for prenatal, postnatal and juvenile exposures are complicated by the limited database of chemicals and studies available for analysis, and the broad distribution of results for different chemicals. The BAAQMD recommends a CRAF of 10 for construction projects to account for exposure from the third trimester to age 2. After reaching age 2, the CRAF is reduced to 3, until the resident child reaches age 16.

The concentration of each TAC at every receptor and the equation outlined above was applied to determine the cancer risk from TACs. The cancer risk level from all TACs was determined at each

³⁷ Bay Area Air Quality Management District, 2010. *Air Toxics NSR Program Health Risk Screening Analysis Guidelines*. January

receptor. The cancer risk at all locations of sensitive receptors was then determined and the highest of these was reported as the maximum exposed individual (MEI).

Chronic Non-Cancer. Non-cancer health risk is based on a hazard index for chronic (long-term) exposures. The hazard index is established by the OEHHA and is the ratio of the predicted incremental exposure concentration (using the annual emission concentration) to the REL that could cause adverse chronic health effects. The Chronic REL is the inhalation exposure concentration at which no adverse chronic health effects would be anticipated following exposure. For instance, the OEHHA has established a DPM Chronic REL of $5.0 \mu\text{g}/\text{m}^3$. This REL represents the level below which exposure to DPM would not result in adverse health effects.

The DPM chronic risk level is calculated as follows:

$$\begin{aligned} \text{Inhalation chronic risk} &= C_{\text{air}} / \text{Inhalation Chronic REL} \\ \text{where: } C_{\text{air}} &= \text{annual concentration of DPM} \\ \text{Inhalation Chronic REL} &= 5.0 \end{aligned}$$

This calculation is repeated for all TACs with chronic RELs and the resulting chronic hazard indices at each receptor are summed and reported as the total chronic hazard index.

Acute Non-Cancer. Similarly, the acute hazard index is established by the OEHHA and is the ratio of the predicted incremental exposure concentration to the REL that could cause adverse acute health effects. The Acute REL is the inhalation exposure concentration at which no adverse acute health effects would be anticipated following exposure.

PM_{2.5}. Annual average concentrations of PM_{2.5} were calculated using the same methodology to determine the concentrations of TACs at all receptors. The resulting concentrations of PM_{2.5} were then compared with the appropriate BAAQMD thresholds to determine significance.

5. Results

Existing residents in the vicinity of the project site would be exposed to TAC emissions generated during construction of the project. The comprehensive receptor grid developed for this analysis allows the examination of TAC concentrations throughout the area surrounding the project site, including all residents in the immediate vicinity. Maximum construction health risk and PM_{2.5} concentrations are shown in Table 3. The results for acute and chronic impacts are also shown in Table 3. AERMOD model inputs and results for all height levels for construction of the project are included in Appendix D. Results of the analysis indicate that construction of the project would not expose sensitive receptors in the project site vicinity to health risk levels that would exceed the criteria established by the BAAQMD and the City of Oakland.

Table 3: Inhalation Health Risks from Project Construction to Off-Site Receptors

	Cancer Risk (in one million)	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index	Annual PM _{2.5} Concentration ($\mu\text{g}/\text{m}^3$)
Maximum Exposed Individual Location	5.97	0.032	0.0	0.16
Threshold	>10 in one million	>1.0	>1.0	>0.30

CRAF = Cancer Risk Adjustment Factors
Source: LSA Associates, Inc., 2014.

Results of the analysis indicate that the highest risk during construction would be a risk level of 5.97 in one million for the maximum exposed individual location. This analysis conservatively assumed the resident to be an infant during the construction period and therefore assumed the CRAF to be 10 until the resident reached age 2, when the CRAF is 3. This risk level is below the threshold of 10 in one million. The Chronic Hazard Index would be below the threshold at 0.032.

The acute inhalation Hazard Index threshold for non-carcinogenic TACs is 1.0. As shown in Table 4, the maximum acute Hazard Index the project would not have a measurable increase in the Acute Hazard Index, and therefore would not exceed the threshold of 1.0. Therefore, the potential for short-term acute exposure during construction of the project would be less than significant.

The results of the analysis also indicate that the maximum PM_{2.5} concentration would be 0.16 µg/m³, which is also below the City’s significance threshold of 0.3 µg/m³.

Cumulative Level Construction Health Risk Assessment Results. Existing residents in the vicinity of the project site would be exposed to TAC emissions generated during construction of the project in addition to any existing sources of TACs. A search of the BAAQMD’s stationary source database indicates there are two sources of TACs within 1,000 feet of the project site. Cumulative health risks for the project are shown in Table 4.

Table 4: Cumulative Construction Health Risk Impacts

	Cancer Risk (in one million)	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index	Annual PM_{2.5} Concentration (µg/m³)
Proposed Project	5.97	0.032	0.00	0.16
Bay 1 Hour Cleaners	7.49	0.20	0.00	0.00
Ken Belts Chevron	9.68	0.01	0.00	0.00
Total	23.14	0.24	0.00	0.16
Cumulative Threshold	100.0	10.0	10.0	0.8
Exceed	No	No	No	No

Source: LSA Associates, Inc., 2014.

Resulting Level of Significance. Results of the project level construction analysis and cumulative analysis indicate project health risk impacts would not expose sensitive receptors to substantial levels of TACs. This impact is *less than significant*. Please note that after construction when slopes are stabilized, the project would not result in health risk impacts associated with TACs.

- Expose new sensitive receptors to substantial ambient levels of Toxic Air Contaminants (TACs) resulting in (a) a cancer risk level greater than 100 in a million, (b) a non-cancer risk (chronic or acute) hazard index greater than 10.0, or (c) annual average PM_{2.5} of greater than 0.8 micrograms per cubic meter?

The proposed project is a remediation project and would not locate new sensitive receptors in an area with substantial ambient levels of Toxic Air Contaminants. Therefore, the proposed project would have *no impact* regarding exposure of new sensitive receptors to TACs.

ODORS

Would the project:

6. *Frequently and for a substantial duration, create or expose sensitive receptors to substantial objectionable odors affecting a substantial number of people?*

The proposed project would consist of a five-month construction period. The existing smell of sulfur which currently increases during rainstorms and is associated with the sulfuric acid in the tailings will be stronger during construction and grading of tailings but will dissipate upon placement of the cover system. Diesel fueled construction equipment would temporarily generate odors, but would be limited to the construction period. Once the five-month construction period has ended, the project would not frequently create substantial objectionable odors affecting a substantial number of people. Therefore, this potential impact would be less than significant. Therefore, the proposed project would have a ***less-than-significant*** impact regarding exposure of sensitive receptors to odors.

Resulting Level of Significance. The project is not a development project and would not locate new receptors to the site. Additionally, the project would temporarily generate odors due to construction equipment exhaust and movement of the sulfur-laden tailings, however these odors would be limited to the five-month construction period. Therefore, this impact would be ***less than significant***.

GREENHOUSE GAS EMISSIONS

Would the project:

1. *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, specifically:*
 - a) *For a project involving a stationary source, produce total emissions of more than 10,000 metric tons of CO₂e annually?*
 - b) *For a project involving a land use development, produce total emissions of more than 1,100 metric tons of CO₂e annually AND more than 4.6 metric tons of CO₂e per service population annually?*
 - c) *Produce emissions of more than 6.6 metric tons of CO₂e per service population annually?*

The proposed project is a remediation project consisting of a five-month construction effort. Once complete, the project would not be a source of greenhouse gas emissions. The project would include the removal of 51 trees that currently sequester carbon as biomass. However, because the net long-term carbon dynamics of trees change through time as trees grow (sequester), die and decay (emit carbon) the BAAQMD specifically indicates the quantification of biogenic CO₂ emission and sequestration should not be assessed in the quantification of GHG emissions for a project. Biogenic CO₂ emissions result from materials that are derived from living cells, as opposed to CO₂ emissions derived from fossil fuels, limestone and other materials that have been transformed by geological processes. Biogenic CO₂ contains carbon that is present in organic materials that include, but are not limited to, wood, paper, vegetable oils, animal fat, and food, animal and yard waste.

The project would not include stationary sources of greenhouse gas emissions, land use development or produce annual greenhouse gas emissions. Therefore, this impact is *less than significant*.

GREENHOUSE GAS EMISSION REDUCTION PLAN

Would the project:

2. *Fundamentally conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing greenhouse gas emissions?*

Construction GHG emissions were estimated for the project using emission factors by equipment type and duration provided by E2C with ARB's EMFAC 2011 model and U.S. EPA's Off-Road model. Detailed calculations are provided in Appendix D. Results of the analysis indicate construction of the project would generate a total of 144 metric tons CO₂e. Implementation of **SCA AIR-1** would reduce greenhouse gas emissions to the extent feasible by limiting on-site idling and by meeting the most recent ARB certification standards. Once operational, the project would not be a source of greenhouse gas emissions. Therefore, it would not conflict with plans, including the City of Oakland's Energy and Climate Action Plan,³⁸ policies or regulations adopted for the purposes of reducing greenhouse gas emissions. This impact would be *less than significant*.

³⁸ Oakland, City of, 2012. *City of Oakland Energy and Climate Action Plan*. December.

IV. BIOLOGICAL RESOURCES	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
Would the project:					
1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act or State protected wetlands, through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Fundamentally conflict with the City of Oakland Tree Protection Ordinance (Oakland Municipal Code (OMC) Chapter 12.36) by removal of protected trees under certain circumstances? [NOTE: Factors to be considered in determining significance include the number, type, size, location and condition of (a) the protected trees to be removed and/or impacted by construction and (b) protected trees to remain, with special consideration given to native trees. Protected trees include <i>Quercus agrifolia</i> (California or coast live oak) measuring four inches diameter at breast height (dbh) or larger, and any other tree measuring nine inches dbh or larger except eucalyptus and <i>Pinus radiata</i> (Monterey pine); provided, however, that Monterey pine trees on City property and in development-related situations where more than five Monterey pine trees per acre are proposed to be removed are considered to be protected trees.]	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IV. BIOLOGICAL RESOURCES	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
<p>7. Fundamentally conflict with the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect biological resources? [NOTE: Although there are no specific, numeric/quantitative criteria to assess impacts, factors to be considered in determining significance include whether there is substantial degradation of riparian and/or aquatic habitat through (a) discharging a substantial amount of pollutants into a creek, (b) significantly modifying the natural flow of the water, (c) depositing substantial amounts of new material into a creek or causing substantial bank erosion or instability, or (d) adversely impacting the riparian corridor by significantly altering vegetation or wildlife habitat.]</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SETTING

1. Methods

Prior to visiting the project area, LSA searched the California Natural Diversity Database (CNDDDB)³⁹ for records of special-status plant and animal species within 5 miles of the site using GIS software (Esri ArcGIS 10.1). LSA also reviewed previous biological reports prepared for the project by Olberding Environmental, Inc. (Olberding Environmental), including the following:

- Biological Resources Analysis for the Leona Heights Property, Alameda County, California (prepared for Moju Environmental Technologies, December 2005)
- U.S. Army Corps of Engineers Wetland Delineation for the Leona Heights Mine Closure Project, Alameda County, California (prepared for Dr. Collin Mbanugo, April 2006)
- Special-status Plant Survey Report for the Leona Heights Property, Alameda County, California (prepared for Dr. Collin Mbanugo, April 2010)
- Alameda Whipsnake Habitat Analysis, Leona Heights Mine Closure Project, Alameda County, California (prepared for Dr. Collin Mbanugo, September 2010)
- United States Fish and Wildlife Service Biological Assessment for the Leona Heights Mine Closure Project, Alameda County, California (prepared for Dr. Collin Mbanugo, February 2014).⁴⁰

³⁹ California Department of Fish and Wildlife, 2013. California Natural Diversity Database, commercial version dated October 1, 2013. Biogeographic Data Branch, California Department of Fish and Wildlife, Sacramento.

⁴⁰ An earlier version (2010) of the Biological Assessment prepared by Olberding Environmental was also reviewed; however, the report was updated in 2014 and is available for review at the City of Oakland Planning and Zoning Division.

LSA wildlife biologist Matt Ricketts visited the project area on November 4, 2013, to assess current habitat conditions and evaluate the habitat potential for special-status plant and/or animal species. LSA Certified Arborist and botanist Tim Milliken conducted a tree inventory of the remediation site on November 4 and 5, 2013.

For the purposes of this IS/MND, special-status species are defined as follows:

- Species that are listed, formally proposed, or designated as candidates for listing as threatened or endangered under the federal Endangered Species Act (ESA)
- Species that are listed, or designated as candidates for listing, as rare, threatened, or endangered under the California Endangered Species Act (CESA)
- Plant species assigned to California Rare Plant Ranks 1A, 1B, 2A, and 2B
- Animal species designated as Species of Special Concern or Fully Protected by the California Department of Fish and Wildlife (CDFW)
- Species that meet the definition of rare, threatened, or endangered under Section 15380 of the CEQA guidelines
- Species considered to be a taxon of special concern by local agencies

2. Vegetation or Cover Types

Olberding Environmental⁴¹ identified three vegetation or cover types on the remediation site: developed, coast live oak woodland, and intermittent drainage. LSA observed three additional vegetation or cover types during a reconnaissance in November 2013, coyote brush/chamise scrub, coast live oak/California bay forest, and ruderal, in or adjacent to the project area. Vegetation types are briefly described below.

Developed. The eastern terminus of McDonell Avenue intersects the northwest corner of the remediation site. McDonell Avenue is a narrow paved road with no curb. A chain-link fence runs between the road and the intermittent drainage. Another chain-link fence runs along the southern bank of the drainage as it traverses the western half of the site. Species observed in this area include wild oats (*Avena fatua*), ripgut grass (*Bromus diandrus*), mustard (*Brassica nigra*), coyote brush (*Baccharis pilularis*), and ornamental pines (*Pinus* sp.).

Coast Live Oak Woodland. Coast live oak (*Quercus agrifolia*) woodland dominates the steep slopes north and south of the remediation site. The woodland on the southern slope is extremely dense with nearly continuous canopy cover. There is little understory vegetation due to extensive leaf litter from the oaks. Patches of maidenhair fern (*Adiantum aleuticum*), sticky monkeyflower (*Mimulus aurantiacus*), poison oak (*Toxicodendron diversilobum*), California blackberry (*Rubus californica*), and Scotch broom (*Cytisus scoparius*) are present along the woodland edge at the base of the slope. The woodland on the northern slope is much less dense and interspersed with scattered blue gum (*Eucalyptus globulus*), pine (*Pinus* sp.), and silver wattle (*Acacia dealbata*). Patches of pampas grass (*Cortaderia jubata*) and French broom (*Genista monspessulana*) also are present throughout this area.

⁴¹ Olberding Environmental, Inc., 2010a. Special-status Plant Survey Report for the Leona Heights Property, Alameda County, California. Prepared for Dr. Collin Mbanugo. April.

Intermittent Drainage with Waste Rock Deposits. The majority of the remediation site is comprised of the intermittent drainage feature. The drainage flows from northeast to southwest and traverses the entire length of the site. Waste rock from the former sulfur mine operation was deposited in the drainage in very large quantities. This waste rock defines the topography of the site, having become deeply eroded by flow originating upstream of the site. The drainage also receives water from a small hose on the north bank and from an underground seep that daylights near the terminus of McDonnell Avenue. The drainage is largely devoid of in-channel vegetation, with the exception of sparse nut sedge (*Cyperus eragrostis*), rush (*Juncus* sp.), and willowherb (*Epilobium* sp.) growing adjacent to the small pool formed by outflow from the small hose.

Coyote Brush/Chamise Scrub. The slopes above and north of the remediation site support a scrub community co-dominated by coyote brush (*Baccharis pilularis*) and chamise (*Adenostema fasciculatum*). Other species present in the understory include sticky monkeyflower, bush lupine (*Lupinus* sp.), wild oats, and ripgut grass. Small stands and scattered individuals of coast live oak occur as emergents throughout the scrub.

3. Wildlife

Wildlife species expected to occur in the project area are those adapted to the oak woodland and scrub communities of the Central Coast Range bioregion. The oak woodland on and adjacent to the remediation site provides habitat for a variety of birds, including the following observed during LSA's November 2013 reconnaissance survey: northern flicker (*Colaptes auratus*), Hutton's vireo (*Vireo huttoni*), Steller's jay (*Cyanocitta stelleri*), western scrub-jay (*Aphelocoma californica*), chestnut-backed chickadee (*Poecile rufescens*), ruby-crowned kinglet (*Regulus calendula*), varied thrush (*Ixoreus naevius*), Townsend's warbler (*Setophaga townsendi*), and spotted towhee (*Pipilo maculatus*). Additional bird species expected to occur in the woodland include Nuttall's woodpecker (*Picoides nuttalli*), oak titmouse (*Baeolophus inornatus*), bushtit (*Psaltriparus minimus*), and American robin (*Turdus migratorius*), among others. The tall blue gums adjacent to the remediation site provide nesting habitat for raptor species such as red-shouldered hawk (*Buteo lineatus*) and Cooper's hawk (*Accipiter cooperi*). Sierran treefrog (*Pseudacris sierra*) was the only amphibian or reptile species detected during the November 2013 survey (one heard calling near pool) but the following common species are also expected to occur: California slender salamander (*Batrachoseps attenuatus*), arboreal salamander (*Aneides lugubris*), western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinata*), and common garter snake (*Thamnophis sirtalis*). Common urban-adapted mammals such as Virginia opossum (*Didelphis virginiana*), northern raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and mule deer (*Odocoileus hemionus*) are also expected to forage and move through the area.

Bird species observed in the scrub, developed, and ruderal portions of the project area include the following: turkey vulture (*Cathartes aura*), Anna's hummingbird (*Calypte anna*), common raven (*Corvus corax*), Bewick's wren (*Thryomanes bewickii*), wrentit (*Chamea fasciata*), northern mockingbird (*Mimus polyglottos*), California towhee (*Melospiza crissalis*), fox sparrow (*Passerella iliaca*), white-crowned sparrow (*Zonotrichia leucophrys*), and golden-crowned sparrow (*Zonotrichia atricapilla*). The drier conditions of these cover types provide basking and foraging habitat for reptiles such as racer (*Coluber constrictor*), gopher snake (*Pituophis catenifer*), Pacific rattlesnake (*Crotalus oreganus*), and California kingsnake (*Lampropeltis californiae*).

4. Special-Status Species

Based on the results of the CNDDDB search, a review of previous biological reports prepared for the remediation site, and LSA's habitat observations in November 2013, LSA identified 32 special-status species (14 plants and 18 animals) as potentially occurring in the project vicinity (Table 5). Of the 14 special-status plants listed in Table 5, only six are considered to potentially occur in the project area based on their habitat association with oak woodland, chaparral, and coastal scrub: bent-flowered fiddleneck (*Amsinckia lunaris*), most beautiful jewel-flower (*Streptanthus albidus* ssp. *peramoenus*), pallid manzanita (*Arctostaphylos pallida*), robust monardella (*Monardella villosa* ssp. *globosa*), Tiburon buckwheat (*Eriogonum luteolum* var. *caninum*), and western leatherwood (*Dirca occidentalis*). Olberding Environmental⁴² did not detect any of these species during focused surveys of the remediation site and vicinity in August 2009 and March, April, and June 2010. As such, these species are presumed absent from the remediation site.

Of the 18 special-status animal species identified in Table 5, Alameda whipsnake (*Masticophis lateralis euryxanthus*) is the only one considered potentially present in the project vicinity. Callippe silverspot butterfly (*Speyeria callippe callippe*) and Bay checkerspot butterfly (*Euphydryas editha bayensis*) are considered absent since focused surveys for their larval host plants (*Plantago erecta*) in 2010 did not find any in or near the site.⁴³ The lack of year-round water and poor water quality associated with the intermittent drainage precludes the occurrence of California red-legged frog (*Rana draytonii*), foothill yellow-legged frog (*Rana boylei*), and western pond turtle (*Actinemys marmorata*). The remaining species are presumed absent due to a lack of habitat (e.g., tidal salt marsh, grassland, large trees, ground squirrel burrows).

Although California red-legged frog and the two federally listed butterfly species are not expected to occur on the project area, the USFWS indicated that the project had the potential to affect these species as well as Alameda whipsnake during Section 7 ESA consultation with the applicant.⁴⁴ In their formal ESA Section 7 biological assessment (BA) for the project, Olberding Environmental⁴⁵ concluded that the project *may affect, but is not likely to adversely affect*, Alameda whipsnake, and will have *no effect* on California red-legged frog, Callippe silverspot butterfly, and Bay checkerspot butterfly. All four federally listed species are further discussed below.

⁴² Olberding Environmental 2010a, op. cit.

⁴³ Olberding Environmental, Inc. 2014. United States Fish and Wildlife Service Biological Assessment for the Leona Heights Sulfur Mine Remediation and Creek Restoration Project, Alameda County, California, California. Prepared for Dr. Collin Mbanugo. February.

⁴⁴ Olberding Environmental, 2013. Kim Erickson. Email communication with LSA Associates, Inc., biologist Matt Ricketts. November 8.

⁴⁵ Olberding Environmental, 2014, op. cit.

Table 5: Special-Status Species Evaluated for the Leona Heights Sulfur Mine Remediation Project, Oakland, California

Species	Status* (Federal/State/Other)	Habitat/Blooming Period	Discussion
Plants			
<i>Amsinckia lunaris</i> Bent-flowered fiddleneck	-/-/1B	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Blooms March to June.	Habitat present in oak woodland but not found during focused special-status plant surveys in summer 2009 and spring 2010 and thus presumed absent.
<i>Arctostaphylos pallida</i> Pallid manzanita	FT/SE/1B	Shale or thin chert substrates in deciduous and coniferous forests and woodlands, chaparral, or coastal scrub. Known from fewer than 10 occurrences in the Diablo Range. Blooms December to March.	Marginal habitat present but no manzanitas observed during special-status plant surveys in 2009 and 2010 or reconnaissance survey in November 2013. Presumed absent.
<i>Cirsium andrewsii</i> Franciscan thistle	-/-/1B	Mesic sites in broadleaved upland forest, coastal bluff scrub, coastal prairie, and coastal scrub. Sometimes occurs in serpentinite. Blooms March to July.	Not expected to occur due to lack of suitable habitat. Not observed during focused surveys.
<i>Clarkia franciscana</i> Presidio clarkia	FE/SE/1B	Serpentine rock outcrops in coastal scrub and grassland. Blooms May to July.	Not expected to occur due to lack of serpentine rock outcrops. Not observed during focused surveys.
<i>Dirca occidentalis</i> Western leatherwood	-/-/1B	A variety of forest and woodland types, mostly on brushy slopes in mixed evergreen forest and foothill woodland communities. Blooms January to March.	Habitat present in oak woodland but not found during focused special-status plant surveys in summer 2009 and spring 2010 and thus presumed absent.
<i>Erigonum luteolum</i> var. <i>caninum</i> Tiburon buckwheat	-/-/1B	Serpentine soils in chaparral, grassland, cismontane woodland, and coastal prairie. Blooms May to September.	Not expected to occur due to lack of serpentine soils. Not observed during special-status plant surveys in 2009 and 2010 and thus presumed absent.
<i>Fritillaria liliacea</i> Fragrant fritillary	-/-/1B	Coastal scrub, grassland, coastal prairie; mostly in serpentine soils. Blooms February to April.	Not expected to occur due to lack of serpentine soils. Not observed during focused surveys.
<i>Helianthella castanea</i> Diablo helianthella	-/-/1B	Rocky soils in chaparral/oak woodland interface. Blooms March to June.	May occur in vicinity, but unlikely to occur on the project site due to disturbed conditions created by mine tailings.
<i>Hoita strobilina</i> Loma Prieta hoita	-/-/1B	Serpentine soils in chaparral and woodland. Blooms March to July (uncommonly into October).	Not expected to occur due to lack of serpentine soils. Not observed during focused surveys.
<i>Meconella oregana</i> Oregon meconella	-/-/1B	Coastal prairie and coastal scrub. Blooms March to April.	Marginal habitat present in grassland openings above secondary staging area, but not expected to occur on project site itself due to lack of grassland. Not observed during focused surveys.
<i>Monardella villosa</i> ssp. <i>globosa</i> Robust monardella	-/-/1B	Openings in woodland, chaparral, scrub, and annual grassland. Blooms June to July.	Marginal habitat present but not observed during special-status plant surveys in 2009 and 2010 and thus presumed absent.
<i>Plagiobothrys diffusus</i> San Francisco popcorn-flower	-/SE/1B	Coastal prairie and grassland. Blooms March to June.	Not expected to occur due to lack of grassland habitat. Not observed during focused surveys.
<i>Streptanthus albidus</i> ssp. <i>peramoenus</i> Most beautiful jewel-flower	-/-/1B	Serpentine soils in chaparral, cismontane woodland, and grassland. Blooms April to September.	Not expected to occur due to lack of serpentine soils. Not observed during special-status plant surveys in 2009 and 2010.

Table 5: Special-Status Species Evaluated for the Leona Heights Sulfur Mine Remediation Project, Oakland, California

Species	Status* (Federal/State/Other)	Habitat/Blooming Period	Discussion
<i>Stuckenia filiformis</i> ssp. <i>alpine</i> Slender-leaved pondweed	-/-/2B	Shallow freshwater marshes and swamps. Blooms May to July.	Not expected to occur due to lack of freshwater marsh. Not observed during focused surveys.
Invertebrates			
Bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	FT/-/-	Native grasslands near serpentine rock outcrops in the vicinity of San Francisco Bay. Requires stands of <i>Plantago erecta</i> for larval host plants; <i>Orthocarpus densiflorus</i> and <i>O. purpureus</i> are secondary host plants.	Not expected to occur due to lack of native grassland with serpentine rock outcrops. No host plants detected during focused surveys in March and April 2010.
Callippe silverspot butterfly <i>Speyeria callippe callippe</i>	FE/-/-	Restricted to San Bruno Mountain and Sign Hill near South San Francisco (San Mateo County), in the hills near Pleasanton (Alameda County), at Sears Point (Sonoma County), and in the hills between Vallejo and Cordelia. Host plant is <i>Viola pedunculata</i> .	Not expected to occur due to lack of native grassland with serpentine rock outcrops. No host plants detected during focused surveys in March and April 2010.
Amphibians and Reptiles			
California red-legged frog <i>Rana draytonii</i>	FT/-/CSC	Ponds, streams, drainages and associated uplands; requires areas of deep, still, and/or slow-moving water for breeding	Not expected to occur in intermittent drainage due to lack of deep pools and poor water quality due to sulfur runoff. ^{46 47}
Foothill yellow-legged frog <i>Rana boylei</i>	-/-/CSC	Partly shaded, shallow streams and riffles with a rocky substrate.	Not expected to occur in intermittent drainage due to poor water quality and heavy shading.
Western pond turtle <i>Actinemys marmorata</i>	-/-/CSC	Ponds, streams, drainages, and associated uplands.	Not expected to occur in intermittent drainage due to poor water quality and lack of year-round flow.
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	FT/ST/-	Chaparral and sage scrub with rock outcrops and an abundance of prey species such as western fence lizard (<i>Sceloporus occidentalis</i>).	May occur. Moderate-quality habitat present in scrub on hillside east of site and adjacent to haul road. Historically known to occur in Leona Heights (1953).
Birds			
Golden eagle <i>Aquila chrysaetos</i>	-/-/CFP	Rolling foothills and mountain areas. Nests in cliff-walled canyons or large trees in open areas.	Not expected to occur. Dense woodland and scrub unsuitable for foraging and lack of large trees precludes nesting.
California black rail <i>Laterallus jamaicensis coturniculus</i>	-/ST/CFP	Salt marshes bordering larger bays, also found in brackish and freshwater marshes.	Not expected to occur due to lack of tidal salt or freshwater marsh.
California clapper rail <i>Rallus longirostris obsoletus</i>	FE/SE/CFP	Tidal salt marshes with sloughs and substantial cordgrass (<i>Spartina</i> sp.) cover.	Not expected to occur due to lack of tidal salt marsh.

⁴⁶ Olberding Environmental, 2013, op. cit.

⁴⁷ Levine-Fricke. 2004. Summary Design Report and Construction Documents, Leona Heights Mine, Oakland, California. Prepared for Dr. Collin Mbanugo, March 1. Cited in Geosyntec Consultants. 2013. Remedial Design Plan, Leona Heights Sulfur Mine, Oakland, California. Project Number WW1775. October 15.

Table 5: Special-Status Species Evaluated for the Leona Heights Sulfur Mine Remediation Project, Oakland, California

Species	Status* (Federal/State/Other)	Habitat/Blooming Period	Discussion
Western snowy plover (Pacific coast population) <i>Charadrius alexandrinus nivosus</i>	FT/--	Sandy beaches, salt ponds, and salt pond levees.	Not expected to occur due to site's distance from Bay shoreline and consequent lack of habitat.
California least tern <i>Sterna antillarum browni</i>	FE/SE/CFP	Sandy beaches, alkali flats, hard-pan surfaces (salt ponds).	Not expected to occur due to site's distance from Bay shoreline and consequent lack of habitat.
Burrowing owl <i>Athene cunicularia</i>	--/CSC	Open habitats (e.g., grasslands, agricultural areas) with mammal burrows or other features (e.g., culverts, pipes, debris piles) suitable for nesting and roosting.	Not expected to occur due to lack of suitable burrows and open habitat for foraging.
Salt marsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	--/CSC	Salt, brackish, and freshwater marshes; and riparian woodlands. Nests on or near ground in low vegetation.	Not expected to occur due to lack of salt, freshwater, or brackish marsh.
Alameda song sparrow <i>Melospiza melodia pusillula</i>	--/CSC	Tidal salt marshes on the fringes of south and central San Francisco Bay. Nests primarily in pickleweed and marsh gumplant.	Not expected to occur due to lack of tidal salt marsh.
Mammals			
Salt-marsh wandering shrew <i>Sorex vagrans halicoetes</i>	--/CSC	Tidal salt marshes with abundant driftwood and other debris (for shelter and foraging).	Not expected to occur due to lack of tidal salt marsh.
Pallid bat <i>Antrozous pallidus</i>	--/CSC	Roosts in caves, tunnels, buildings, under bridges, and in tree hollows; primarily forages over a variety of habitats.	Not expected to occur due to lack of suitable roost sites.
Salt-marsh harvest mouse <i>Reithrodontomys raviventris</i>	FE/SE/CFP	Tidal salt marshes of San Francisco Bay and its tributaries. Requires tall, dense pickleweed (<i>Salicornia</i> sp.) for cover.	Not expected to occur due to lack of tidal salt marsh.
American badger <i>Taxidea taxus</i>	--/CSC	Open, dry habitats (e.g., grasslands) with friable soils.	Not expected to occur. No potential dens observed during reconnaissance survey and does not typically occur in woodland habitat.

Status: FE = federally endangered
 FT = federally threatened
 SE = State endangered
 ST = State threatened
 1B = California Rare Plant Rank (CRPR) 1B (rare, threatened, or endangered in California and elsewhere)
 2B = CRPR 2B (rare, threatened, or endangered in California, but more common elsewhere)
 CSC = California Species of Special Concern
 CFP = California Fully Protected Species

Source: LSA Associates, Inc., 2013.

Bay Checkerspot Butterfly. The Bay checkerspot butterfly is a federally threatened species that is limited to native grasslands with serpentine rock outcrops in the San Francisco Bay Area. Historically, the species occurred along the spine of the San Francisco peninsula and in a few pockets in Alameda and Contra Costa counties, but habitat loss and fragmentation, air pollution, pesticides, vehicle strikes, fire, overgrazing, gopher control, illegal collecting, and invasion of exotic grass species have greatly reduced the population.⁴⁸ The primary larval host plant is California plantain (*Plantago erecta*) and secondary host plants consist of two owl's clover species: *Castilleja densiflora* and *C. exserta*.

The closest USFWS critical habitat unit for Bay checkerspot is across the Bay, approximately 15 miles west of the project area. The USFWS has defined the following primary constituent elements (PCEs) for Bay checkerspot critical habitat: (1) the presence of annual or perennial grasslands with little or no overstory that provide north-south and east-west slopes with a tilt of more than 7 degrees for larval host plant survival; (2) the presence of the primary larval host plant, California plantain, and at least one of the secondary host plants; (3) the presence of adult nectar sources for feeding (e.g., desert parsley [*Lomatium* sp.], California goldfields [*Lasthenia californica*], tidy tips [*Layia platyglossa*]); (4) soils derived from serpentinite ultramafic rock; and (5) the presence of stable holes and cracks in the soil, and surface rock outcrops that provide shelter for the larval stage of the Bay checkerspot during summer diapause.⁴⁹ None of these PCEs are present in the project area. The CNDDDB includes only two occurrences, both during the 1970s, within 5 miles of the project area: a small colony at Joaquin Miller Park approximately 1.9 miles to the northwest (CNDDDB Occurrence No. 10) and historic colonies in San Leandro that were extirpated due to habitat loss, approximately 1.2 miles to the southeast (CNDDDB Occurrence No. 11). Olberding Environmental conducted focused surveys for Bay checkerspot host and nectar plants in and adjacent to the remediation site in March and April 2010 with negative results. In addition, no Bay checkerspots were observed.⁵⁰ Given the lack of host plants, the presence of sulfur mine tailings and consequent lack of native grassland, and lack of recent known occurrences in the project vicinity, this species is presumed absent from the project area.

Callippe Silverspot Butterfly. The callippe silverspot is a federally endangered species that occurs in grasslands with a significant component of native grasses, shallow rocky soils, or numerous rock outcrops. For a given site to be considered potential habitat, grasslands must contain sufficient densities of Johnny jump-up (*Viola pedunculata*), the only larval host plant for the species. Larvae of this species feed on the host plant from March to May and the typical flight season runs from May to July. On the San Francisco peninsula, the species is now only known from San Bruno Mountain.⁵¹ In the East Bay, it formerly ranged from Richmond in the north to Castro Valley in Alameda County, but is now only known from an undisclosed city park in Alameda County.⁵² Since 1988, it has been

⁴⁸ U.S. Fish and Wildlife Service, 1998. Recovery plan for serpentine soil species of the San Francisco Bay Area. Portland, OR.

⁴⁹ U.S. Fish and Wildlife Service, 2008. Endangered and threatened wildlife and plants; designation of critical habitat for the Bay checkerspot butterfly (*Euphydryas editha bayensis*). Federal Register 73(166):50406–50452.

⁵⁰ Olberding Environmental, 2014, op. cit.

⁵¹ Essig Museum of Entomology. 2013. California's Endangered Insects: Callippe Silverspot Butterfly. University of California, Berkeley. Website: essig.berkeley.edu/endins/callippe.htm (accessed November 11, 2013).

⁵² Ibid.

observed at San Bruno Mountain and Sign Hill near South San Francisco (San Mateo County), in the hills near Pleasanton (Alameda County), at Sears Point (Sonoma County), and in the hills between Vallejo and Cordelia.⁵³

There are no known callippe silverspot occurrences within 5 miles of the project area. Olberding Environmental conducted focused surveys for Johnny jump-up in and adjacent to the remediation site in March and April 2010 with negative results.⁵⁴ In addition, no callippe silverspots were observed.⁵⁵ Given the lack of host plants, the presence of sulfur mine tailings and consequent lack of native grassland, and lack of recent known occurrences in the project vicinity, this species is presumed absent from the site.

California Red-Legged Frog. California red-legged frog is a federally threatened species that occurs in and along freshwater marshes, streams, ponds, and other semi-permanent water sources. Optimal habitat for this species contains dense emergent or shoreline riparian vegetation closely associated with deep (i.e., greater than 2.3 feet), still, or slow-moving water. Although the species can occur in intermittent streams and ponds, they are unlikely to persist in streams in which all surface water disappears.⁵⁶ Suitable breeding ponds and pools usually have a minimum depth of 20 inches, but CRLF do sometimes breed successfully in pools as shallow as 10 inches.⁵⁷ Regardless of water depth, suitable breeding habitat must contain water during the entire development period for eggs and tadpoles.

The CNDDDB contains three red-legged frog occurrences within 5 miles of the project area, with the closest consisting of a 1931 specimen collection from Thornhill Pond in Berkeley approximately 3.5 miles to the north (CNDDDB Occurrence No. 8). The most recent occurrence within 5 miles is an October 14, 2008, observation of nine adults at the San Leandro Reservoir spillway basin at Miller Creek, approximately 4.9 miles to the south (CNDDDB Occurrence No. 1071). The project area does not support habitat for red-legged frogs. The intermittent drainage at the remediation site does not contain suitable aquatic conditions due to the absence of deep pools, emergent or shoreline vegetation, and poor water quality from sulfur runoff. In addition, the presence of urban development and several roads between the frogs at Miller Creek and the project area precludes dispersal to the project area from this location. Roads are an important human-caused landscape component hindering amphibian movement and thus fragmenting amphibian populations.^{58, 59} As such, California red-legged frog is presumed absent from the project area.

⁵³ U.S. Fish and Wildlife Service. 2009. Species account: Callippe Silverspot Butterfly (*Speyeria callippe callippe*). Sacramento Fish and Wildlife Office, Sacramento, CA.

⁵⁴ Olberding Environmental, 2014, op. cit.

⁵⁵ Ibid.

⁵⁶ Jennings, M.R. and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. Final report to California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova.

⁵⁷ Fellers, G.M. 2005. California red-legged frog. In M. Lannoo, editor. Amphibian Declines: The Conservation Status of United States Species. University of California Press, Berkeley.

⁵⁸ U.S. Fish and Wildlife Service, 2002. Recovery plan for the California red-legged frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, OR.

⁵⁹ Reh, W. and A. Seitz, 1990. The influence of land use on the genetic structure of populations of the common frog (*Rana temporaria*). Biological Conservation 54:239–249.

Alameda Whipsnake. Alameda whipsnake is a federally and State threatened species that primarily occurs in areas that support scrub communities, including mixed chaparral, chamise-redshank chaparral, coastal scrub, and annual grassland and oak woodlands that lie adjacent to scrub habitats. Within these plant communities, specific habitat features needed by whipsnakes include, but are not limited to, small mammal burrows, rock outcrops, talus, and cover types that provide temperature regulation, shelter from predators, egg-laying sites, and winter hibernation refuges. Many of these same elements are important in maintaining prey species (e.g., western fence lizards).

The CNDDDB contains 44 records of Alameda whipsnake within 5 miles of the project area.⁶⁰ The closest of these is an October 12, 2008, capture at the Lawrence Berkeley National Laboratory on the west of Telegraph Canyon (CNDDDB Occurrence No. 14). A 1953 occurrence described as occurring in Leona Heights is presumed to come from the scrub habitat adjacent to the project area. Alameda whipsnakes have also been observed and collected from the Leona Heights Open Space Preserve, less than 4 miles away, and 0.5 mile north of Pinehurst Road and Skyline Drive, approximately 3.7 miles to the north. In 2002, an Alameda whipsnake was found dead on Pinehurst Road, approximately 3.4 miles north of the project area.⁶¹ Given the abundance of both recent and historical records in the project vicinity and the presence of scrub habitat immediately adjacent to the project area, there is moderate potential for this species to occur.

5. Jurisdictional Waters

Olberding Environmental⁶² identified 0.152 acre of potential waters of the United States on the remediation site during December 5, 2005, wetland delineation, consisting of the intermittent drainage channel that runs northeast to southwest through the site

6. Special-Status Natural Communities

The CDFW tracks the occurrences of natural plant communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. Many special-status natural communities support special-status plants and animals and are addressed under CEQA as habitat for those species. Northern coastal salt marsh, serpentine bunchgrass, and northern maritime chaparral are the only special-status natural communities within 5 miles of the site,⁶³ but none of these are present on the project area. The remediation site does not support any riparian vegetation along the intermittent drainage. No other special-status natural communities have been observed on the project area.

City of Oakland Standard Conditions of Approval. The City of Oakland provides the following Standard Conditions of Approval regarding biological resources. In the event of a conflict between the City of Oakland Standard Conditions of Approval and the permits issued by the regulatory agencies, the permit conditions will apply.

⁶⁰ California Department of Fish and Wildlife, 2013, op. cit.

⁶¹ Olberding Environmental, 2014, op. cit.

⁶² Olberding Environmental, Inc. 2006. U.S. Army Corps of Engineers Wetland Delineation for the Leona Heights Mine Closure Project, Alameda County, California. Prepared for Dr. Collin Mbango. April.

⁶³ California Department of Fish and Wildlife, 2013, op. cit.

SCA BIO-1: Whipsnake Habitat, Biological Monitor. Prior to issuance of a demolition, grading, or building permit and ongoing throughout demolition, grading, and/or construction:

If the project is located within confirmed Alameda Whipsnake Habitat area, the project applicant shall hire an on-site biological monitor who is qualified to identify Alameda Whipsnakes. The on-site biological monitor shall instruct the project superintendent and the construction crews (primarily the clearing, demolition and foundation crews) of the potential presence, status and identification of Alameda Whipsnakes. The biological monitor shall also provide information to the Planning and Zoning Division on the steps to take if a whipsnake is seen on the project site, including who to contact, to ensure that whipsnakes are not harmed or killed, as regulated by the federal Endangered Species Act and California Endangered Species Act.

SCA BIO-2: Whipsnake Habitat, Placement of Debris. Prior to issuance of a demolition, grading, or building permit and throughout construction:

If the project is located within confirmed Alameda Whipsnake Habitat area, the project applicant shall ensure that the placement of construction debris is limited to the area immediate adjacent to the foundation of the proposed buildings or and to the area between the foundation and the street. Install flexible construction fencing at the limit of work line (approximately ten feet beyond the foundation of the proposed building other than in the direction of the street). Such construction fencing shall limit the placement of construction materials and construction debris to inside the fencing.

SCA BIO-3: Whipsnake Habitat, Barrier Fence. Prior to issuance of a demolition, grading, or building permit and throughout construction:

If the project is located within confirmed Alameda Whipsnake Habitat area, the project applicant shall install a solid fence along the real limit of construction line, and for a distance of insert distance perpendicular to the real line, to prevent whipsnakes from entering the work site. The snake barrier shall be constructed as follows and shall remain in place throughout the entire construction period:

- a. Plywood sheets at least three feet in height;
- b. 4 feet, 6 inches of the sheets shall be buried into the ground;
- c. Soil back-filled against the plywood fence to create a solid barrier at the ground;
- d. Plywood sheets maintained in an upright position with wooden or masonry stakes;
- e. Ends of each plywood sheet overlapped to ensure a continuous barrier.

SCA BIO-4: Whipsnake Habitat, Downsloping Lots. Prior to issuance of a demolition, grading, or building permit and throughout construction:

If the project is located within confirmed Alameda Whipsnake Habitat area, the project applicant shall install erosion control devices, such as hay bales, at the downhill limit of construction line to prevent rocks and soil from moving downhill.

SCA BIO-5: Tree Removal During Breeding Season. To the extent feasible, removal of any tree and/or other vegetation suitable for nesting birds shall not occur during the breeding season of March 15 and August 15. If tree removal must occur during the breeding season, all sites shall be surveyed by a qualified biologist to verify the presence or absence of nesting raptors or other birds. Pre-removal surveys shall be conducted within 15 days prior to start of work from March 15 through May 31, and within 30 days prior to the start of work from June 1 through August 15. The pre-removal surveys shall be submitted to the Planning and Zoning Division and the Tree Services Division of the Public Works Agency. If the survey indicates the potential presence of nesting raptors or other birds, the biologist shall determine an appropriately sized buffer around the nest in which no work will be allowed until the young have successfully fledged. The size of the nest buffer will be determined by the biologist in consultation with the CDFW, and will be based to a large extent on the nesting species and its sensitivity to disturbance. In general, buffer sizes of 200 feet for raptors and 50 feet for other birds should suffice to prevent disturbance to birds nesting in the urban environment, but these buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near the nest.

SCA BIO-6: Tree Removal Permit. Prior to issuance of a demolition, grading, or building permit:

Prior to removal of any protected trees, per the Protected Tree Ordinance, located on the project site or in the public right-of-way adjacent to the project, the project applicant must secure a tree removal permit from the Tree Division of the Public Works Agency, and abide by the conditions of that permit.

SCA BIO-7: Tree Replacement Plantings. Prior to issuance of a final inspection of the building permit:

Replacement plantings shall be required for erosion control, groundwater replenishment, visual screening and wildlife habitat, and in order to prevent excessive loss of shade, in accordance with the following criteria:

- a. No tree replacement shall be required for the removal of nonnative species, for the removal of trees which is required for the benefit of remaining trees, or where insufficient planting area exists for a mature tree of the species being considered.
- b. Replacement tree species shall consist of *Sequoia sempervirens* (Coast Redwood), *Quercus agrifolia* (Coast Live Oak), *Arbutus menziesii* (Madrone), *Aesculus californica* (California Buckeye) or *Umbellularia californica* (California Bay Laurel) or other tree species acceptable to the Tree Services Division.
- c. Replacement trees shall be at least of twenty-four (24) inch box size, unless a smaller size is recommended by the arborist, except that three fifteen (15) gallon size trees may be substituted for each twenty-four (24) inch box size tree where appropriate.
- d. Minimum planting areas must be available on site as follows:
 - a. For *Sequoia sempervirens*, three hundred fifteen square feet per tree;
 - b. For all other species listed in #2 above, seven hundred (700) square feet per tree.
- e. In the event that replacement trees are required but cannot be planted due to site constraints, an in lieu fee as determined by the master fee schedule of the city may be substituted for required replacement plantings, with all such revenues applied toward tree planting in city parks, streets and medians.
- f. Plantings shall be installed prior to the issuance of a final inspection of the building permit, subject to seasonal constraints, and shall be maintained by the project applicant

until established. The Tree Reviewer of the Tree Division of the Public Works Agency may require a landscape plan showing the replacement planting and the method of irrigation. Any replacement planting which fails to become established within one year of planting shall be replanted at the project applicant's expense.

SCA BIO-8: Tree Protection During Construction. Prior to issuance of a demolition, grading, or building permit:

Adequate protection shall be provided during the construction period for any trees which are to remain standing, including the following, plus any recommendations of an arborist:

- a. Before the start of any clearing, excavation, construction or other work on the site, every protected tree deemed to be potentially endangered by said site work shall be securely fenced off at a distance from the base of the tree to be determined by the City Tree Reviewer. Such fences shall remain in place for duration of all such work. All trees to be removed shall be clearly marked. A scheme shall be established for the removal and disposal of logs, brush, earth and other debris which will avoid injury to any protected tree.
- b. Where proposed development or other site work is to encroach upon the protected perimeter of any protected tree, special measures shall be incorporated to allow the roots to breathe and obtain water and nutrients. Any excavation, cutting, filing, or compaction of the existing ground surface within the protected perimeter shall be minimized. No change in existing ground level shall occur within a distance to be determined by the City Tree Reviewer from the base of any protected tree at any time. No burning or use of equipment with an open flame shall occur near or within the protected perimeter of any protected tree.
- c. No storage or dumping of oil, gas, chemicals, or other substances that may be harmful to trees shall occur within the distance to be determined by the Tree Reviewer from the base of any protected trees, or any other location on the site from which such substances might enter the protected perimeter. No heavy construction equipment or construction materials shall be operated or stored within a distance from the base of any protected trees to be determined by the tree reviewer. Wires, ropes, or other devices shall not be attached to any protected tree, except as needed for support of the tree. No sign, other than a tag showing the botanical classification, shall be attached to any protected tree.
- d. Periodically during construction, the leaves of protected trees shall be thoroughly sprayed with water to prevent buildup of dust and other pollution that would inhibit leaf transpiration.
- e. If any damage to a protected tree should occur during or as a result of work on the site, the project applicant shall immediately notify the Public Works Agency of such damage. If, in the professional opinion of the Tree Reviewer, such tree cannot be preserved in a healthy state, the Tree Reviewer shall require replacement of any tree removed with another tree or trees on the same site deemed adequate by the Tree Reviewer to compensate for the loss of the tree that is removed.
- f. All debris created as a result of any tree removal work shall be removed by the project applicant from the property within two weeks of debris creation, and such debris shall be properly disposed of by the project applicant in accordance with all applicable laws, ordinances, and regulations.

SCA BIO-9: Regulatory Permits and Authorizations. Prior to issuance of a demolition, grading, or building permit within vicinity of the creek:

Prior to construction within the vicinity of the creek, the project applicant shall obtain all necessary regulatory permits and authorizations from the U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife, and the City of Oakland, and shall comply with all conditions issued by applicable agencies. Required permit approvals and certifications may include, but not be limited to the following:

- a. U.S. Army Corps of Engineers (Corps): Section 404. Permit approval from the Corps shall be obtained for the placement of dredge or fill material in Waters of the U.S., if any, within the interior of the project site, pursuant to Section 404 of the federal Clean Water Act.
- b. Regional Water Quality Control Board (RWQCB): Section 401 Water Quality Certification. Certification that the project will not violate state water quality standards is required before the Corps can issue a 404 permit, above.
- c. California Department of Fish and Wildlife (CDFW): Section 1602 Lake and Streambed Alteration Agreement. Work that will alter the bed or bank of a stream requires authorization from CDFW.

SCA BIO-10: Erosion, Sedimentation, and Debris Control Reminders. The project applicant shall submit an erosion and sedimentation control plan for review and approval by the Building Services Division. All work shall incorporate all applicable "Best Management Practices (BMPs) for the construction industry, and as outlined in the Alameda Countywide Clean Water Program pamphlets, including BMP's for dust, erosion and sedimentation abatement per Chapter Section 15.04 of the Oakland Municipal Code. The measures shall include, but are not limited to, the following:

- a. On sloped properties, the downhill end of the construction area must be protected with silt fencing (such as sandbags, filter fabric, silt curtains, etc.) and hay bales oriented parallel to the contours of the slope (at a constant elevation) to prevent erosion into the creek.
- b. In accordance with an approved erosion control plan, the project applicant shall implement mechanical and vegetative measures to reduce erosion and sedimentation, including appropriate seasonal maintenance. One hundred (100)-percent degradable erosion control fabric shall be installed on all graded slopes to protect and stabilize the slopes during construction and before permanent vegetation gets established. All graded areas shall be temporarily protected from erosion by seeding with fast growing annual species. All bare slopes must be covered with staked tarps when rain is occurring or is expected.
- c. Minimize the removal of natural vegetation or ground cover from the site in order to minimize the potential for erosion and sedimentation problems. Maximize the replanting of the area with native vegetation as soon as possible.
- d. All work in or near creek channels must be performed with hand tools and by a minimum number of people. Immediately upon completion of this work, soil must be repacked and native vegetation planted.
- e. Install filter materials (such as sandbags, filter fabric, etc.) acceptable to the Engineering Division at the storm drain inlets nearest to the project site prior to the start of the wet weather season (October 15); site dewatering activities; street washing activities; saw

- cutting asphalt or concrete; and in order to retain any debris flowing into the City storm drain system. Filter materials shall be maintained and/or replaced as necessary to ensure effectiveness and prevent street flooding.
- f. Ensure that concrete/granite supply trucks or concrete/plaster finishing operations do not discharge wash water into the creek, street gutters, or storm drains.
 - g. Direct and locate tool and equipment cleaning so that wash water does not discharge into the creek.
 - h. Create a contained and covered area on the site for storage of bags of cement, paints, flammables, oils, fertilizers, pesticides, or any other materials used on the project site that have the potential for being discharged to the storm drain system by the wind or in the event of a material spill. No hazardous waste material shall be stored on site.
 - i. Gather all construction debris on a regular basis and place them in a dumpster or other container which is emptied or removed on a weekly basis. When appropriate, use tarps on the ground to collect fallen debris or splatters that could contribute to stormwater pollution.
 - j. Remove all dirt, gravel, refuse, and green waste from the sidewalk, street pavement, and storm drain system adjoining the project site. During wet weather, avoid driving vehicles off paved areas and other outdoor work.
 - k. Broom sweep the street pavement adjoining the project site on a daily basis. Caked-on mud or dirt shall be scraped from these areas before sweeping. At the end of each workday, the entire site must be cleaned and secured against potential erosion, dumping, or discharge to the creek, street, gutter, and storm drains.
 - l. All erosion and sedimentation control measures implemented during construction activities, as well as construction site and materials management shall be in strict accordance with the control standards listed in the latest edition of the Erosion and Sediment Control Field Manual published by the Regional Water Quality Board (RWQB).
 - m. Temporary fencing is required for sites without existing fencing between the creek and the construction site and shall be placed along the side adjacent to construction (or both sides of the creek if applicable) at the maximum practical distance from the creek centerline. This area shall not be disturbed during construction without prior approval of Planning and Zoning.
 - n. All erosion and sedimentation control measures shall be monitored regularly by the project applicant. The City may require erosion and sedimentation control measures to be inspected by a qualified environmental consultant (paid for by the project applicant) during or after rain events. If measures are insufficient to control sedimentation and erosion then the project applicant shall develop and implement additional and more effective measures immediately.

SCA BIO-11: Creek Protection Plan.

- a. The approved creek protection plan shall be included in the project drawings submitted for a building permit (or other construction-related permit). The project applicant shall implement the creek protection plan to minimize potential impacts to the creek during and after construction of the project. The plan shall fully describe in plan and written form all erosion, sediment, stormwater, and construction management measures to be implemented on-site.

- b. If the plan includes a stormwater system, all stormwater outfalls shall include energy dissipation that slows the velocity of the water at the point of outflow to maximize infiltration and minimize erosion. The project shall not result in a substantial increase in stormwater runoff volume or velocity to the creek or storm drains.

SCA BIO-12: Creek Monitoring. A qualified geotechnical engineer and/or environmental consultant shall be retained and paid for by the project applicant to make site visits during all grading activities; and as a follow-up, submit to the Building Services Division a letter certifying that the erosion and sedimentation control measures set forth in the Creek Protection Permit submittal material have been instituted during the grading activities.

SCA BIO-13: Revegetation Plan. The project applicant shall develop a final detailed revegetation plan for review and approval by the Planning and Zoning Division prepared by a licensed landscape architect or other qualified person. Such a plan shall include a planting schedule, detailing plant types and locations, and a system for temporary irrigation of plantings.

- a. Plant and maintain only drought-tolerant native plants on the site where appropriate.
- b. All landscaping indicated on the approved revegetation plan shall be installed prior to the issuance of a Final inspection of the building permit, unless bonded pursuant to the provisions of Section 17.124.50 of the Oakland Planning Code.
- c. All landscaping areas shown on the approved revegetation plan shall be maintained in neat and safe conditions, and all plants shall be maintained in good growing condition and, whenever necessary replaced with new plant materials to ensure continued compliance with all applicable revegetation requirements. All paving or impervious surfaces shall occur only on approved areas.

7. WILDLIFE AND PLANT SPECIES

Would the Project:

1. *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

As noted above, the California red-legged frog and the Callippe silverspot and bay checkerspot butterflies are presumed absent from the site as there is a lack of habitat, disturbed conditions (i.e., acid mine drainage), and lack of host plants on the site. Project construction could result in mortality, injury, and harassment of Alameda whipsnake by vehicle strikes from equipment traffic or other construction-related activity. Alameda whipsnakes potentially inhabiting the project area and adjacent scrub would likely be subject to temporary harassment from construction-related noise and human presence. Harassment, mortality, or injury could also result from heavy equipment vibration causing the collapse of hibernaculum and subsequent displacement of individual snakes. Construction activities would also temporarily impede Alameda whipsnake movement through the project area. A temporary reduction in natural food sources may also occur from habitat disturbance.⁶⁴ Permanent habitat loss is not expected since project impacts will be almost exclusively limited to the waste rock

⁶⁴ Olberding Environmental, 2014, op. cit.

deposits on the remediation site. Therefore, the proposed project would have *potentially significant impacts unless mitigation incorporated* as described below.

Measures to Implement Standard Conditions of Approval. The following measures from the project’s biological assessment⁶⁵ and Incidental Take Permit application will reduce potential impacts to Alameda whipsnake to a less-than-significant level.

Mitigation Measure BIO-1: Compensatory Measures. The applicant proposes the following measure to compensate for impacts to potential habitat for Alameda whipsnake, California red-legged frog (CRLF), Bay checkerspot butterfly, and callippe silverspot butterfly.

Compensation for potential impacts to federally and State listed species will be based on the amount of permanent and temporary loss of potential habitat, as shown in Table 6. Should the determination of permanent versus temporary habitat loss increase or decrease as a result of project construction, the amount of compensation may be revised.

Compensation for permanent and temporary impacts will be achieved through either the purchase of credits from an approved conservation bank or another agency-approved mitigation site. The applicant is proposing to conserve 3 acres of habitat for each acre permanently impacted and 1 acre of habitat for each acre temporarily impacted as shown below in Table 6.

Table 6: Habitat Loss and Compensation

Level of Effect	Location	Compensation Ratio	Area of Effects	Area of Compensation
Permanent	Project Site	3:1	1.26 acres	3.78 acres
Temporary	Primary Staging Area at Project Site		Included in 1.26 acres above	0
	Leona Lodge Staging Area	1:1	Compacted dirt portion of staging area (0.08 acres; 3,500 square feet)	0.08
Total			1.34 acres	3.86 acres

Note: Area of effects based on limits of disturbance determined by Aiguo Xu in personal communication with LSA Associates in March 2014. The compensation ratios are the typical compensation ratios used by the USFWS and CDFW for impacts to potential special-status habitat used by the Alameda whipsnake.

Source: Olberding Environmental, 2014.

⁶⁵ Ibid.

Implementation Measure BIO-2: General Measures to Protect Biological Resources. The applicant or permittee shall implement the following measures to avoid and/or minimize impacts on Alameda Whipsnake:

A. Administrative Measures

1. Legal Compliance. Permittee shall comply with all applicable State, federal, and local laws in existence on the effective dates of the permits or adopted thereafter.
2. CEQA Compliance. Permittee shall implement and adhere to the mitigation measures related to the State and federally listed species in the Biological Resources section of the CEQA document adopted by the CEQA lead agency, City of Oakland, for the proposed project.
3. Lake and Streambed Alteration Agreement Compliance. Permittee shall implement and adhere to the mitigation measures and conditions related to Alameda whipsnake in the Lake and Streambed Alteration Agreement for the project when it is issued by CDFW.
4. ESA Compliance. Permittee shall implement and adhere to the terms and conditions related to the Alameda whipsnake in the Biological Opinion to be issued by the USFWS for the project pursuant to the federal Endangered Species Act (ESA), unless those terms and conditions are less protective of the Alameda whipsnake or conflict with the conditions of the Incidental Take Permit.
5. Incidental Take Permit Time Frame Compliance. Permittee shall fully implement and adhere to the conditions of the Incidental Take Permit within the time frames set forth in the Incidental Take Permit.
6. Documentation at Project Site. The permittee will ensure a readily available copy of all permits (404 Permit, 401 Water Quality Certification, 1600 Streambed Alteration Agreement, Biological Opinion, and Incidental Take Permit) and California Environmental Quality Act (CEQA) documents are maintained by the construction foreman/manager on the project site whenever earthmoving and/or construction is taking place. The name and telephone number of the construction foreman/manager shall be provided to the Service and CDFW prior to project groundbreaking.
7. Providing Permits and Agreements to Persons at Project Site. The permittee shall provide copies of permits, agreements and any extensions and amendments to the permits and agreements to all persons who will be working on the project at the project site on behalf of permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.
8. Notification of Conflicting Provisions. The permittee shall notify the Service and CDFW if permittee determines or learns that any provision in the permits or agreements might conflict with a provision imposed on the project by another local, State, or federal agency. In that event, the permittee shall contact the Service and CDFW to resolve any conflict.
9. Inspections. Service or CDFW personnel or agents may inspect the work performed at the project site at any time. As a result of field inspection, Service or CDFW may require that additional conditions be applied to protect sensitive

biological resources. Such conditions may be amended into the Biological Opinion or Incidental Take Permit.

10. Consistency with Plans. All work shall be completed in accordance with the plans and drawings submitted with the permit applications.
11. Access to Property Not Owned by Permittee. Neither the Biological Opinion nor the Incidental Take Permit grants the permittee authority to enter, use, or otherwise encroach upon the property rights of individuals or organizations not party to the Biological Opinion or Incidental Take Permit. The permittee shall obtain written authorization from outside parties, in accordance with applicable laws, if access to property not owned by permittee is necessary.
12. Notification of Work Initiation/Completion. The permittee will notify the Service and CDFW Bay Delta Region 48 hours prior to the initiation and following completion of work.

B. Avoidance and Minimization Measures

1. Work Period. Work within the area containing or immediately adjacent to aquatic habitats shall be restricted to periods with minimal or no stream flow or precipitation to protect aquatic species and habitat. The approved work period for these areas is from April 15 to October 15. No phase of the project shall be initiated if work and installation of associated erosion control measures cannot be completed prior to the onset of a storm event predicted by 72-hour weather forecasts from the National Weather Service. If an unanticipated storm event occurs, the permittee shall inspect all sites currently under construction and scheduled to begin work within 72 hours for indications of bank erosion and/or channel sedimentation; if noticeable erosion or sedimentation has occurred, the permittee shall implement additional erosion control features and consult with CDFW Bay Delta Region regarding corrective actions. Revegetation work above the mean high water level is not confined to the work period specified above.
2. Work Hours. All grading activities will cease one half hour before sunset and will not begin prior to one half hour before sunrise. No nighttime construction will be allowed without prior written approval by the Service and CDFW.
3. Designated Representative. Before starting any construction activity including clearing and grubbing, the permittee shall designate a representative (Designated Representative) responsible for communications with the Service and CDFW and overseeing compliance with the biological opinion and Incidental Take Permit.
4. Notification before Commencement. The Designated Representative shall notify the Service and CDFW 14 calendar days before any construction activity including clearing and grubbing.
5. Designated Biologist. At least 14 days prior to any construction activity, the permittee will submit to the Service and CDFW in writing the name, qualifications, business address and contact information of a biological monitor (Designated Biologist). Permittee shall ensure that the Designated Biologist is knowledgeable and experienced in the biology, natural history, collecting, and handling of the Alameda whipsnake. The Designated Biologist shall be

responsible for monitoring all construction activities to help minimize and fully mitigate or avoid the incidental take of individual Alameda whipsnakes and to minimize disturbance to the habitat.

6. Designated Biologist Authority. To ensure compliance with the Biological Opinion and the Incidental Take Permit, the Designated Biologist shall have authority to immediately stop any activity that is not in compliance with the Biological Opinion and Incidental Take Permit, and/or to order any reasonable measure to avoid the unauthorized take of an Alameda whipsnake or a species not covered by the Biological Opinion or Incidental Take Permit.
7. Notification of Non-compliance. The Designated Representative shall immediately notify the Service and CDFW in writing if it determines that the permittee is not in compliance with any conditions, terms, or requirements of the Biological Opinion or Incidental Take Permit, including but not limited to any actual or anticipated failure to implement measures within the time period identified in the permit. The Designated Representative shall report any non-compliance to the Service and CDFW within 24 hours.
8. Photographic Documentation of Work. Prior to commencement of work, the Designated Biologist shall identify a minimum of ten vantage points that offer representative views of the project site and work areas. The Designated Biologist shall photograph the project site from each of the identified points, noting the GPS coordinates, compass direction and magnification/resolution of each photo. On a monthly basis, Designated Biologist shall photograph the project site from each of the established photo points. Upon completion of work, the Designated Biologist shall photograph post-project conditions from the photo points using the same coordinates, direction and magnification as pre-project photos. Labeled digital copies of pre- and post-project photographs shall be sent to the Service and the CDFW with the monthly compliance reports and the post-construction compliance report.
9. Pre-Construction Training. Prior to construction activities, an employee education program will be conducted regarding federally- and State-listed threatened and endangered species that may be affected by the proposed project. At minimum, the program will consist of a brief presentation by the Designated Biologist knowledgeable in endangered species biology and legislative protection to explain concerns to contractors, their employees, and agency personnel involved in the project. The program will include the following: a description of the species and their habitat needs; any reports of occurrences in the project area; an explanation of the status of each threatened and endangered species and their protection under the federal and state Endangered Species Acts; and a list of measures being taken to reduce impacts to the species during project construction and implementation. Fact sheets conveying this information will be prepared for distribution to the above-mentioned people and anyone else who may enter the project area.
10. Pre-Construction Survey Prior to Any Construction. Regardless of when construction occurs, any construction or mitigation implementation activities that occur in appropriate wetland or riparian habitats will be preceded by pre-construction surveys. The Designated Biologist will conduct one or more surveys

for Alameda whipsnake 14 to 30 days before the start of any ground disturbance or construction activities that may impact these species. This survey will include, at minimum, all areas that may be disturbed during construction including the project site and temporary staging areas and haul roads. The results of this pre-construction survey will be submitted to the Service and CDFW within five days, or immediately, if a whipsnake or any other sign of their presence is discovered.

11. Ongoing Pre-Construction Surveys. The Designated Biologist will complete walking pre-construction surveys of the construction area prior to earthmoving and they shall follow the earthmoving equipment while construction activities are being conducted to look for Alameda whipsnakes. If an Alameda whipsnake is discovered, the Designated Biologist will move the animal to a safe nearby location (e.g., mouth of a ground squirrel burrow or opening of a rock outcrop at a safe, nearby location and monitored until it is determined that they are not imperiled by predators or other dangers. If an Alameda whipsnake is found in open construction areas, the Designated Biologist will halt construction and allow the animal to disperse on its own. Only the Designated Biologist will be allowed to capture or handle Alameda whipsnakes.
12. Biological Monitoring. The Designated Biologist will be on-site during all activities, including ground breaking, earth-moving, and construction activities, that could result in the "take" of the Alameda whipsnake. The Designated Biologist shall have the authority to stop work if any special-status species are found and shall notify the Service and the CDFW within 24 hours of any cessation of work. Each morning prior to commencement of project work, the Designated Biologist shall inspect the work site, including excavated areas, to ensure that special-status species identified as potentially present are not within the project area.
13. Construction Monitoring Notebook. The biologists monitoring on-site construction activities shall maintain a construction monitoring notebook on-site throughout the construction period. The construction monitoring notebook shall include a copy of the Biological Opinion and Incidental Take Permit with attachments, and a list of signatures of all personnel who have successfully completed the pre-construction training. Permittee shall ensure a copy of the construction-monitoring notebook is available for review at the project site upon request by the Service or CDFW.
14. Staging Areas. Vegetation disturbance at the staging areas and along the haul route shall be minimized.
15. No Pets. No pets will be permitted in the project site during the construction period. Signage and fencing will be installed as necessary to inform local residents of the presence of threatened and endangered species and off-leash restrictions.
16. Construction Fencing. The construction area shall be delineated with high visibility temporary fencing at least 4 feet in height, flagging, or other barrier to prevent encroachment of construction personnel and equipment outside of the construction area. Such fencing shall be inspected and maintained daily until

completion of the project. The fencing will be removed only when all construction equipment is removed from the site.

17. Wildlife Exclusion Fencing. Wildlife exclusion fencing will be used to prevent listed species from entering the project area. Exclusion fencing will be at least 3 feet high and the lower 6 inches of the fence will be buried in the ground to prevent animals from crawling under. The remaining 2.5 feet will be left above ground to serve as a barrier for animals moving on the ground surface. The fence will be pulled taut at each support to prevent folds or snags. Fencing shall be installed and maintained in good condition during all construction activities. Such fencing shall be inspected and maintained daily until completion of the project. The fencing will be removed only when all construction equipment is removed from the site. Wildlife exclusion fencing will be installed around the project site and the staging areas.
18. Prevention of Animal Entrapment. To prevent inadvertent entrapment of Alameda whipsnakes during construction, the Designated Biologist and/or construction foreman/manager will ensure all excavated, steep-walled holes or trenches more than one-foot deep are completely covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks or inspected by the Designated Biologist or foreman/manager. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals by the Designated Biologist and/or construction foreman/manager. If at any time a trapped whipsnake is discovered, a biologist permitted and authorized by the Service and CDFW to move Alameda whipsnakes will move the animal to a safe nearby location (e.g., mouth of a burrow or rock opening in the on-site conservation area) and monitored until it is determined that they are not imperiled by predators or other dangers. Alameda whipsnakes will not be moved from the project site without authorization of the Service and CDFW.
19. Storage of Construction Pipes, Culverts and other Equipment. All construction pipes, culverts, or similar structures that are stored at a construction site for one or more overnight periods will be either securely capped prior to storage or thoroughly inspected by the Designated Biologist and/or the construction foreman/manager for these animals before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a whipsnake is discovered inside a pipe, a biologist permitted and authorized by the Service and CDFW to move Alameda whipsnakes will move the animal to a safe nearby location (e.g., mouth of a ground squirrel burrow or opening in a rock outcrop in the on-site conservation area) and monitor it until it is determined that it is not imperiled by predators or other dangers.
20. Equipment Storage and Stationary Operation. Staging and storage areas for equipment, materials, fuels, lubricants and solvents shall be located outside of any drainage areas. Stationary equipment such as motors, pumps, generators, compressors and welders, located adjacent to drainageways, shall be positioned over drip-pans. Any equipment or vehicles driven and/or operated in proximity to drainages must be checked and maintained daily. Vehicles must be moved away from the drainageways prior to refueling and lubrication.

21. Vehicle Speeds. Project-related vehicles will observe a 15 miles per hour speed limit in the project and staging areas, except on City and County roads, and State highways.
22. Vehicle Restrictions. All project-related vehicle traffic will be restricted to established roads, construction areas, designated haul routes, and other designated areas. Any vehicle movement along the haul routes will require a Biological Monitor to clear the routes prior to use. These areas will also be included in pre-construction surveys and, to the maximum extent possible, be established in locations disturbed by previous activities to prevent further adverse effects. Sensitive habitat areas shall be delineated with high visibility flagging or fencing to prevent encroachment of construction personnel and equipment into any sensitive areas during project work activities. These areas include, but are not limited to, on-site drainage channels, especially if water is present. At no time will equipment or personnel be allowed to adversely affect areas outside the development area without authorization from the Service and CDFW.
23. Removal of Trash and Debris. Except as explicitly described in the Project Description, the removal of native soils, rock, gravel, vegetation and vegetative debris from the drainageways is prohibited.

All raw construction materials and wastes from the project site shall be removed following the completion of work. Food-contaminated wastes generated during work shall be removed on a daily basis to avoid attracting predators to work sites. All temporary fences, barriers, and/or flagging shall be completely removed from work sites and properly disposed of upon completion of work. No litter or construction debris shall be disposed of onsite.
24. Erosion Control Materials. Tightly woven fiber netting or similar material will be used for erosion control or other purposes at the project to ensure that local wildlife do not get trapped, should they make it onto the project site. Coconut coir matting is an acceptable erosion control material. Plastic mono-filament netting (erosion control matting) or similar material will not be used within the project site because Alameda whipsnakes may become entangled or trapped in this material.
25. Erosion Control Best Management Practices (BMPs). During all construction and mitigation implementation in and along streams and drainage channels, Best Management Practices (BMPs) will be used to minimize erosion and impacts to water quality. The Permittee will prepare a Storm Water Pollution Prevention Plan (SWPPP) which will include an erosion and sedimentation control plan. Grading and post-grade water quality control measures will be identified in the SWPPP. During grading, structural source controls to stabilize soil such as blown straw, seeding and irrigation, and covering exposed soil, may be used. Other source controls could include inlet protection, building gravel berms to use as sedimentation basins, and using crushed aggregate/gravel bags instead of sand bags. Other construction BMPs may include controlling dust by spraying with water; protection of soil stock piles from rainwater, and/or off-site washing of construction vehicles.

26. Pesticide and Fertilizer Use. The use of pesticides and herbicides in the project and staging areas shall be utilized in such a manner to prevent primary or secondary poisoning of the Alameda whipsnake and the depletion of prey populations on which they depend. All uses of pesticides and herbicides will observe label and other restrictions.
27. Prohibition on Firearms. No firearms will be allowed within the project site, except for federal, State, local law enforcement, or security guards.
28. Encounters with Listed Species. If an Alameda whipsnake or any reptile or amphibian is encountered during project implementation, the following protocol shall be followed:
 - a. All work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease within 50 feet of the individual.
 - b. The Designated Biologist and foreman will be immediately notified.
 - c. The Designated Biologist will immediately notify the Service and the CDFW via telephone and electronic mail.
 - d. The Designated Biologist will allow the Alameda whipsnake to disperse on its own and monitor it until he/she determines that the animal(s) are not imperiled by predators or other dangers.
29. Injured Species Protocol. Any contractor, employee, or agency personnel who inadvertently kill or injure an Alameda whipsnake will immediately report the incident to the Designated Biologist. The Designated Biologist will contact the Service and CDFW to report the dead or injured animal via electronic mail and telephone within one working day. Injured listed species must be cared for by a licensed veterinarian or other qualified person(s), such as the Designated Biologist.
30. CNDDDB Observations. The Designated Biologist shall submit all observations of the Alameda whipsnake or other State or federally listed species to the CDFW California Natural Diversity Database (CNDDDB) within 60 calendar days of the observation and the Designated Biologist shall include copies of the submitted forms with the Post-Construction Compliance Report.
31. Restoration Required. Following construction, the temporarily impacted areas will be revegetated with native species as stipulated in the Revegetation Plan.
32. Monthly Compliance Report. The Designated Representative or Designated Biologist shall submit a Monthly Compliance Report showing current project progress to the Service and CDFW. The Service and/or CDFW may at any time increase the timing and number of compliance inspections and reports required depending upon the results of previous compliance inspections. If the Service or CDFW determines the reporting schedule must be changed, notice will be in writing.
33. Post-Construction Compliance Report. Within 30 calendar days following completion of construction activity, the Designated Biologist shall prepare and submit a post-construction compliance report to the Service and CDFW. This report shall detail:

- a. Dates that construction occurred;
- b. Pertinent information concerning the success of the project in meeting conservation measures;
- c. An explanation of failure to meet such measures, if any;
- d. Known project effects on the Alameda whipsnake, if any;
- e. Occurrences of incidental take of Alameda whipsnakes, if any;
- f. Documentation of employee environmental education; and
- g. Other pertinent information.

Resulting Level of Significance. With implementation of **SCA BIO-1, SCA BIO-2, SCA BIO-3, SCA BIO-4** and **Mitigation Measure BIO-1** and **Implementation Measures BIO-2**, potential impacts to special-status species would be *less than significant*.

8. RIPARIAN HABITAT/SENSITIVE NATURAL COMMUNITIES

Would the Project:

2. *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

The project will result in approximately 1.26 acres of construction disturbance within the Leona Creek drainage. While little to no riparian habitat will be affected, because there is little to no riparian habitat located within or along the creek channel on the remediation site, the project would “substantially change or use material from the bed, channel, or bank” of an active stream drainage and will thus impact CDFW jurisdiction under Section 1602 of the California Fish and Game Code. By itself, the proposed project would have a substantial adverse effect on the drainage since it would involve significant grading, excavation, and sediment removal and deposition within the existing channel. However, the proposed creek restoration included in the project description will restore the channel to a more natural setting, including the incorporation of drop structures to provide stability and energy dissipation; the placement of embedded boulders along the channel bottom and banks to provide stability, scour protection, and habitat diversity; and revegetation of adjacent banks and uplands with herbaceous species (e.g., mugwort [*Artemisia douglasiana*], blue wildrye [*Elymus glaucus*]). These project elements are expected to substantially increase the drainage’s habitat value from its current degraded state. In summary, the long-term benefit of the mine tailing and creek remediation is expected to outweigh short-term construction-related impacts to the existing degraded channel. Impacts to the Leona Creek intermittent drainage are expected to be *less than significant* with full implementation of the creek restoration plan and revegetation plan.

9. WETLANDS/WATERS OF THE U.S./State

Would the Project:

3. *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act or State protected wetlands, through direct removal, filling, hydrological interruption, or other means?*

The project will impact approximately 744 linear feet (0.137 acre) of other waters of the United States (intermittent channel) by removing of 1,200 cubic yards of material (550 cubic yards of waste tailings and 650 cubic yards of native soil to enlarge the channel). Approximately 1,200 cubic yards of new fill (200 cubic yards of native soil or clean fill and 1,000 cubic yards of boulders and cobbles for channel restoration and stability) will be placed in the channel as part of creek restoration activities. The proposed creek restoration included in the project description will replace the existing channel with restored channel that will be isolated from mining wastes. The long-term benefits of the project are expected to outweigh short-term construction-related impacts to the existing degraded channel and is thus considered to be self-mitigating. As such, the project will have a *less than significant* impact on jurisdictional waters with full implementation of the creek stabilization plan.

10. MOVEMENT OF SPECIES

Would the Project:

4. *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

The project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or established wildlife corridor. Species that currently move up, down, or across the intermittent drainage will temporarily be unable to do so during construction, but after construction is completed the drainage will be restored to a semi-natural state and wildlife will again be able to move through it. It is expected that wildlife species that currently use the creek corridor will be able to use the corridor once the remediation activities are complete. Because the project would result in a clean-up of the water flowing from the site, wildlife using Leona Creek will be benefitted by the project.

Several species of native birds are expected to nest in the woodland and scrub habitats in and adjacent to the project area. The nests of all native birds are protected under the federal Migratory Bird Treaty Act and Section 3503 of the California Fish and Game Code. If conducted during the nesting season (March 15 to August 15), proposed tree removal and brush clearing activities could directly impact nesting birds by removing trees or shrubs that support active nests. Prolonged loud construction noise could also disturb nesting birds, resulting in nest failure.

Resulting Level of Significance. Satisfactory compliance with **SCA BIO-5** above will reduce potential impacts to nesting birds to *less than significant with Standard Conditions of Approval*.

11. CONSERVATION PLAN

Would the Project:

5. *Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan?*

The project area is not located in an area covered by any habitat conservation plan or natural community conservation plan. There would be *no impact* in this regard.

12. OAKLAND TREE PROTECTION ORDINANCE

Would the Project:

6. *Fundamentally conflict with the City of Oakland Tree Protection Ordinance (Oakland Municipal Code (OMC) Chapter 12.36) by removal of protected trees under certain circumstances?*

The City of Oakland provides the following factors to be considered in determining significance of this potential impact: the number, type, size, location and condition of (a) the protected trees to be removed and/or impacted by construction and (b) the protected trees to remain, with special consideration given to native trees.

Protected trees include the following: *Quercus agrifolia* (California or coast live oak) measuring 4 inches diameter at breast height (DBH) or larger, and any other tree measuring 9 inches DBH or larger except eucalyptus and *Pinus radiata* (Monterey pine); provided, however, that Monterey pine trees on City property and in development-related situations where more than five Monterey pine trees per acre are proposed to be removed are considered to be protected trees.

The project area contains 194 trees that qualify as protected trees under the City of Oakland Tree Protection Ordinance (See Tree Survey and Protection Plan attached as Appendix E). All of the protected trees are coast live oaks. Within the proposed limit of disturbance at the remediation site there are 186 protected trees (51 to be removed, 135 to remain). Of the trees to be removed, the diameter at breast height (DBH) ranges from 5 inches to 51 inches. The total of all removed trees is 838 DBH.⁶⁶ LSA calculated the cumulative trunk area of all trees to be removed, not including hazardous trees, as .002 percent of the total size of the 135-acre wooded parcel APN 037A-3151-002-06 (as shown in Table D in Appendix E). Therefore, the effects of the tree removal associated with this project would be considered less than significant. Approximately 15 eucalyptus trees would also be removed to accommodate the primary staging area and McDonnell Avenue cul-de-sac improvements. No protected or unprotected trees would be removed from the lodge staging area.

Fifty-eight (58) of the protected trees will be retained. Construction activities could have the potential for damaging retained trees. For retained trees, the City of Oakland maintains a Standard Condition of Approval regarding their protection during construction activities, which the applicant would be

⁶⁶ LSA Associates, Inc., 2014. *Leona Heights Sulfur Mine Remediation Site Tree Survey and Protection Plan*. March.

required to meet in order to reduce potential construction-related tree impacts to a level considered less than significant. Additionally, a Tree Survey and Protection Plan that identifies tree protection measures at the remediation site and staging areas has been prepared and is included in Appendix E of this document.

Pursuant to SCA BIO-7, replacement trees may be required for removed protected trees. The options for mitigating the removal of protected trees are as follows:

- Replace at the project site.
- Replace elsewhere on the property.
- Relocation of trees.
- Pay an in-lieu fee.

Replacement at the project site would not be possible as the 1.26-acre project site is a remediation site that requires the existing waste piles to be consolidated and covered to prevent the ongoing site runoff that is currently impairing water quality. The majority of the site would be covered with a reinforced soil slope that includes an impermeable geotextile liner which would impede the establishment of replacement trees. As a result, the Revegetation Plan does not include replacement trees or other woody species which utilize extensive root systems for survival. Additionally, the perimeter portions of the site that are not covered with the impermeable liner are steep, thickly wooded, and would not provide enough space to establish new or replacement trees.

Replacement of trees elsewhere on the property is not a feasible option as the remainder of the property is already heavily wooded, steeply sloped, difficult to access and considered habitat for the Alameda whipsnake and under the jurisdiction of USFWS and CDFW regulations.

Relocation of trees would not be feasible as the Water Board would not allow the tailings attached to the root ball of transplanted trees to leave the remediation site, and the likelihood that a substantial change in the mature oaks environment could weaken or kill the specimen.⁶⁷ Additionally, this option would be infeasible due to the width of McDonell Avenue as compared to the size of the trucks that would be needed to relocate the trees.

Because relocation and replanting of trees is infeasible as mitigation for the reasons identified above, the project proponent proposes to provide an in-lieu fee for tree replacement, per section e. of SCA BIO-7 and in accordance with section 12.36.060 of the Protected Trees Ordinance.

Resulting Level of Significance. Satisfactory compliance with **SCA BIO-6, SCA BIO-7** and **SCA BIO-8** above, will reduce potential impacts to protected trees to *less than significant with Standard Conditions of Approval*.

⁶⁷ California Oaks, 2014. *Care of Native California Oaks*. Website: www.californiaoaks.org/ExtAssets/CareOfCAsNativeOaks.pdf. (accessed January 31, 2014).

13. CREEK PROTECTION ORDINANCE

Would the Project:

7. *Fundamentally conflict with the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect biological resources?*

Although there are no specific, numeric/quantitative criteria to assess impacts, factors to be considered in determining significance include whether there is substantial degradation of riparian and aquatic habitat through: (a) discharging a substantial amount of pollutants into a creek; (b) significantly modifying the natural flow of the water; (c) depositing substantial amounts of new material into a creek or causing substantial bank erosion or instability; or (d) adversely impacting the riparian corridor by significantly altering vegetation or wildlife habitat.

One of the goals of the proposed project is to restore the stream channel in the intermittent drainage to a more natural condition. As such, the long-term benefit of the project is expected to outweigh short-term impacts to the existing, degraded channel. Nevertheless, if left unchecked, excess soil, waste rock, and other materials generated during project construction could “deposit substantial amounts of new material” into the drainage, thus causing significant impacts.

Resulting Level of Significance. Satisfactory compliance with **SCA BIO-9, SCA BIO-10, SCA BIO-11, SCA BIO-12** and **SCA BIO-13** above will reduce potential impacts to Leona Creek to *less than significant with Standard Conditions of Approval.*

V. CULTURAL RESOURCES	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
Would the project:					
1. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5? Specifically, a substantial adverse change includes physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be "materially impaired." The significance of an historical resource is "materially impaired" when a project demolishes or materially alters, in an adverse manner, those physical characteristics of the resource that convey its historical significance and that justify its inclusion on, or eligibility for inclusion on an historical resource list (including the California Register of Historical Resources, the National Register of Historical Resources, Local Register, or historical resources survey form (DPR Form 523) with a rating of 1-5).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SETTING

Methods

LSA conducted background research, consultation with a local historical society, and a field survey to identify cultural resources in the project site. The tasks conducted in support of the environmental analysis are described below.

- Records Search.** A record search of the project site was conducted on November 4, 2013, at the Northwest Information Center (NWIC) of the California Historical Resources Information System. The NWIC, an affiliate of the State of California Office of Historic Preservation (OHP), is the official state repository of cultural resource records and reports for Alameda County.

- **Literature Review.** A literature review was conducted and included a review of State, County, and City cultural resource inventories. The inventories reviewed consist of:
 - Five Views: An Ethnic Historic Site Survey for California;⁶⁸ and
 - Directory of Properties in the Historic Property Data File.⁶⁹ The directory includes the listings of the National Register of Historic Places, National Historic Landmarks, the California Register of Historical Resources, California Historical Landmarks, and California Points of Historical Interest; and
 - City of Oakland Designated Landmarks, Heritage Properties, and Preservation Districts.⁷⁰
- **Historical Society Consultation.** On November 18, 2013, LSA sent a letter and maps depicting the project site to the Oakland Heritage Alliance (OHA) requesting any information or concerns they may have regarding historical sites in the project site. A follow-up telephone call and an email were sent to the OHA after no response was received to the letter.
- **Field Survey.** An LSA archaeologist conducted a pedestrian field survey of the project site on November 24 and December 2, 2013, to document the portion of the Leona Mine within the project site.

In addition to the tasks described above, LSA conducted an eligibility evaluation of that portion of the Leona Heights Sulfur Mine (Leona Mine), a historical mining complex, that includes the project area, to determine if features within the project site contribute to the mine's eligibility for listing in the California Register of Historical Resources (CRHR).⁷¹ The eligibility evaluation of the mine is presented in LSA's technical study included in Appendix F of this document and is summarized below.

Leona Mine. Mining and quarrying began in the project site and vicinity during the 1890s. The hills east of Laundry Farm were a source of pyrite (or "fool's gold") used to produce sulfuric acid, a common chemical used in industrial applications such as mineral production, fertilizer manufacturing, oil refining, and wastewater processing. The pyrite found at the mine was assayed as 50 percent sulfur with some infused copper. The copper was extracted as copper sulfate and used as a marketable product. The largest mine to produce native sulfur was the Leviathan Mine in Alpine County, but the Leona Mine was one of seven mines in California that produced sulfur from processing pyrite. The principal source of sulfur processed from pyrite was the Iron Mountain Mine in Shasta County

⁶⁸ California Office of Historic Preservation, 1988. *Five Views: An Ethnic Sites Survey for California*. California Department of Parks and Recreation, Sacramento.

⁶⁹ California Office of Historic Preservation, 2012. *Directory of Properties in the Historic Property Data File, April 5*. California Office of Historic Preservation.

⁷⁰ Oakland Cultural Heritage Survey, 2011. *City of Oakland Designated Landmarks, Heritage Properties, and Preservation Districts*. Electronic document, <http://www2.oaklandnet.com/Government/o/PBN/OurServices/Historic/DOWD009012>, accessed November 18, 2013.

⁷¹ LSA Associates, Inc., 2013. *An Eligibility Evaluation for the Leona Creek Restoration and Leona Heights Sulfur Mine Remediation Project*. LSA Associates, Inc., Point Richmond, California.

(4,500,000 tons of sulfide ore), with the Alma Mine (located approximately one mile north of Leona) (156,600 tons) and the Leona Mine (87,500 tons) producing smaller amounts.

The earliest printed references to the Leona Mine in operation date to 1906. It was the project of Francis Marion 'Borax' Smith, who made his fortune mining borax in Nevada. Borax is a soluble mineral used in many detergents, cosmetics, industrial fluxes, glass making, and enamel glazes. At the Leona Mine, Smith and his Realty Syndicate financed the construction of a system of aerial tramways to deliver extracted ore to the railroad, where it was then hauled to the Stauffer Chemical Company facility in Richmond, where it was processed into sulfuric acid. The Stauffer Company was founded by John Stauffer, who came to San Francisco in 1885 as a representative of European chemical producers. Stauffer saw an opportunity to develop a chemical business, and after obtaining financing from European investors, he began producing soda bicarbonate and sulfur. The Stauffer Company grew to eventually absorb other competing firms, and was consolidated as Stauffer Chemical Company in 1895. Following the bankruptcy of Smith in 1913, the Stauffer Chemical Company assumed control of Leona Mine, and Stauffer Chemical Company continued to extract ore until 1929, when diminishing ore quality and safety concerns resulted in the mine's closure. In 1925, the company expanded into the chlor-alkali business by acquiring an interest in New York-based Niagara Smelting Corporation.

Following World War II, the demand for chemicals rose steeply in the United States. To raise funds to expand and meet this demand, the Stauffer Chemical Company went public and sold shares of the business in 1953 (following the closure of Leona Mine in 1929). During the 1950s, after the capital investment from the public offering, the company prospered and grew. By 1955, the Stauffer Chemical Company operated 44 plants nationwide with facilities in Richmond and in San Francisco.

The Leona Mine extracted sulfur ore from the ground similar to a hard rock mining operation would extract gold from quartz veins deep in the earth. Typical resource types associated with this activity include exploratory prospect pits, waste rock piles, shafts, adits, and underground workings. Other facilities associated with this activity can include an office, changing rooms, machine shop, blacksmith, equipment storage, tramways, trails, paths, roads, railroad beds, tanks or cisterns, and a reservoir.

The Leona Mine extracted sulfur ore from the ground similar to a hard rock mining operation would extract gold from quartz veins deep in the earth. Typical resource types associated with this activity include exploratory prospect pits, waste rock piles, shafts, adits, and underground workings. Other facilities associated with this activity can include an office, changing rooms, machine shop, blacksmith, equipment storage, tramways, trails, paths, roads, railroad beds, tanks or cisterns, and a reservoir.

At its height, the Leona Mine contained two adits, totaling over 3,000 feet, with a daily output of 500 tons.⁷² Mine fires were routine occurrences, and the risk associated with ore extraction eventually prompted the mine's closure. Before the mine closed in about 1929 over 200,000 tons of pyrite

⁷² Monteaule, Fredrick J. *Leona Gold, Oakland Districts, Leona Heights*. On file at Oakland History Room, Oakland Public Library, Oakland, California.

valued at over \$1,000,000 was extracted.⁷³ Around 1950, the adits were blasted shut to prevent accidents.⁷⁴

Leona Mine Eligibility Evaluation. The portion of the Leona Mine in the project area was evaluated under the four CRHR significance criteria defined in *CEQA Guidelines* Section 15064.5(a) (3) (see attached Appendix F). The evaluation considers whether or not the portion of the Leona Mine’s built-environment features inside the project site contribute to the CRHR eligibility of the complex as a whole. The Leona Mine was active during the years between 1906 and approximately 1929. This approximately 30-year-long period constitutes the mine complex’s period of significance.

The two phases of mining activity associated with extraction at the mine complex are (1) exploration and (2) mining development. Exploration is represented by the numerous mining prospects—pits, troughs, and gouges—that are on the hillside above the tailings (outside the project site). Mining development is represented by the two large tailings piles and the collapsed adits (inside the project site). Mining development was once represented at the Leona Mine by infrastructure such as ore cart tracks, adits, a garage, a “shop,” and an aerial tramway. These features are no longer present, leaving only documentary evidence to illustrate and convey the industrial process of historical mining at the Leona Mine.

In evaluating the CRHR eligibility of the portion of the Leona Mine within the project area, the guiding concept used in the evaluation is the “degree to which the overall mining system remains intact and visible.”⁷⁵ The Leona Mine as a whole appears potentially eligible for inclusion in the CRHR for its historical association with mining activities in Oakland. However, with respect to the portion of the Leona Mine within the project site, several important features that convey the importance of the resource have been removed or have poor integrity. The movement of ore through the site and the exact nature of the mining activities that took place there cannot be clearly reconstructed or conveyed by what remains: the two adits have been blasted shut, no ore cart rails extend from the collapsed adits, none of the components of the aerial tramway survive, and the tailings piles have been partially eroded. Due to the removal of the majority of the mine’s infrastructure in the project area, it is difficult to understand how the mine functioned as a system engaged in the extraction of mineral resources. In spite of its significance in Oakland history, therefore, the portion of the Leona Mine within the project site does not appear eligible for inclusion in the CRHR due to a lack of integrity.

City of Oakland Standard Conditions of Approval. The City of Oakland provides the following Standard Conditions of Approval regarding archaeological resources:

SCA CULT-1: Archaeological Resources. Ongoing throughout demolition, grading, and/or construction. The project applicant shall implement either Provision A (Intensive Pre-Construction Study) or Provision D (Construction ALERT Sheet). However, if in either case a high potential presence of historic-period archaeological resources on

⁷³ Ibid.

⁷⁴ Oakland Tribune, 1950. Cows Come Home To roost; City has Mine Shaft Trouble. *Oakland Tribune*. July 2.

⁷⁵ U.S. Department of the Interior, 1997:21. *National Register Bulletin: How to Apply the National Register Criteria for Evaluation*. U.S. Department of the Interior, Washington, D.C.

the project site is indicated, or a potential resource is discovered, the project applicant shall also implement all of the following provisions:

- Provision B (Construction-Period Monitoring),
- Provision C (Avoidance and/or Find Recovery), and
- Provision D (to establish a Construction ALERT Sheet if the Intensive Pre-Construction Study was originally implemented per Provision A, or to update and provide more specificity to the initial Construction ALERT Sheet if a Construction Alert Sheet was originally implemented per Provision D).

Provision A through Provision D are detailed as follows:

Provision A: Intensive Pre-Construction Study. The project applicant, upon approval from the City Planning and Zoning Division, may choose to complete a site-specific, intensive archaeological resources study prior to soil-disturbing activities occurring on the project site. The purpose of the site-specific, intensive archaeological resources study is to identify early the potential presence of history-period archaeological resources on the project site. If that approach is selected, the study shall be conducted by a qualified archaeologist approved by the City Planning and Zoning Division. If prepared, at a minimum, the study shall include:

- An intensive cultural resources study of the project site, including subsurface presence/absence studies, of the project site. Field studies conducted by the approved archaeologist(s) may include, but are not limited to, auguring and other common methods used to identify the presence of archaeological resources;
- A report disseminating the results of this research;
- Recommendations for any additional measures that could be necessary to mitigate any adverse impacts to recorded and/or inadvertently discovered cultural resources.

If the results of the study indicate a high potential presence of historic-period archaeological resources on the project site, or a potential resource is discovered, the project applicant shall hire a qualified archaeologist to monitor any ground disturbing activities on the project site during construction (see Provision B, Construction-Period Monitoring, below), implement avoidance and/or find recovery measures (see Provision C, Avoidance and/or Find Recovery, below), and prepare an ALERT Sheet that details what could potentially be found at the project site (see Provision D, Construction ALERT Sheet, below).

Provision B: Construction-Period Monitoring. Archaeological monitoring would include briefing construction personnel about the type of artifacts that may be present (as referenced in the ALERT Sheet, require per Provision D, Construction ALERT Sheet, below) and the procedures to follow if any are encountered, field recording and sampling in accordance with the Secretary of Interior's *Standards and Guidelines for Archaeological Documentation*, notifying the appropriate officials if human remains or cultural resources are discovered, or preparing a report to document negative findings after construction is completed. If a significant archaeological

resource is discovered during the monitoring activities, adherence to Provision C, Avoidance and/or Find Recovery, discussed below), would be required to reduce the impact to less than significant. The project applicant shall hire a qualified archaeologist to monitor all ground-disturbing activities on the project site throughout construction.

Provision C: Avoidance and/or Find Recovery. If a significant archaeological resource is present that could be adversely impacted by the proposed project, the project applicant of the specific project site shall either:

- Stop work and redesign the proposed project to avoid any adverse impacts on significant archaeological resource(s); or,
- If avoidance is determined infeasible by the City, design and implement an Archaeological Research Design and Treatment Plan (ARDTP). The project applicant shall hire a qualified archaeologist who shall prepare a draft ARDTP that shall be submitted to the City Planning and Zoning Division for review and approval. The ARDTP is required to identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain. The ARDTP shall identify the scientific/historic research questions applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. The ARDTP shall include the analysis and specify the curation and storage methods. Data recovery, in general, shall be limited to the portions of the archaeological resource that could be impacted by the proposed project. Destructive data recovery methods shall not be applied to portions of the archaeological resources if nondestructive methods are practical. The project applicant shall implement the ARDTP. Because the intent of the ARDTP is to save as much of the archaeological resource as possible, including moving the resource, if feasible, preparation and implementation of the ARDTP would reduce the potential adverse impact to less than significant.

Provision D: Construction ALERT Sheet. The project applicant, upon approval from the City Planning and Zoning Division, may choose to prepare a construction ALERT sheet prior to soil-disturbing activities occurring on the project site, instead of conducting site-specific, intensive archaeological resources pursuant to Provision A, above. The project applicant shall submit for review and approval by the City prior to subsurface construction activity an “ALERT” sheet prepared by a qualified archaeologist with visuals that depict each type of artifact that could be encountered on the project site. Training by the qualified archaeologist shall be provided to the project’s prime contractor; any project subcontractor firms (including demolition, excavation, grading, foundation, and pile driving); and/or utilities firm involved in soil-disturbing activities within the project site.

The ALERT sheet shall state, in addition to the basic archaeological resource protection measures contained in other standard conditions of approval, that in the event of discovery of the following cultural materials, all work must be stopped in the area and the City’s Environmental Review Officer contacted to evaluate the find: concentrations of shellfish remains; evidence of fire (ashes, charcoal, burnt earth,

fire-cracked rocks); concentrations of bones; recognizable Native American artifacts (arrowheads, shell beads, stone mortars [bowls], humanly shaped rock); building foundation remains; trash pits, privies (outhouse holes); floor remains; wells; concentrations of bottles, broken dishes, shoes, buttons, cut animal bones, hardware, household items, barrels, etc.; thick layers of burned building debris (charcoal, nails, fused glass, burned plaster, burned dishes); wood structural remains (building, ship, wharf); clay roof/floor tiles; stone walls or footings; or gravestones.

Prior to any soil-disturbing activities, each contractor shall be responsible for ensuring that the ALERT sheet is circulated to all field personnel, including machine operators, field crew, pile drivers, and supervisory personnel.

If the project applicant chooses to implement Provision D, Construction ALERT Sheet, and a potential resource is discovered on the project site during ground disturbing activities during construction, the project applicant shall hire a qualified archaeologist to monitor any ground disturbing activities on the project site during construction (see Provision B, Construction-Period Monitoring, above), implement avoidance and/or find recovery measures (see Provision C, Avoidance and/or Find Recovery, above), and prepare an updated ALERT Sheet that addresses the potential resource(s) and other possible resources based on the discovered find found on the project site.

SCA CULT-2: Human Remains. Ongoing throughout demolition, grading, and/or construction.

In the event that human skeletal remains are uncovered at the project site during construction or ground-breaking activities, all work shall immediately halt and the Alameda County Coroner shall be contacted to evaluate the remains, and following the procedures and protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the City shall contact the California Native American Heritage Commission (NAHC), pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and all excavation and site preparation activities shall cease within a 50-foot radius of the find until appropriate arrangements are made. If the agencies determine that avoidance is not feasible, then an alternative plan shall be prepared with specific steps and timeframe required to resume construction activities. Monitoring, data recovery, determination of significance and avoidance measures (if applicable) shall be completed expeditiously.

SCA CULT-3: Paleontological Resources. Ongoing throughout demolition, grading, and/or construction.

In the event of an unanticipated discovery of a paleontological resource during construction, excavations within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology standards (SVP 1995,1996)). The qualified paleontologist shall document the discovery as needed, evaluate the potential resource, and assess the significance of the find. The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the City determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and such plan shall be implemented. The plan shall be submitted to the City for review and approval.

HISTORICAL RESOURCES

Would the project:

1. *Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5? Specifically, a substantial adverse change includes physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be “materially impaired.” The significance of an historical resource is “materially impaired” when a project demolishes or materially alters, in an adverse manner, those physical characteristics of the resource that convey its historical significance and that justify its inclusion on, or eligibility for inclusion on an historical resource list (including the California Register of Historical Resources, the National Register of Historical Resources, Local Register, or historical resources survey form (DPR Form 523) with a rating of 1-5).*

The project would impact a portion of the Leona Mine. As summarized above and described in detail in Appendix F, the Leona Mine appears potentially eligible under CRHR Criterion 1. As noted in the CEQA Guidelines Section 15064.5(a)(3), “Generally, a resource shall be considered by the lead agency to be “historically significant” if the resource meets the criteria for listing on the California Register of Historical Resources.” The portion of the Leona Mine within the project area, however, does not retain sufficient integrity to convey its historical significance due to the removal of historical features associated with the mine. Because the project-site portion of the Leona Mine does not contribute to the overall significance of the resource, the features in the project area are, therefore, not eligible for listing in the CRHR. Furthermore, due to a lack of integrity, the portion of the Leona Mine within the project area is not listed in, nor does it appear eligible for inclusion in, the National Register of Historic Places, the Local Register, or a DPR Form 523 with a rating of 1-5. Because there will not be a substantial adverse change in the significance of the resource (i.e., the project-site portion of the mine complex), the project will have a *less than significant* impact on the Leona Mine with implementation of the project.

ARCHAEOLOGICAL & PALEONTOLOGICAL RESOURCES AND HUMAN REMAINS

Would the project:

2. *Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?*

A portion of the project area, including the remediation site containing the mining-related features associated with the Leona Mine identified by LSA, was previously surveyed for archaeological resources by Archaeological Consulting and Research Services, Inc.⁷⁶ As stated in the report documenting that survey, “No indications of archaeological resources were discovered during the course of this reconnaissance.”

No prehistoric archaeological resources were identified during LSA’s survey conducted for the project. Historic-period archaeological resources associated with the Leona Mine that operated at this site from at least 1906, however, could be present in the project area, including those not currently accessible due to collapsed adits. Such remains, if present, may have the potential to yield information important in history.

Resulting Level of Significance. Satisfactory compliance with **SCA CULT-1** above would reduce potential impacts to archaeological resources to less than significant with Standard Conditions of Approval.

3. *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

The project area is underlain by Late Jurassic Early Cretaceous Knoxville Formation and Late Jurassic keratophyre and quartz keratophyre deposits.⁷⁷ Paleontological resources (marine invertebrate fossils) have been identified in association with the Knoxville Formation.

The project area has been heavily disturbed due to mining activities that occurred at this location from the late nineteenth century to the first few decades of the twentieth century. As a result of this disturbance, *in situ* fossils are unlikely to be identified during project ground-disturbing activities. Nevertheless, due to the presence of mapped fossiliferous geologic formations in the project area, the potential for disturbing significant fossils cannot be ruled out.

Resulting Level of Significance. Satisfactory compliance with **SCA CULT-3** above would reduce potential impacts to paleontological resource to less than significant with Standard Conditions of Approval.

⁷⁶ Archaeological Consulting and Research Services, Inc., n.d. *Report of the Archaeological Reconnaissance of the Proposed Mountain Village Developments, Alameda County, California*. Archaeological Consulting Services, Inc., Mill Valley, California.

⁷⁷ Wagner, R.W., D.L. Jones, and E.E. Brabb, 1996. *Preliminary Geologic Map Emphasizing Bedrock Formations in Alameda County, California*. U.S. Geological Survey, Washington, D.C.

4. *Disturb any human remains, including those interred outside of formal cemeteries?*

LSA's background research and field survey conducted for the project did not identify human remains, including those interred outside of formal cemeteries. Although the project area is not of high sensitivity for Native American human remains, which are frequently associated with midden sites closer the bayshore in the East Bay, the presence of such remains in the project area cannot be ruled out.

Resulting Level of Significance. Satisfactory compliance with **SCA CULT-2** above would reduce potential impacts to human remains to less than significant with Standard Conditions of Approval.

VI. GEOLOGY AND SOILS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
Would the project:					
Expose people or structures to geologic hazards, soils, and/or seismic conditions so unfavorable that they could not be overcome by special design using reasonable construction and maintenance practices. Specifically:					
1. Expose people or structures to substantial risk of loss, injury, or death involving:					
a) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? [NOTE: Refer to California Geological Survey 42 and 117 and Public Resources Code section 2690 et. seq.]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Seismic-related ground failure, including liquefaction, lateral spreading, subsidence, collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Result in substantial soil erosion or the loss of topsoil, creating substantial risk to life, property, or creek/waterways?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Be located on expansive soil, as defined in Section 1802.3.2 of the California Building Code (2007, as it may be revised), creating substantial risk to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Be located above a well, pit, swamp, mound, tank vault, or unmarked sewer line, creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Be located above landfills for which there is no approved closure and post-closure plan, or unknown fill soils, creating substantial risk to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The City of Oakland lies within the San Andreas fault system, the largest one in California and the one with potential for the strongest earthquakes. More specifically, the City straddles the Hayward fault, a “branch” fault of the larger system. The Hayward fault runs along the southwestern base of the East Bay hills and parallels Highway 13, making it an approximate physical boundary between the low-lying, urbanized portions of Oakland to the west and the less developed, upland areas to the east.⁷⁸ The Leona Heights Sulfur Mine is located in the Oakland Hills at the approximate location shown on the Bay Area Fault Map in Figure 29. The Hayward-Rodgers Creek fault lies approximately 0.35 miles west of the remediation site (Figure 29). The largest magnitude event occurring on this fault is considered to be a moment magnitude, Mw of 7.3.⁷⁹

The typical soil layers at the Leona Heights Sulfur Mine consist of up to 25 feet of mine tailings material, underlain by rhyolite bedrock, siltstone, and claystone. Thicknesses of subsurface soil layers are greater at the center of the tailings piles and thinner towards the edge of the tailings piles. Stiff to very stiff bedrock was estimated to range from approximately 25 feet to 40 feet below the surface.⁸⁰

City of Oakland Standard Conditions of Approval. The City of Oakland provides the following Standard Conditions of Approval regarding geology and soils:

SCA GEO-1: Stormwater Pollution Prevention Plan (SWPPP). Prior to and ongoing throughout demolition, grading, and/or construction activities.

The project applicant must obtain coverage under the General Construction Activity Storm Water Permit (General Construction Permit) issued by the State Water Resources Control Board (SWRCB). The project applicant must file a notice of intent (NOI) with the SWRCB. The project applicant will be required to prepare a stormwater pollution prevention plan (SWPPP) and submit the plan for review and approval by the Building Services Division. At a minimum, the SWPPP shall include a description of construction materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; site-specific erosion and sedimentation control practices; a list of provisions to eliminate or reduce discharge of materials to stormwater; Best Management Practices (BMPs), and an inspection and monitoring program. Prior to the issuance of any construction-related permits, the project applicant shall submit to the Building Services Division a copy of the SWPPP and evidence of submittal of the NOI to the SWRCB. Implementation of the SWPPP shall start with the commencement of construction and continue through the completion of the project. After construction is completed, the project applicant shall submit a notice of termination to the SWRCB.

SCA GEO-2: Drainage Plan for Projects on Slopes Greater than 20%. Prior to issuance of building permit (or other construction-related permit).

⁷⁸ Oakland, City of, 2004. *General Plan- Safety Element*.

⁷⁹ Geosyntec, 2013. *Leona Heights Seismic Hazard Evaluation*. July.

⁸⁰ Ibid.

The project drawings submitted for a building permit (or other construction-related permit) shall contain a drainage plan to be reviewed and approved by the Building Services Division. The drainage plan shall include measures to reduce the post-construction volume and velocity of stormwater runoff to the maximum extent practicable. Stormwater runoff shall not be augmented to adjacent properties or creeks. The drainage plan shall include and identify the following:

- i. All proposed impervious surface on the site;
- ii. Anticipated directional flows of on-site stormwater runoff;
- iii. Site design measures to reduce the amount of impervious surface area and directly connected impervious surfaces;
- iv. Source control measures to limit the potential for stormwater pollution; and
- v. Stormwater treatment measures to remove pollutants from stormwater runoff.

SCA GEO-3: Erosion, Sedimentation, and Debris Control Measures. Prior to issuance of demolition, grading, or construction-related permit.

The project applicant shall submit an erosion and sedimentation control plan for review and approval by the Building Services Division. All work shall incorporate all applicable “Best Management Practices (BMPs) for the construction industry, and as outlined in the Alameda Countywide Clean Water Program pamphlets, including BMP’s for dust, erosion and sedimentation abatement per Chapter Section 15.04 of the Oakland Municipal Code. The measures shall include, but are not limited to, the following:

BASIC (Applies to ALL construction sites)

- a. On sloped properties, the downhill end of the construction area must be protected with silt fencing (such as sandbags, filter fabric, silt curtains, etc.) and hay bales oriented parallel to the contours of the slope (at a constant elevation) to prevent erosion into the street, gutters, storm drains.
- b. In accordance with an approved erosion control plan, the project applicant shall implement mechanical and vegetative measures to reduce erosion and sedimentation, including appropriate seasonal maintenance. One hundred (100) percent degradable erosion control fabric shall be installed on all graded slopes to protect and stabilize the slopes during construction and before permanent vegetation gets established. All graded areas shall be temporarily protected from erosion by seeding with fast growing annual species. All bare slopes must be covered with staked tarps when rain is occurring or is expected.
- c. Minimize the removal of natural vegetation or ground cover from the site in order to minimize the potential for erosion and sedimentation problems. Maximize the replanting of the area with native vegetation as soon as possible. Install filter materials acceptable to the Engineering Division at the storm drain inlets nearest to the project site prior to the start of the wet weather season (October 15); site dewatering activities; street washing activities; saw cutting asphalt or concrete; and in order to retain any debris flowing into the City storm drain system. Filter materials shall be maintained and/or replaced as necessary to ensure effectiveness and prevent street flooding.

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- d. Ensure that concrete/granite supply trucks or concrete/plaster finishing operations do not discharge wash water into the creek, street gutters, or storm drains.
- e. Direct and locate tool and equipment cleaning so that wash water does not discharge into the street, gutters, or storm drains.
- f. Create a contained and covered area on the site for storage of bags of cement, paints, flammables, oils, fertilizers, pesticides, or any other materials used on the project site that have the potential for being discharged to the storm drain system by the wind or in the event of a material spill. No hazardous waste material shall be stored on site.
- g. Gather all construction debris on a regular basis and place them in a dumpster or other container which is emptied or removed on a weekly basis. When appropriate, use tarps on the ground to collect fallen debris or splatters that could contribute to stormwater pollution.
- h. Remove all dirt, gravel, refuse, and green waste from the sidewalk, street pavement, and storm drain system adjoining the project site. During wet weather, avoid driving vehicles off paved areas and other outdoor work.
- i. Broom sweep the street pavement adjoining the project site on a daily basis. Caked-on mud or dirt shall be scraped from these areas before sweeping. At the end of each workday, the entire site must be cleaned and secured against potential erosion, dumping, or discharge to the street, gutter, storm drains.
- j. All erosion and sedimentation control measures implemented during construction activities, as well as construction site and materials management shall be in strict accordance with the control standards listed in the latest edition of the Erosion and Sediment Control Field Manual published by the Regional Water Quality Board (RWQB).
- k. All erosion and sedimentation control measures shall be monitored regularly by the project applicant. The City may require erosion and sedimentation control measures to be inspected by a qualified environmental consultant (paid for by the project applicant) during or after rain events. If measures are insufficient to control sedimentation and erosion then the project applicant shall develop and implement additional and more effective measures immediately

EXPOSURE TO FAULT RUPTURE AND SEISMIC GROUND SHAKING

Would the project:

1. *Expose people or structures to substantial risk of loss, injury, or death involving:*
 - a) *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?*
 - b) *Strong seismic ground shaking?*

1. Fault Rupture

Geologic records show that fault displacement is normally confined to a narrow zone along the traces of earthquake faults considered to be active or potentially active. The only earthquake fault zone (EFZ) found in Oakland occurs through the Oakland hills, along both sides of the Hayward fault, approximately 0.35 miles west of the remediation site. A high-magnitude earthquake along the Hayward fault can be expected to produce horizontal ground displacement of up to several feet, which would have a catastrophic effect on any structures, roads and utility lines that were built atop or across the fault.⁸¹

The proposed project would remediate mine tailings and restore the creek channel and is not located in an EFZ zone. E2C prepared a Construction Workplan, included as Appendix G, that summarizes subsurface conditions. The project remediation was designed to take into account the potential for seismic activities. Therefore, the proposed project would have *no impact* with regard to earthquake fault rupture.

2. Strong Seismic Ground Shaking

Most of Oakland is found within the three levels of greatest intensity of ground shaking and damage.⁸² The strongest ground shaking in Oakland is expected to occur as a result of earthquakes on the Hayward fault, while earthquakes originating in more distant faults will produce less intense shaking. According to the Association of Bay Area Government (ABAG) maps, a representative earthquake of magnitude 6.9 on the north and south segments of the Hayward fault would produce “very violent” ground shaking throughout the Hayward Earthquake Fault Zone (EFZ), along Lake Merritt Channel and on the margins of San Leandro Bay; most of the rest of the city would experience “violent” shaking, with a smaller area experiencing “very strong” shaking.⁸³ However, ABAG demonstrates that based upon the underlying geologic materials, the shaking amplification at the project site is classified as “low”.⁸⁴ Site visits have concluded that the remediation site consists of up to 25 feet of mine tailings material, underlain by rhyolite bedrock, siltstone, and claystone with stiff to very stiff bedrock approximately 25 feet to 40 feet below the surface. Due to the project area location, the risk of ground shaking is high. However, there is nothing inherent about the proposed project that increases that risk. Additionally, as described in the project description, the project cap and tailings compaction and creek restoration have been designed to maintain their stability under projected seismic conditions. Therefore, the proposed project would have a *less-than-significant impact* with regard to exposure of people or structures to strong ground shaking.

⁸¹ Oakland, City of, op. cit.

⁸² California Geologic Survey, 2003. *Seismic Shaking Hazards in California*. Website: <http://redirect.conservation.ca.gov/cgs/rghm/pshamap/pshamain.html> (accessed November 14, 2013).

⁸³ Oakland, City of, op. cit.

⁸⁴ Association of Bay Area Governments, 1995. *Earthquake Hazard Map for East Oakland Based on Underlying Geologic Material*. Website: <http://www.abag.ca.gov/cgi-bin/pickmapx.pl> (accessed November 14, 2013).

LIQUEFACTION & LANDSLIDES

Would the project:

1. *Expose people or structures to substantial risk of loss, injury, or death involving:*
 - c) *Seismic-related ground failure, including liquefaction, lateral spreading, subsidence, collapse?*
 - d) *Landslides?*

1. Liquefaction

The Oakland General Plan Safety Element does not identify the project area as a potential liquefaction area.⁸⁵ Additionally, according to the Association of Bay Area Government's (ABAG) online interactive hazards mapping website, the project area is located in an area with very low liquefaction hazard.⁸⁶ Site visits have concluded that the remediation site consists of up to 25 feet of mine tailings material, underlain by rhyolite bedrock, siltstone, and claystone with stiff to very stiff bedrock approximately 25 feet to 40 feet below the surface. Additionally, the proposed project does not contain structures that would be vulnerable to liquefaction or subsidence. The improvements to McDonnell Avenue cul-de-sac would be designed such that liquefaction would not occur. Therefore, the proposed project would have *no impact* with regard to seismic related ground failure.

2. Landslides

The Oakland General Plan Safety Element identifies the project area as a potential landslide zone.⁸⁷ Additionally, according to the Association of Bay Area Government's (ABAG) online interactive hazards mapping website, the project area is located in an area in which landslides have occurred, or indicate the potential for occurrence.⁸⁸

Slope instability can result in either slow slumping earth movements or rapid landslide events and are often induced by precipitation or seismic events. One of the key design elements of the proposed project includes creating slope stability where there is none. The steep slopes at the site would be graded to more consistently level slopes where possible, to increase the overall stability of the tailings piles. The grading plan is intended to improve the overall stability of the tailings materials and also allow placement of the final cover over the tailings. Proposed grading and cover is also intended to eliminate the possibility of surface water contacting the mine tailings. Stability of the newly graded steeper slopes adjacent to the creek channel would be maintained through the use of layers of closely spaced geogrid reinforcement extending horizontally into the slope, a drainage system behind the reinforced zone to prevent buildup of water pressure, and incorporation of the cover system at the slope face, including both a low permeability component and vegetative soils. This system is

⁸⁵ Oakland, City of, op. cit.

⁸⁶ Association of Bay Area Governments, 2013. *ABAG Liquefaction Maps and Information*. Website: <http://gis.abag.ca.gov/website/liquefactionsusceptibility/index.html> (accessed November 14, 2013).

⁸⁷ Oakland, City of, op. cit.

⁸⁸ Association of Bay Area Governments, 2013. *ABAG Landslide Study Zones*. Website: <http://gis.abag.ca.gov/website/LandslideCGS/index.html> (accessed November 14, 2013).

designed for stability and permanence. Therefore, the proposed project would have a *less-than-significant* impact on landslide potential at the remediation site.

SOIL EROSION AND LOSS OF TOPSOIL

Would the project:

2. *Result in substantial soil erosion or the loss of topsoil, creating substantial risks to life, property, or creek/waterways?*

The proposed project would require extensive vegetation removal and grading. These activities may cause erosion during the construction period, however the project is scheduled to be constructed during the dry season which will significantly diminish the opportunity for erosion.

After grading is completed, a cover system would be placed over the tailing piles. Import soils (vegetative soil and low permeability soil) would be brought to the site to construct the cover system. Once the cover is installed and the channel has been restored, the remediation site would be revegetated to prevent erosion and enhance the visual and habitat quality of the area. Revegetation would occur on the cover, on the slopes, and in all areas of soil disturbance. A Revegetation Plan has been prepared for the project area (see Appendix B). A hydroseeding process would be utilized in order to revegetate the cover with a mix of native grasses, wildflowers and herbaceous plants. The hydroseeding process would occur in a series of applications. The first layer would consist largely of a seed mix, which would establish good seed to soil contact. Each subsequent layer would utilize a progressively heavier blend of mulch and tackifier to ensure appropriate adhesion to slopes (see Figure 11). Additionally, an Erosion Control Plan has been prepared for the project and is included as Appendix H.

Resulting Level of Significance. Satisfactory compliance with **SCA GEO-1, SCA GEO-2** and **SCA GEO-3** above will reduce potential impacts to geology and soils to less-than-significant. Therefore, the proposed project would result in a *less-than-significant impact with Standard Conditions of Approval* impact to erosion or the loss of topsoil.

EXPANSIVE SOIL

Would the project:

3. *Be located on expansive soil, as defined in Section 1802.3.2 of the California Building Code (2007, as it may be revised), creating substantial risk to life or property?*

Expansive soils expand and contract in response to changes in soil moisture, most notably when near surface soils change from saturated to a low moisture content condition, and back again. Clayey loams, such as those mapped at the project site, have the potential to shrink and swell. However, the proposed project does not include physical infrastructure improvements which could be damaged by such soils. The proposed project would remediate the mine tailings and restore the creek channel. The tailings would be capped, covered and revegetated. Therefore, the proposed project would have *no impact* with regard to expansive soils.

OTHER SUBSURFACE CONDITIONS

Would the Project:

4. *Be located above a well, pit, swamp, mound, tank vault, or unmarked sewer line, creating substantial risks to life or property?*
5. *Be located above landfills for which there is no approved closure and post-closure plan, or unknown fill soils, creating substantial risks to life or property?*

The remediation site is located adjacent to the Leona Creek channel and the only known previous use of the land was the Leona Heights Sulfur Mine. The Leona Heights Sulfur Mine operated at the project site from about 1900 through the 1920s to extract pyrite (iron sulfide) crystals from the volcanic bedrock for the production of sulfuric acid. Previous site investigations indicate that the typical materials layer at the remediation site consists of up to 25 feet of tailings material, supported by rhyolite bedrock, siltstone, and claystone.⁸⁹ The tailings would be excavated horizontally from the slope face up to a maximum of 70 percent of the reinforced soil slope heights or excavated to competent⁹⁰ bedrock, whichever occurs first.

The only known subsurface issues that could compromise the stability of the remediation site are two former mine adits that have been described previously by LFR within the footprint of the tailings.⁹¹ The Construction Workplan (See Attachment F)⁹² for the project recommends that the entrance of the identified adit located near the toe of the upper pile will be exposed and sealed prior to earthfill in the area. Additionally, if other adits or mine shafts are encountered during construction, they will be sealed or disposed with approval from an on-site engineer. Therefore, the proposed project would provide a beneficial impact to the project site by unearthing and sealing previously compromised mine adits and shafts. Therefore, the proposed project will have a *less-than-significant* impact upon subsurface conditions.

SOILS SUITABLE FOR ALTERNATIVE WASTEWATER DISPOSAL

Would the Project:

6. *Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?*

The proposed project would result in the remediation of mine tailings and the restoration of a creek channel. The proposed project does not include the installation or use of septic or on-site wastewater disposal systems. Therefore, the proposed project would have *no impact* upon the use of septic tanks or alternative waste water disposal systems.

⁸⁹ Geosyntec, 2013. *Leona Heights Sulfur Mine Plan- Remedial Design Plan*. October.

⁹⁰ "Competent bedrock" refers to bedrock that is not fractured, crumbling or eroded and would provide a stable surface upon which to build new slopes.

⁹¹ Levine Fricke, 2004. *Summary Design Report and Construction Documents- Leona Heights Mine*. March.

⁹² E2C, 2013. *Leona Heights Draft Construction Workplan*. November 14.

VII. HAZARDS AND HAZARDOUS MATERIALS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
Would the project:					
1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Create a significant hazard to the public through the storage or use of acutely hazardous materials near sensitive receptors? [NOTE: Per the BAAQMD CEQA Guidelines, evaluate whether the project would result in persons being within the Emergency Response Planning Guidelines (ERPG) exposure level 2 for acutely hazardous air emissions either by siting a new source or a new sensitive receptor. For this threshold, sensitive receptors include residential uses, schools, parks, daycare centers, nursing homes, and medical centers]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (i.e., the "Cortese List") and, as a result, would create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Result in less than two emergency access routes for streets exceeding 600 feet in length unless otherwise determined to be acceptable by the Fire Chief, or his/her designee, in specific instances due to climatic, geographic, topographic, or other conditions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and would result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Be located within the vicinity of a private airstrip and would result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
VII. HAZARDS AND HAZARDOUS MATERIALS					
9. Fundamentally impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The term “hazardous materials” covers a large number of gaseous, liquid and solid substances that are toxic, flammable, corrosive, reactive, infectious or explosive. Due to those properties, hazardous materials have the potential to harm human health or environmental resources, especially if managed improperly. Hazardous materials are generated by a broad range of industrial, commercial, transportation-related and other activities. Common hazardous materials and sources include solvents, paint, acids, plating solutions and other substances produced by heavy- and light-industrial businesses; waste oil, exhaust emissions and other gases and liquids associated with transportation-related facilities. Some mining activities that produced soils contamination from the storage and disposal of toxic substances could produce hazardous conditions.⁹³

The proposed project would disturb soils that contain elevated concentrations of arsenic, lead, and copper.⁹⁴ However, the remediation site is no longer considered a hazardous waste site, and was removed from the State of California’s Cortese List (Government Code Section 65962.5) in 2007.⁹⁵

City of Oakland Standard Conditions of Approval. The City of Oakland provides the following Standard Conditions of Approval regarding the handling, storage, and transportation of hazardous materials on-site:

SCA HAZ-1: Hazardous Materials Business Plan. Prior to issuance of a business license.

The project applicant shall submit a Hazardous Materials Business Plan for review and approval by Fire Prevention Bureau, Hazardous Materials Unit. Once approved this plan shall be kept on file with the City and will be updated as applicable. The purpose of the Hazardous Materials Business Plan is to ensure that employees are adequately trained to handle the materials and provides information to the Fire

⁹³ Oakland, City of, 2004. *City of Oakland General Plan- Safety Element*. November.

⁹⁴ Levine Fricke, 2004. *Summary Design Report and Construction Documents-Leona Heights Mine*. March.

⁹⁵ State Water Resources Control Board, 2007. Written communication to Curtis T. Scott, Chief, California Regional Water Quality Control Board Chief. April 4.

Services Division should emergency response be required. The Hazardous Materials Business Plan shall include the following:

- a. The types of hazardous materials or chemicals stored and/or used on site, such as petroleum fuel products, lubricants, solvents, and cleaning fluids.
- b. The location of such hazardous materials.
- c. An emergency response plan including employee training information
- d. A plan that describes the manner in which these materials are handled, transported and disposed.

SCA HAZ-2: Vegetation Management Plan on Creekside Properties. (www.oaklandnet.com/wildfirePrevention/DosandDonts.pdf) Prior to issuance of a demolition, grading, and/or construction and Ongoing:

- a. The project applicant shall submit a vegetation management plan for review and approval by the Planning and Zoning Division, Fire Services Division, and Environmental Services Division of the Public Works Agency that includes, if deemed appropriate, the following measures:
 - i. Identify and do not disturb a 20-foot creek buffer from the top of the creek bank. If the top of bank cannot be identified, leave a 50-foot buffer from the centerline of the creek or as wide a buffer as possible between the creek centerline and the proposed site development.
 - ii. Identify and leave "islands" of vegetation in order to prevent erosion and landslides and protect nesting habitat.
 - iii. Leave at least 6 inches of vegetation on the site.
 - iv. Trim tree branches from the ground up (limbing up) and leave tree canopy intact.
 - v. Leave stumps and roots from cut down trees to prevent erosion.
 - vi. Plant fire-appropriate, drought-tolerant, preferably native vegetation.
 - vii. Err on the side of caution. If you don't know if a plant, tree or area is sensitive, ask for a second opinion before you cut.
 - viii. Provide erosion and sediment control protection if cutting vegetation on a steep slope.
 - ix. Leave tall shrubbery at least 3-feet high.
 - x. Fence off sensitive plant habitats and creek areas to protect from goat grazing.
 - xi. Obtain a tree protection permit for a protected tree (includes all mature trees except eucalyptus and Monterey pine).
 - xii. Contact the City Tree Department (615-5850) for dead trees.
 - xiii. Do not clear-cut vegetation. This can lead to erosion and severe water quality problems and destroy important habitat.
 - xiv. Do not remove vegetation within 20-feet of the top of bank. If the top of bank cannot be identified, do not cut within 50-feet of the centerline of the creek or as wide a buffer as possible between the creek centerline and the proposed site development.
 - xv. Do not trim/prune branches that are larger than 4 inches in diameter.
 - xvi. Do not remove tree canopy.
 - xvii. Do not dump cut vegetation in a creek.

- xviii. Do not cut tall shrubbery to less than 3-feet high.
- xix. Do not cut of short vegetation (grasses, ground-cover) to less than 6-inches high.

SCA HAZ-3: Fire Safety. Prior to and ongoing throughout demolition, grading, and/or construction.

The project applicant and construction contractor will ensure that during project construction, all construction vehicles and equipment will be fitted with spark arrestors to minimize accidental ignition of dry construction debris and surrounding dry vegetation.

SCA HAZ-4: Site Review by the Fire Services Division.

The Project applicant shall submit plans for site review and approval to the Fire Prevention Bureau Hazardous Materials Unit. Property owner may be required to obtain or perform a Phase II hazard assessment.

SCA HAZ-5: Fire Safety Phasing Plan. Prior to issuance of a demolition, grading, and/or construction and concurrent with any p-job submittal permit.

The Project applicant shall submit a separate fire safety phasing plan to the Planning and Zoning Division and Fire Services Division for their review and approval. The fire safety plan shall include all of the fire safety features incorporated into the Project and the schedule for implementation of the features. Fire Services Division may require changes to the plan or may reject the plan if it does not adequately address fire hazards associated with the Project as a whole or the individual phase.

PUBLIC HAZARD THROUGH ROUTINE USE

Would the project:

1. *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*
3. *Create a significant hazard to the public through the storage or use of acutely hazardous materials near sensitive receptors?*

The proposed project area is located in the Oakland Hills, and includes land that is located primarily in the `Resource Conservation Land Use designation. The only known previous land use at the project site is the closed Leona Heights Sulfur Mine. Previous soil testing has indicated the presence of elevated levels of lead, copper and arsenic consistent with sulfuric acid mine leakage, but reconnaissance has not uncovered evidence of any hazardous materials.⁹⁶

⁹⁶ Levine Fricke, op. cit.

The mine tailings have not been categorized as a “hazardous material”^{97,98} and the grading and handling of the mine tailings, with the implementation of **SCA AIR-1** and the implementation of all feasible dust reduction measures, would not create a more significant hazard to human health due to inhalation of dust particulates than would occur during the handling and grading of other soils and materials.

Construction of the proposed project would not require the routine transport, use, or disposal of significant quantities of hazardous materials. Some small quantities of commercially-available hazardous materials, such as vehicle fuel and janitorial supplies, would be used during operation of the earthmoving equipment, and stored at the staging area for restroom maintenance. However, these materials would not be used in sufficient quantities or contrary to their intended use to pose a threat to human health or the environment.

Resulting Level of Significance. Implementation of the City’s Standard Condition of Approval **SCA HAZ-1** would reduce this potential risk to a *less-than-significant impact with Standard Condition of Approval* on the public and the environment related to the routine transport, use, and handling of hazardous materials.

PUBLIC HAZARD RESULTING FROM ACCIDENTAL RELEASE OF MATERIALS

Would the project:

2. *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

Construction at the project site would require the use and transport of hazardous materials. These materials would include fuels, oils, and other chemicals used during construction activities. Improper use and transportation of hazardous materials could result in accidental releases or spills, potentially posing health risks to workers, the public, and environment.

Construction activities at the project site would require implementation of a Storm Water Pollution Prevention Plan (SWPPP) (See **SCA GEO-1** in Section XIII). The SWPPP would incorporate current Best Management Practices (BMPs) for construction, including site housekeeping practices, hazardous material storage, inspections, maintenance, worker training in pollution prevention measures, and containment of releases to prevent run off via storm water. Although designed to protect storm water quality, the SWPPP would also reduce the potential impacts of hazardous materials releases during construction. Additionally, implementation of **SCA HAZ-1**, described above, would further reduce the potential impact to a *less-than-significant level with Standard Condition of Approval*.

⁹⁷ Levine Fricke, 2004. *Summary Design Report and Construction Documents-Leona Heights Mine*. March.

⁹⁸ State Water Resources Control Board, 2007. Written communication to Curtis T. Scott, Chief, California Regional Water Quality Control Board Chief. April 4.

HAZARDS NEAR SCHOOLS

Would the project:

4. *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

The tailings to be remediated (covered) on the site do not meet the criteria for being considered hazardous or acutely hazardous materials.⁹⁹ However, Merritt College is located approximately .25 miles east of the remediation site, and the Oakland Community Day School is located approximately .10 miles west of the remediation site. Because the remediation site is located downhill and across densely wooded lands from Merritt College and uphill and across densely wooded lands from the Oakland Community Day School, dust from construction activities at the site is not expected to be a concern at the school sites. In addition to reduction of dust leaving the site due to topography and intervening vegetation, implementation of the City's Standard Condition of Approval regarding Dust Control (See **SCA AIR-1** in Section III) would ensure that excavated materials would not become airborne. The proposed project would not result in hazardous emissions and hazardous or acutely hazardous materials would not be handled at the site. Therefore, the proposed project would result in a *less-than-significant with Standard Condition of Approval* impact with regard to hazards near schools.

LISTED HAZARDOUS MATERIALS SITE

Would the project:

5. *Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (i.e., the "Cortese List") and, as a result, would create a significant hazard to the public or the environment?*

The project site was formerly listed pursuant to Section 65962.5 of the Government Code due to a Cleanup and Abatement Order issued by the Regional Water Quality Control Board, San Francisco Bay Region. The Regional Water Board requested that the site be removed from the list and that request was approved by the State Water Resources Control Board on April 4, 2007.¹⁰⁰ Therefore, the proposed project would have *no impact* with regard to being listed as a hazardous materials site.

⁹⁹ State Water Resources Control Board, 2007. Written communication to Curtis T. Scott, Chief, California Regional Water Quality Control Board Chief. April 4.

¹⁰⁰ Ibid.

PROXIMITY TO AIRPORT PLAN OR FACILITIES

Would the project:

7. *Be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and would result in a safety hazard for people residing or working in the project area?*
8. *Be located within the vicinity of a private airstrip and would result in a safety hazard for people residing or working in the project area?*

The proposed project is not within the vicinity of a private airstrip. The proposed project would not result in a safety hazard to people working or residing in the area due to the proximity of a private airstrip. Similarly, the closest airport is the Oakland International Airport, which is approximately 5.5 miles away as the crow flies, and the project area is not included in any airport land use plans. The project would not result in a safety hazard related to these airports. Therefore, the proposed project would have **no impact** with regard to proximity to airport facilities.

EMERGENCY ACCESS AND RESPONSE

Would the project:

6. *Result in less than two emergency access routes for streets exceeding 600 feet in length unless otherwise determined to be acceptable by the Fire Chief, or his/her designee, in specific instances due to climatic, geographic, topographic, or other conditions?*
9. *Fundamentally impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

The emergency access routes for this project site include McDonell Avenue, Campus Drive and the existing fire trail. During the construction period, McDonell Avenue would be utilized as the materials hauling route. To maintain one-way traffic, the contractor will use traffic controls such as traffic monitors, GPS units, and radio communication. Additionally a traffic control plan would be submitted to the City and at no time would emergency vehicle access to McDonell Avenue and/or the fire road be restricted.

The project will submit a Fire Prevention Plan to the City for approval prior to the construction period. Therefore, the proposed project would result in a **less-than-significant** impact with regard to emergency access.

RISK ASSOCIATED WITH WILDFIRES

Would the project:

10. *Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

The vegetation of the Oakland Hills ranges from densely wooded forests to open grasslands, making virtually the entire area vulnerable to fire; the wooded areas pose risks due to the supply of fuel from trees and the possibility of crown, or tree-top, fires, while the grass- and brush-covered areas are

highly flammable. Adding to the fire risk are the area's steep and rugged terrain, and the abundance of non-native vegetation, especially Monterey pine and eucalyptus, which are not fire-resistant. As a result, the project area is classified as "high" or "very high" for fire threat.¹⁰¹

Although workers could be exposed to wildland fire risks during the project construction period, there is nothing inherent in the design or construction of the proposed project that would increase the potential for wildfire.

Resulting Level of Significance. Implementation of the City's Standard Conditions of Approval **SCA HAZ-2, SCA HAZ -3, SCA HAZ-4 and SCA HAZ-5** would reduce this potential risk to a *less-than-significant with Standard Condition of Approval* level.

¹⁰¹ Oakland, City of, 2004. *City of Oakland General Plan- Safety Element*. November.

VIII. HYDROLOGY AND WATER QUALITY	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
Would the project:					
1. Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Result in substantial erosion or siltation on- or off-site that would affect the quality of receiving waters?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Result in substantial flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Create or contribute substantial runoff which would exceed the capacity of existing or planned stormwater drainage systems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Create or contribute substantial runoff which would be an additional source of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Expose people or structures to a substantial risk of loss, injury or death involving flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Expose people or structures to a substantial risk of loss, injury, or death as a result of inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course, or increasing the rate or amount of flow, of a creek, river or stream in a manner that would result in substantial erosion, siltation, or flooding, both on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VIII. HYDROLOGY AND WATER QUALITY	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
<p>13. Fundamentally conflict with elements of the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect hydrologic resources? [NOTE: Although there are no specific, numeric/quantitative criteria to assess impacts, factors to be considered in determining significance include whether there is substantial degradation of water quality through (a) discharging a substantial amount of pollutants into a creek, (b) significantly modifying the natural flow of the water or capacity, (c) depositing substantial amounts of new material into a creek or causing substantial bank erosion or instability, or (d) substantially endangering public or private property or threatening public health or safety.]</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SETTING

The streams running through the remediation site drain a watershed encompassing approximately 50 acres. The watershed begins in an unpaved parking lot west of Merritt College and primarily consists of undeveloped shrub and grass covered hills and ravines. In the upper portion of the former mine site, the intermittent Leona Creek has eroded downward through the mine tailings, forming a deeply incised channel. The tailings piles are more porous than the native bedrock, which allows water to migrate easily through the material. In the lower portion of the site, the creek generally skirts around the southern edge of the mine tailings. One spring-fed perennial stream appears to flow out of the buried mine adit in the upper pile. The creek flows down the southeast side of the tailings, under Leona Street through a culvert, follows a natural channel several hundred feet, and enters a storm drain near the intersection of Mountain Boulevard and Griffin Street. The storm drain discharges to Lake Aliso on the Mills College campus, then to the San Leandro Bay via Line J of the Alameda County Flood Control and Water Conservation Districts (ACFCWDs) storm drain system, and ultimately discharges into the San Francisco Bay.¹⁰²

Water samples from the remediation site have produced very low pH (about 3.0), which increases the solubility of the metals in the tailings piles.¹⁰³ The elevated acidity, in turn, increases the solubility of metals present in the mine tailings, resulting in the leaching of heavy metals into the creek.¹⁰⁴ The creek within the remediation site has the characteristic orange color associated with acid mine drainage, and water samples have demonstrated high levels of cadmium, copper, mercury, nickel, lead, zinc and arsenic.¹⁰⁵ Shallow groundwater generally flows toward the southwest, and water

¹⁰² Levine Fricke, 1992. *Hydrogeology Report- Leona Heights Sulfur Mine*. October.

¹⁰³ Geosyntec, 2013. *Leona Heights Sulfur Mine Plan- Remedial Design Plan*. October 15.

¹⁰⁴ Ibid.

¹⁰⁵ San Francisco Bay Area Regional Water Quality Control Board, 2013. *Updated Fact Sheet*. March.

samples have indicated that groundwater upstream and downstream does not appear to be affected by the dissolved metals. However, testing has indicated that onsite shallow groundwater impairs water quality in Leona Creek.¹⁰⁶

In 1998, the Water Board issued a Cleanup and Abatement Order (CAO) (Order No. 92-105) requiring the responsible parties to address the source of acid mine drainage and improve water quality at the project site. On May 9, 2013, the Water Board rescinded Order No. 92-105 and declared the amended CAO (Orders NOS. 98-004 and R2-2013-0021) as the superseding document.

DEGRADATION OF WATER QUALITY/VIOLATION OF STANDARDS

Would the project:

1. *Violate any water quality standards or waste discharge requirements?*
6. *Create or contribute substantial runoff which would be an additional source of polluted runoff?*
7. *Otherwise substantially degrade water quality?*

The proposed project for the restoration of Leona Creek and remediation of the mine tailings would satisfy the requirements of the CAO (Orders NOS. 98-004 and R2-2013-0021). Similarly, the proposed project satisfies the City of Oakland's General Plan Open Space, Conservation and Recreation¹⁰⁷ (OSCAR) Element Section 3.2.3- Sulfur Mine Cleanup which discusses the importance of developing a remediation plan for the Leona Creek.

The proposed project includes the remediation of mine tailings and the restoration of the Leona Creek channel. The proposed consolidation, capping, revegetation, and drainage improvements at the site would minimize contact between groundwater runoff and tailings, thereby reducing the metal and sediment load in Leona Creek.

A project area drainage plan has been prepared with the post-remediation objectives of avoiding contact of stormwater and groundwater with tailings piles, reducing erosion from concentrated stormwater flows and enhancing reinforced soil slope performance. The overall site drainage management would include a series of appropriately-sized surface water conveyance features to divert drainage flows from areas at higher elevation away from the cover system, and route flows to the creek channel. Therefore, the proposed project would have beneficial impacts upon the water quality of Leona Creek and as a result, would have *no impact* upon degradation of water quality.

GROUNDWATER SUPPLIES AND RECHARGE

Would the project:

2. *Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a*

¹⁰⁶ E2C, 2013. *Leona Heights Sulfur Mines Remediation Creek Restoration 90% Design Report*. October.

¹⁰⁷ Oakland, City of. 1996. *City of Oakland General Plan- Open Space, Conservation and Recreation Element*. June.

level which would not support existing land uses or planned uses for which permits have been granted)?

The proposed project includes the remediation of mine tailings and the restoration of a creek channel. The project would include a cover system consisting of a 12-inch thick vegetative layer, a 12-inch thick low-permeability layer and compacted mine tailings which would limit the potential for groundwater to contact tailings. However, the project would restore the existing creek channel by removing tailings in the channel and recreating steps and drops that would mimic natural features. As a result, the proposed project would allow for the recharging of the aquifer below the creek channel, and would not in any way deplete groundwater supplies. Therefore, the proposed project would have *no impact* with respect to groundwater supplies.

EROSION/SILTATION AFFECTING WATER QUALITY AND INCREASE POLLUTED RUNOFF

Would the project:

3. *Result in substantial erosion or siltation on- or off-site that would affect the quality of receiving waters?*
12. *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course, or increasing the rate or amount of flow, of a creek, river or stream in a manner that would result in substantial erosion, siltation, or flooding, both on- or off-site?*

The existing creek channel would be restored to allow continued flow of Leona Creek through the site and to provide natural sediment transport along the creek. The first task in the creek restoration would be to remove mine tailings in the channel. Once all tailings materials have been removed from the existing channel, the portion of the creek channel within the remediation site boundaries would be restored in accordance with the design drawings. Steps and drops would be constructed utilizing existing competent bedrock, where encountered, or by placing and embedding cobbles¹⁰⁸ and, or large boulders. The large boulders would be individually stabilized and interlocked with one another. Cobbles, gravels and coarse sands would fill the gaps among the large boulders (see Figure 12).

Resulting Level of Significance. Implementation of **SCA GEO-1, SCA GEO-2, and SCA GEO-3**, identified in Section VI, would ensure that the potential impact associated with erosion and siltation would be reduced to *less than significant with Standard Conditions of Approval*.

EXCEED STORM DRAINAGE CAPACITY/FLOODING

Would the project:

4. *Result in substantial flooding on- or off-site?*
5. *Create or contribute substantial runoff which would exceed the capacity of existing or planned stormwater drainage systems?*

¹⁰⁸ Cobbles are rounded stones.

The closed mine is located in the upper reach of the Leona Creek watershed, and sulfur-bearing mining waste (also referred to as tailings) now fills the creek channel. The site consists of upper and lower mine tailings piles. In the upper portion of the former mine site, the intermittent creek has eroded downward through the mine tailings, forming a deeply incised channel. In the lower portion of the site, the creek generally skirts around the southern edge of the mine tailings. The streams running through the remediation site drain a watershed encompassing approximately 50 acres. During rain events, runoff from the watershed above the site forms an ephemeral stream that combines with the daylighted groundwater to significantly increase flows.

No stormwater drainage systems are existing or planned in the project area. The existing creek channel would be restored to allow continued flow of Leona Creek through the site and to provide natural sediment transport along the creek. Once all tailings materials have been removed from the existing channel, the portion of the creek channel within the remediation site boundaries would be restored in accordance with the design drawings. The redesigned channel is designed to accommodate the 100-year, 24-hour storm event.

The proposed project would have a beneficial impact upon the storm drainage capacity of Leona Creek, and would result in *no impact*.

FLOOD HAZARD AREAS

Would the project:

8. *Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, that would impede or redirect flood flows?*
9. *Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?*

FEMA's flood-insurance rate map for Oakland assigned the "Zone C" designation to the vast majority of the city. This is FEMA's designation carrying the lowest flood potential or hazard, and represents "areas of minimal flooding."¹⁰⁹ Due to the proposed project location in the Oakland Hills, it is not anticipated to be at risk for flooding. Additionally, one of the beneficial design elements of the proposed project is that the redesigned channel is designed to accommodate the 100-year, 24-hour storm event. Finally, the proposed project does not include housing or infrastructure that would be at risk for flooding. Therefore, the proposed project would have *no impact* upon flood hazard areas.

FLOODING

Would the project:

10. *Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?*

¹⁰⁹ Oakland, City of, 2004. *City of Oakland General Plan-Safety Element*. November.

As discussed previously, the proposed project is not located in a flood prone area. Additionally, the proposed project is not located downstream of a levee or dam. Finally, the proposed project does not include structures or housing that would be vulnerable to flooding. Therefore, the proposed project would have *no impact* on flooding.

SEICHE, TSUNAMI, AND MUDFLOW

Would the project:

11. *Expose people or structures to a substantial risk of loss, injury, or death as a result of inundation by seiche, tsunami, or mudflow?*

The proposed project is located in the Oakland Hills at elevations ranging from 350 feet above mean sea level (msl) at the southwest corner, rising to approximately 550 feet msl, and is not located adjacent to the coastline. Additionally, the proposed project does not include structures or housing that would be vulnerable to seiche, tsunami or mudflow. Therefore, the proposed project would have *no impact* with regard to seiche, tsunami, or mudflow.

CREEK PROTECTION ORDINANCE

Would the project:

13. *Fundamentally conflict with elements of the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect hydrologic resources?*

The proposed project would remediate mine tailings and restore the Leona Creek channel. To comply with the CAO and City of Oakland requirements as Lead Agency under CEQA, the project applicant must also obtain a Category IV Creek Protection Permit, a Tree Removal and Protection Permit, and Grading, Encroachment and Private Work in the Public Right-of-Way permits from the City.

As part of the permitting process, the proposed project would implement the following Standard Conditions of Approval that include **SCA BIO-9, SCA BIO-10, SCA BIO-11, SCA BIO-12** and **SCA BIO-13** and apply to all projects involving a Category IV Creek Protection permit. These SCAs were **discussed previously in Section IV**.

Resulting Level of Significance. Implementation of **SCA BIO-9, SCA BIO-10, SCA BIO-11, SCA BIO-12, SCA BIO-13** identified above, would ensure that the potential impact associated with conflicts to the Creek Protection Ordinance would be reduced to *less than significant with Standard Conditions of Approval*.

IX. LAND USE AND PLANNING	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
Would the project:					
1. Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Result in a fundamental conflict between adjacent or nearby land uses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Fundamentally conflict with applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect and actually result in a physical change in the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SETTING

The project area is located within the Resource Conservation Area land use designation. The project area is also located within the Residential Hillside (RH-1) Zoning Districts. The remediation site is located along the western edge of a large, undeveloped property. The site is bordered on the west by private residences and those directly adjacent to the site are irregularly spaced along the hillside. To the north and south are areas of expansive open space owned by the project applicant and totaling approximately 135 acres. Located north of the project applicant's property is additional open space owned by the City of Oakland. Merritt College is located east of Campus Drive, approximately one-quarter mile east of the site, and is a branch of the Peralta Community College District.

PHYSICAL DIVISION OF COMMUNITY/LAND USE COMPATIBILITY

Would the project:

1. *Physically divide an established community?*
2. *Result in a fundamental conflict between adjacent or nearby land uses?*

The physical division of an established community typically refers to the construction of a physical feature (such as an interstate highway or railroad tracks) or removal of a means of access (such as a local road or bridge) that would impair mobility within an existing community, or between a community and outlying area.

The proposed project would not change access patterns around the project area or otherwise restrict traffic flow on McDonnell Drive, Campus Drive, or other streets in the vicinity of the project area.

The remediation site is directly adjacent to undeveloped land to the north, south and east, and scattered residences to the west. The zoning of the remediation site (and undeveloped land to the north, south and east) is Residential Hillside (RH-1). The residential properties to the west are located in a similar zoning district, Residential Hillside (RH-3).

The proposed project would restore the function of the creek channel, improve the aesthetics of the remediation site, and is consistent with the surrounding land use. Therefore, the proposed project would not disrupt or divide the physical arrangement of an established community or result in a conflict between adjacent land uses and would instead result in an overall benefit to the community within the area. The proposed project would have a *less-than-significant* impact upon the physical cohesion of the surrounding community and *no impact* upon land use compatibility.

PLANS, POLICIES AND ZONING

Would the project:

3. *Fundamentally conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect and actually result in a physical change in the environment?*

The proposed project would restore the function of the creek channel, improve the aesthetics of the remediation site, and is consistent with the City of Oakland's General Plan polices as discussed Policy CO-3.1 and Action CO-3.2.3. Policy CO-3.1 supports the conservation of the rhyolite deposits in the Oakland hills and as identified at the remediation site. The proposed project will grade the tailings piles and cover and cap the tailings in order to eliminate contact between surface water and tailings. Indirectly, this design element will serve to further protect the rhyolite deposits that lie underneath the tailings.

Action CO-3.2.3 urges the creation of a task force to address the issue of acidic runoff from the mine tailings at this site. Since the project is designed specifically to meet the objective of eliminating acidic runoff from the mine tailings, this project is in conformance with the OSCAR Action CO-3.2.3.

Finally, the proposed project is in compliance with CEQA as evidence by the preparation of this document and will meet all of the criteria set forth by each agency in order to successfully attain the following permits necessary for the implementation of the project:

- U.S. Fish and Wildlife Service Section 7 of the Endangered Species Act
- Army Corps of Engineers Section 404 Clean Water Act Permit
- CA Department of Fish and Game Stream Bed Alteration Agreement
- CA Endangered Species Act Compliance- Incidental Take Permit
- RWQCB Section 401 Water Quality Certification
- City of Oakland Category IV Creek Protection Permit
- City of Oakland Tree Removal and/or Protection Permit
- City of Oakland Grading Permit

- City of Oakland Encroachment Permit
- City of Oakland Permit for Private Work in the Public Right of Way (“P” Job Permit)

Therefore, the proposed project would have a *less-than-significant* effect with regard to conflicting applicable land use plan, policy, or regulation of relevant agencies.

CONSERVATION PLAN

Would the project:

4. *Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan?*

There are no applicable habitat conservation plans or natural community conservation plans for the project area. Therefore, the proposed project would have *no impact* upon those plans.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
X. MINERAL RESOURCES					
Would the project:					
1. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The only identified mineral resource in the City of Oakland is Leona rhyolite, which is found in the Oakland hills between Claremont Canyon and the San Leandro border. Rhyolite is volcanic rock used as material for road base, paving, curbs, and foundation stones. There are currently no active quarries in Oakland. The remediation site is located in the hills, and Leona rhyolite has been observed in the project area.¹¹⁰

MINERAL RESOURCES

Would the project:

1. *Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?*
2. *Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

The City of Oakland General Plan-OSCAR Section 3.1 indicates that the Leona rhyolite deposits that are located in the Oakland hills are of regional significance and recommends the conservation of the deposits.¹¹¹ Soil and site testing has confirmed the presence of the Leona rhyolite within and adjacent to the project area. However, the proposed project would not impact the conservation of the mineral resource. The project proposes to grade and compact the mine tailings to cover the slopes of the creek channel. The compacted tailings would be reinforced with a geomembrane liner, erosion control fabric, clean soil, and planted with native grasses, wildflowers, and herbaceous plants, thereby preserving the rhyolite bedrock. Therefore, the proposed project would not result in the loss of availability of a known mineral resource of value to the region or residents of the State. The project would have a *less-than-significant* effect upon mineral resources.

¹¹⁰ Oakland, City of, 1996. *Oakland General Plan; Open Space, Conservation, and Recreation Element*. June.

¹¹¹ Ibid.

There are no operational mineral resource recovery sites delineated in the OSCAR, or any other specific plan or land use plan, or operating in the City of Oakland¹¹². Similarly, the proposed project would not result in the quarrying of any mineral resource. Therefore, the proposed project would have *no impact* related to the loss of availability of a mineral recovery site.

¹¹² San Francisco Chronicle, 2005. *Extreme makeover / Leona Quarry to get a new life as Oakland's biggest subdivision*. Website: www.sfgate.com/bayarea/article/Extreme-makeover-Leona-Quarry-to-get-a-new-life-2562773.php (accessed November 1, 2013).

XI. NOISE	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
Would the project:					
1. Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding construction noise, except if an acoustical analysis is performed that identifies recommended measures to reduce impacts? (During the hours of 7 p.m. to 7 a.m. on weekdays and 8 p.m. to 9 a.m. on weekends and federal holidays, noise levels received by any land use from construction or demolition shall not exceed the applicable nighttime operational noise level standard.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Municipal Code Section 8.18.020) regarding persistent construction-related noise?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding operational noise?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Generate noise resulting in a 5 dBA permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or, if under a cumulative scenario where the cumulative increase results in a 5 dBA permanent increase in ambient noise levels in the project vicinity without the project (i.e., the cumulative condition including the project compared to the existing conditions) and a 3 dBA permanent increase is attributable to the project (i.e., the cumulative condition including the project compared to the cumulative baseline condition without the project)? [NOTE: Outside of a laboratory, a 3 dBA change is considered a just-perceivable difference. Therefore, 3 dBA is used to determine if the project-related noise increases are cumulative considerable. Project-related noise should include both vehicle trips and project operations.]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Expose persons to interior L _{dn} or CNEL greater than 45 dBA for multi-family dwellings, hotels, motels, dormitories and long-term care facilities (and may be extended by local legislative action to include single family dwellings) per California Noise Insulation Standards (CCR Part 2, Title 24)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
XI. NOISE					
6. Expose the project to community noise in conflict with the land use compatibility guidelines of the Oakland General Plan after incorporation of all applicable Standard Conditions of Approval?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Expose persons to or generate noise levels in excess of applicable standards established by a regulatory agency (e.g., occupational noise standards of the Occupational Safety and Health Administration [OSHA])?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. During either project construction or project operation expose persons to or generate groundborne vibration that exceeds the criteria established by the Federal Transit Administration (FTA)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Be located within an airport land use plan and would expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Be located within the vicinity of a private airstrip, and would expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

1. Characteristics of Noise

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, or sleep. Several noise measurement scales exist that are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative intensity of a sound. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a ten-fold increase in acoustic energy, while 20 dB is 100 times more intense and 30 dB is 1,000 times more intense. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness. Sound intensity is normally measured through the A-weighted sound level (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. The A-weighted sound level is the basis for 24-hour sound measurements which better represent how humans are more sensitive to sound at night. These measurements include the day/night sound level (L_{dn}) and the Community Noise Equivalent Level (CNEL). CNEL is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale, but without the adjustment for events occurring during the evening relaxation hours.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis are specified in terms of maximum levels denoted by L_{max} for short-term noise impacts. L_{max} reflects peak operating conditions and addresses the annoying aspects of intermittent noise.

Noise impacts can be described in three categories. The first is audible impacts, which refers to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 dB or greater, since this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise level of less than 1.0 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

2. Existing Noise Environment

The project is located in a predominantly residential suburban area and is, therefore, influenced by several surrounding noise sources. Primary noise sources that affect the background noise level of the area include vehicular traffic on State Route 13, Interstate-580, and local roadways, natural noises such as dogs barking and wind rustling trees, and occasional airplane overflights. To document the existing noise environment in the project vicinity, an ambient noise measurement effort was performed. On November 5, 2013, an LSA technician took three short-term (15-minute) noise measurements at three noise-sensitive locations in the project vicinity. The short-term noise monitoring data sheets are included in Appendix I. Table 7 summarizes the noise levels measured during the short-term ambient noise measurements.

Table 7: Ambient Noise Monitoring Results, dBA

Site #	Location	Start Time	L_{eq}	L_{max}	L_{min}
1	Driveway of 5250 McDonell Avenue	10:31 a.m.	54.5	77.7	46.7
2	Driveway of 5171 McDonell Avenue	11:03 a.m.	60.8	81.1	43.0
3	Driveway of 5238/5230 Leona Street	12:19 p.m.	53.1	74.5	48.4

Source: LSA Associates, Inc., November 2013.

City of Oakland Standard Conditions of Approval. In order to reduce impacts generated by construction activities at the Project site, the following City of Oakland Standard Conditions of Approval would apply:

- SCA NOI-1: Days/Hours of Construction Operation.** The project applicant shall require construction contractors to limit standard construction activities as follows:
- a. Construction activities are limited to between 7:00 a.m. and 7:00 p.m. Monday through Friday, except that pile driving and/or other extreme noise generating activities greater than 90 dBA shall be limited to between 8:00 a.m. and 4:00 p.m. Monday through Friday.
 - b. Any construction activity proposed to occur outside of the standard hours of 7:00 a.m. to 7:00 p.m. Monday through Friday for special activities (such as concrete pouring which may require more continuous amounts of time) shall be evaluated

on a case by case basis, with criteria including the proximity of residential uses and a consideration of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened and such construction activities shall only be allowed with the prior written authorization of the Building Services Division.

- c. Construction activity shall not occur on Saturdays, with the following possible exceptions:
 - i. Prior to the building being enclosed, requests for Saturday construction for special activities (such as concrete pouring which may require more continuous amounts of time), shall be evaluated on a case by case basis, with criteria including the proximity of residential uses and a consideration of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened. Such construction activities shall only be allowed on Saturdays with the prior written authorization of the Building Services Division.
 - ii. After the building is enclosed, requests for Saturday construction activities shall only be allowed on Saturdays with the prior written authorization of the Building Services Division, and only then within the interior of the building with the doors and windows closed.
- d. No extreme noise generating activities (greater than 90 dBA) shall be allowed on Saturdays, with no exceptions.
- e. No construction activity shall take place on Sundays or Federal holidays.
- f. Construction activities include but are not limited to: truck idling, moving equipment (including trucks, elevators, etc) or materials, deliveries, and construction meetings held on-site in a non-enclosed area.
- g. Applicant shall use temporary power poles instead of generators where feasible.

SCA NOI- 2: Noise Control. To reduce noise impacts due to construction, the project applicant shall require construction contractors to implement a site-specific noise reduction program, subject to the Planning and Zoning Division and the Building Services Division review and approval, which includes the following measures:

- a. Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).
- b. Except as provided herein, Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used, if such jackets are commercially available and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such

as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.

- c. Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the City to provide equivalent noise reduction.
- d. The noisiest phases of construction shall be limited to less than 10 days at a time. Exceptions may be allowed if the City determines an extension is necessary and all available noise reduction controls are implemented.

SCA NOI-3: Noise Complaint Procedures. Prior to the issuance of each building permit, along with the submission of construction documents, the project applicant shall submit to the Building Services Division a list of measures to respond to and track complaints pertaining to construction noise. These measures shall include:

- a. A procedure and phone numbers for notifying the Building Services Division staff and Oakland Police Department; (during regular construction hours and off-hours);
- b. A sign posted on-site pertaining with permitted construction days and hours and complaint procedures and who to notify in the event of a problem. The sign shall also include a listing of both the City and construction contractor's telephone numbers (during regular construction hours and off-hours);
- c. The designation of an on-site construction complaint and enforcement manager for the project;
- d. Notification of neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of extreme noise generating activities about the estimated duration of the activity; and
- e. A preconstruction meeting shall be held with the job inspectors and the general contractor/on-site project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.

SCA NOI-4: Pile Driving and Other Extreme Noise Generators. To further reduce potential pier drilling, pile driving and/or other extreme noise generating construction impacts greater than 90dBA, a set of site-specific noise attenuation measures shall be completed under the supervision of a qualified acoustical consultant. Prior to commencing construction, a plan for such measures shall be submitted for review and approval by the Planning and Zoning Division and the Building Services Division to ensure that maximum feasible noise attenuation will be achieved. This plan shall be based on the final design of the project. A third-party peer review, paid for by the project applicant, may be required to assist the City in evaluating the feasibility and effectiveness of the noise reduction plan submitted by the project applicant. The criterion for approving the plan shall be a determination that maximum feasible noise attenuation will be achieved. A special inspection deposit is required to ensure compliance with the noise reduction plan. The amount of the deposit shall be determined by the Building Official, and the deposit shall be submitted by the project applicant concurrent with

submittal of the noise reduction plan. The noise reduction plan shall include, but not be limited to, an evaluation of implementing the following measures. These attenuation measures shall include as many of the following control strategies as applicable to the site and construction activity:

- f. Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings;
- g. Implement “quiet” pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;
- h. Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site;
- i. Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example and implement such measure if such measures are feasible and would noticeably reduce noise impacts; and
- j. Monitor the effectiveness of noise attenuation measures by taking noise measurements.

CONSTRUCTION IMPACTS

Would the project:

1. *Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding construction noise, except if an acoustical analysis is performed? (During the hours of 7 p.m. to 7 a.m. on weekdays and 8 p.m. to 9 a.m. on weekends and federal holidays, noise levels received by any land use from construction or demolition shall not exceed the applicable nighttime operational noise level standard.)*
2. *Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Municipal Code Section 8.18.020) regarding persistent construction-related noise?*
7. *Expose persons to or generate noise levels in excess of applicable standards established by a regulatory agency (e.g., occupational noise standards of the Occupational Safety and Health Administration [OSHA])?*

The City of Oakland has standards for construction noise levels at receiving property lines, as shown in Table 8.

Table 8: City of Oakland Construction Noise Standards at Receiving Property Line, dBA^a

Receiving Land Use	Maximum Allowable Noise Level (dBA)	
	Daily 7:00 a.m. to 7:00 p.m.	Daily 7:00 a.m. to 7:00 p.m.
Less Than 10 Days		
Residential	80	65
Commercial, Industrial	85	70
More Than 10 Days		
Residential	65	55
Commercial, Industrial	70	60

^a Note: If the ambient noise level exceeds these standards, the standard shall be adjusted to equal the ambient noise level.

Source: City of Oakland, 1997. *Oakland Municipal Code*. Chapter 17.120.

An acoustical analysis for this project was performed, as detailed below.

Implementation of the proposed project would temporarily raise ambient noise levels in the vicinity of the project site during the construction period. Construction is expected to commence in May 2014 and would occur over an approximate five-month period. Construction-related short-term noise levels would be higher than existing ambient noise levels in the vicinity of the project site but would end once construction is completed.

Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. The project will consist of general phases including the following: 1) site-preparation including installation of signage and staging area preparation; 2) site grading and construction including constructing reinforced slopes; and 3) mining wastes isolation and creek remediation including installation of an impermeable geomembrane cover system over re-graded waste piles, and revegetation of disturbed land. These phases would change the character of the noise generated on the project site and, therefore, the noise levels surrounding the site as construction progresses.

Two types of short-term noise impacts would occur during the construction phases of the project. The first type would result from the increase in traffic flow on local streets, associated with the transport of workers, equipment, and materials to and from the project site. The FHWA highway traffic noise prediction model (FHWA RD-77-108) was used to evaluate the potential increase in traffic noise associated with construction traffic trips in the vicinity of the project site. For this traffic analysis, it is estimated that the project would generate approximately 50 maximum daily trips along the proposed construction access route during delivery events of construction materials. It is estimated that there would be five such events lasting five days each during the five-month construction period. This estimate includes a maximum of 30 worker daily trips to the lodge staging area, 2 van/shuttle daily trips from the staging area to the project site, and 38 material and equipment delivery trips. For a typical construction day without staged materials delivery, the construction traffic on McDonell Avenue will consist of 2 van/shuttle trips, approximately 30 maximum worker daily trips and a few trips for materials and equipment direct delivery to the main staging area at the site entrance. Existing vehicle trips along the access route of McDonell Avenue is estimated to be 90 trips per day, based on the nine residential land uses that obtain access from this roadway; while it is estimated an average of 1,000 daily vehicle trips occur along Mountain Boulevard. The resultant noise levels were weighed and summed over a 24-hour period in order to determine the CNEL values associated with maximum

daily project-related construction trips. The modeling results show that the project would not result in a substantial increase of greater than 3 dBA along any portion of the access route to the project site. Therefore, noise impacts from project construction trips to the site would be less than significant.

The second type of short-term noise impact is related to the noise generated by heavy construction equipment operating on the project site. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 9 lists typical construction equipment noise levels recommended for noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor. Please note that no pile driving will occur in association with project construction.

The maximum and hourly average noise levels associated with each phase of construction was calculated based on the tentative construction equipment usage information provided in the project Construction Workplan. The calculation tables for these noise levels are provided in Appendix I.

Typical operating cycles for the proposed types of construction equipment for each phase of construction involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings. Assuming each piece of construction equipment operates at a minimum distance apart from the other equipment, the worst-case combined noise level during the site-grading and construction phase of construction would be 92 dBA L_{max} (with a resulting hourly average of 89 dBA L_{eq}) as measured at a distance of 50 feet from multiple pieces of heavy construction equipment operating simultaneously. The worst-case combined noise level during the creek restoration phase of construction would be 90 dBA L_{max} (with a resulting hourly average of 87 dBA L_{eq}) as measured at a distance of 50 feet from multiple pieces of heavy construction equipment operating simultaneously. The worst-case combined noise level during the asphalt restoration phase of construction would be 89 dBA L_{max} (with a resulting hourly average of 86 dBA L_{eq}) as measured at a distance of 50 feet from multiple pieces of heavy construction equipment operating simultaneously.

Geometric spreading causes sound levels to attenuate or be reduced, resulting in a 6 dB reduction in the noise level for each doubling of distance from a single point source of noise to the noise sensitive receptor of concern. The existing topography, terrain, and trees surrounding the project site blocks the line of sight to all but the four closest residential properties to the project site, providing additional reduction of at least 10 dBA compared to what would be experienced at properties with a direct line of sight to operating equipment. Therefore, only residential land uses within a 350-foot radius around

Table 9: Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Impact Device? (Yes/No)	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Impact Pile Driver	Yes	95
Auger Drill Rig	No	85
Vibratory Pile Driver	No	95
Jackhammers	Yes	85
Pneumatic Tools	No	85
Pumps	No	77
Scrapers	No	85
Cranes	No	85
Portable Generators	No	82
Rollers	No	85
Dozers	No	85
Tractors	No	84
Front-End Loaders	No	80
Backhoe	No	80
Excavators	No	85
Graders	No	85
Air Compressors	No	80
Dump Truck	No	84
Concrete Mixer Truck	No	85
Pickup Truck	No	55

Source: FHWA, *Highway Construction Noise Handbook*, August 2006

the project construction areas would be expected to experience construction noise levels in excess of 65 dBA L_{\max} when construction activities are taking place at or near the western property boundary. The project engineers estimate that construction activities along the property line would not occur for more than 20 days during the five-month duration of the project.¹¹³

The closest sensitive receptors to the potential construction areas are the residences located at 5230 Leona Street and 5171 McDonell Avenue, whose properties are located adjacent to the western border of the project site. The closest façade of these residences would be located approximately 15 feet from the nearest potential construction areas. At this distance, these closest façades could be exposed to noise levels up to 102 dBA L_{\max} if multiple pieces of heavy construction equipment operated simultaneously at the nearest project border. The next closest residence is on McDonell Avenue approximately 110 feet west of the construction areas; while the next closest residence is located approximately 127 feet south of the project on Leona Street.

The City has established Standard Conditions of Approval that address construction noise impacts. If the City approves the proposed project, these Standard Conditions of Approvals would be adopted as requirements of the proposed project to help ensure less-than-significant impacts related to noise. Generally, these Standard Conditions of Approvals are more current, more detailed, and provide greater clarity regarding process and procedures than the City's municipal codes; in addition, they will not increase additional adverse effects. The Standard Conditions of Approvals would be incorporated as the proposed project and would be required by the City, and therefore are not listed as mitigation measures. These standards include restrictions on permissible hours of construction that would eliminate all nighttime weekend and holiday construction noise impacts.

The following site-specific noise reduction measures, as determined to be feasible by the City, shall also be implemented by the project applicant:

Implementation Measure NOI-1: Site Specific Noise Reduction Strategies. The following site-specific noise reduction strategies shall be implemented as part of the proposed project:

- a. The project applicant shall ensure that the conditions of the SCA NOI-1 through NOI-4, listed above, are implemented as part of the project;
- b. In order to reduce potential daytime construction noise impacts, the project applicant shall ensure that only one piece of heavy construction equipment (defined as any equipment that would generate more than 80 dBA L_{\max} as measured at 50 feet) be permitted to operate at a single time within 100 feet of adjacent residential structures;
- c. As determined to be reasonable and effective in blocking noise, the project applicant shall utilize temporary noise barrier fencing along project property lines that would block the line of sight to nearby residential structures;
- d. To further reduce less-than-significant noise impacts, if granted permission from residential property owners, during the loudest phases of construction the project applicant shall utilize noise control blankets or panels on the façades of structures

¹¹³ E2C, 2014. Goalwin, Phil, Remediation Consultant. Personal communication with LSA Associates, Inc. March.

within 350 feet of the project boundary that, due to terrain or other features, cannot feasibly be protected (line of sight blocked) by temporary noise barrier fencing located along the project property lines; and

- e. Use temporary fences covered with sound blankets immediately adjacent to noisy equipment to block “line of site” noise.

Implementation of these measures should reduce daytime construction noise levels as measured in nearby residential interior spaces to below levels that would potentially interfere with normal speech intelligibility (such as normal conversations or phone calls).

Resulting Level of Significance. Strict adherence to **SCA NOI-1, SCA NOI-2, SCA NOI-3** and **SCA NOI-4**, and **Implementation Measure NOI-1** would ensure that project construction noise impacts would be reduced to a *less-than-significant* level.

3. OPERATIONAL IMPACTS

Would the project:

3. *Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding operational noise?*
4. *Generate noise resulting in a 5 dBA permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or, if under a cumulative scenario where the cumulative increase results in a 5 dBA permanent increase in ambient noise levels in the project vicinity without the project (i.e., the cumulative condition including the project compared to the existing conditions) and a 3 dBA permanent increase is attributable to the project (i.e., the cumulative condition including the project compared to the cumulative baseline condition without the project)?*
5. *Expose persons to interior L_{dn} or CNEL greater than 45 dBA for multi-family dwellings, hotels, motels, dormitories and long-term care facilities (and may be extended by local legislative action to include single family dwellings) per California Noise Insulation Standards (CCR Part 2, Title 24)?*
6. *Expose the project to community noise in conflict with the land use compatibility guidelines of the Oakland General Plan after incorporation of all applicable Standard Conditions of Approval?*
7. *Expose persons to or generate noise levels in excess of applicable standards established by a regulatory agency (e.g., occupational noise standards of the Occupational Safety and Health Administration [OSHA])?*

The proposed project would only consist of temporary construction and remediation activities. Noise associated with these operations would cease after completion of the project. Implementation of the project would not result in the creation of any permanent noise sources, nor would it expose persons to noise levels in excess of established standard, nor result in a permanent increase in ambient noise levels in the project vicinity. The project would not result in the creation of or alteration of any permanent operational noise sources. Therefore, ***no impact*** would occur.

VIBRATION

Would the project:

8. *During either project construction or project operation expose persons to or generate groundborne vibration that exceeds the criteria established by the Federal Transit Administration (FTA)?*

No permanent noise sources that would expose persons to excessive groundborne vibration or noise levels would be located within the project site. In addition, there are no known existing sources of vibration that would affect the project site (e.g., railroad trains). Construction activities related to development of the proposed project could result in groundborne vibration levels that would be perceptible at points along the project site property line when heavy earthmoving equipment operates near the periphery of the site.

Construction-related groundborne vibration impacts on building structures are generally assessed in terms of peak particle velocity (PPV). The Federal Transit Administration (FTA) has established industry accepted construction-related groundborne vibration impact criteria. Their impact assessment guidelines are published in their *Transit Noise and Vibration Impact Assessment* document.¹¹⁴ The FTA's thresholds for construction vibration impacts for various structural categories are shown in Table 10.

Table 10: Federal Transit Administration Construction Vibration Impact Criteria

Building Category	PPV (in/sec)	Approximate VdB
I. Reinforced – Concrete, Steel or Timber (no plaster)	0.5	102
II. Engineered Concrete and Masonry (no plaster)	0.3	98
III. Non Engineer Timber and Masonry Buildings	0.2	94
IV. Buildings Extremely Susceptible to Vibration Damage	0.12	90

Source: Federal Transit Administration, 2006. *Transit Noise and Vibration Impact Assessment*. May.

Typical groundborne vibration levels from the types of heavy construction equipment that would be used for the project can range up to 0.089 PPV as measured at a distance of 25 feet from the operating equipment. This is well below the FTA's construction-related groundborne vibration impact criteria of 0.2 PPV for non-engineered timber and masonry structures, the type of structures surrounding the project site. It is not anticipated that operation of heavy construction equipment would occur within less than 25 feet of adjacent residential structures. The project would not expose persons to or generate groundborne vibration that exceeds the criteria established by the FTA. Therefore, implementation of the project would result in *no impact* related to groundborne vibration.

¹¹⁴ Federal Transit Administration, 2006. *Transit Noise and Vibration Impact Assessment*. May.

AIRPORTS

Would the Project:

9. *Be located within an airport land use plan and would expose people residing or working in the project area to excessive noise levels?*
10. *Be located within the vicinity of a private airstrip, and would expose people residing or working in the project area to excessive noise levels?*

The project site is located approximately 4.2 miles northeast of Oakland International Airport (the nearest airport) and approximately 15 miles northeast of San Francisco International Airport. Due to the distance from these two airports and the orientation of these and other runways and regional flight patterns, the project site does not lie within the 55 dBA CNEL noise contours of any airport. The project would not expose persons to excessive aircraft-related noise levels. In addition, the project site is not located in the vicinity of a private airstrip. Therefore, *no impact* would occur.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
XII. POPULATION AND HOUSING					
Would the project:					
1. Induce substantial population growth in a manner not contemplated in the General Plan either directly (for example by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure), such that additional infrastructure is required but the impacts of such were not previously considered or analyzed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The project vicinity is characterized by irregularly spaced single-family homes, surrounded by steep and wooded undeveloped land. The project area contains no existing residential population and no housing is proposed with the project.

POPULATION INDUCEMENT REQUIRING INFRASTRUCTURE NOT PREVIOUSLY CONSIDERED

Would the project:

- Induce substantial population growth in a manner not contemplated in the General Plan either directly (for example by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure), such that additional infrastructure is required but the impacts of such were not previously considered or analyzed?*

The proposed project would result in the remediation of mine tailings and the restoration of a creek channel. No new utility infrastructure would be required to serve the proposed project. Therefore, the proposed project would have **no impact** related to directly or indirectly inducing population growth.

DISPLACEMENT OF HOUSING OR PEOPLE

Would the project:

2. *Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element?*
3. *Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element?*

No housing is located within the remediation area, which is planned open-space and undeveloped private land; therefore, the proposed project would not displace existing housing or people, necessitating the construction of replacement housing elsewhere and would have *no impact* upon the displacement of housing or people.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
XIII. PUBLIC SERVICES					
Would the project:					
1. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:					
a) Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The project site is located in an urban area where public services are already provided. Due to the nature of the project, there will be no impacts to the provision of public services.

RESULT IN NEW OR PHYSICALLY ALTERED GOVERNMENTAL FACILITIES

Would the project:

1a-d) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: fire protection, police protection, schools, and/or other public facilities?

The project site is located in an urban area where public services are already provided. The development of the project site as proposed is not anticipated to require the provision of new or expanded public services or physically altered governmental facilities. The project would have **no impact** on public services.

Resulting Level of Significance. The proposed project would not result in significant impacts to the provision of public services, as discussed above. Implementation of **SCA HAZ-2, SCA HAZ-3, SCA HAZ-4, and SCA HAZ-5** identified and discussed in Section VII would further reduce any impact related to the provision of emergency services related to wildfires.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
XIV. RECREATION					
Would the project:					
1. Increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The project site is located in an urban area already served by existing parks and urban open space areas. There is no residential or recreation component included as part of the proposed project. Similarly, the project proposes to remediate and restore the Leona Creek channel on private property.

ACCELERATED PHYSICAL DETERIORATION OF FACILITIES

Would the project:

- Increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*

The proposed project is located on private, undeveloped property and does not include recreational facilities. The project proposes to remediate mine tailings and restore the Leona Creek channel. The proposed project does not include improvements to nearby open-space lands, park amenities or the fire road. There are no inherent elements as part of the proposed project that would lead to increased use of nearby recreation or open-space facilities by the public. Therefore, the proposed project would have **no impact** upon increasing the physical deterioration of nearby parks or recreational facilities.

EFFECT OF NEW OR EXPANDED FACILITIES

Would the project:

- Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?*

The proposed project includes the remediation of mine tailings and the restoration of a creek channel. The project does not include the addition or expansion of recreational facilities. The project does not include housing, which could require the addition of recreation facilities. Therefore, the proposed project would have **no impact** upon creating adverse physical effect on the environment related to the construction or expansion of recreational facilities.

XV. TRANSPORTATION/TRAFFIC	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
Would the project:					
Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit, specifically:					
Traffic Load and Capacity Thresholds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1. At a study, signalized intersection which is located outside the Downtown area and that does not provide direct access to Downtown, the project would cause the motor vehicle level of service (LOS) to degrade to worse than LOS D (i.e., LOS E or F) and cause the total intersection average vehicle delay to increase by four (4) or more seconds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. At a study, signalized intersection which is located within the Downtown area or that provides direct access to Downtown, the project would cause the motor vehicle LOS to degrade to worse than LOS E (i.e., LOS F) and cause the total intersection average vehicle delay to increase by four (4) or more seconds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. At a study, signalized intersection outside the Downtown area and that does not provide direct access to Downtown where the motor vehicle level of service is LOS E, the project would cause the total intersection average vehicle delay to increase by four (4) or more seconds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. At a study, signalized intersection outside the Downtown area and that does not provide direct access to Downtown where the motor vehicle level of service is LOS E, the project would cause an increase in the average delay for any of the critical movements of six (6) seconds or more?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

XV. TRANSPORTATION/TRAFFIC	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
<p>[NOTE: The Downtown area is defined in the Land Use and Transportation Element of the General Plan (page 67) as the area generally bounded by the West Grand Avenue to the north, Lake Merritt and Channel Park to the east, the Oakland Estuary to the south, and I-980/Brush Street to the west. Intersections that provide direct access to Downtown are generally defined as principal arterials within two (2) miles of the Downtown area and minor arterials within one (1) mile of the Downtown area, provided that the street connects directly to the Downtown area.]</p>					
<p>5. At a study, signalized intersection for all areas where the level of service is LOS F, the project would cause (a) the overall volume-to-capacity (“V/C”) ratio to increase 0.03 or more or (b) the critical movement V/C ratio to increase 0.05 or more?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>6. At a study, unsignalized intersection the project would add ten (10) or more vehicles to the critical movement and after project completion satisfy the California Manual on Uniform Traffic Control Devices (MUTCD) peak hour volume traffic signal warrant?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>7. For a roadway segment of the Congestion Management Program (CMP) Network, the project would cause (a) the LOS to degrade from LOS E or better to LOS F or (b) the V/C ratio to increase 0.03 or more for a roadway segment that would operate at LOS F without the project? [NOTE: This threshold only applies to land use development projects that generate a vehicle trip on a roadway segment of the CMP Network located in the project study area and to transportation projects that would reduce the vehicle capacity of a roadway segment of the CMP Network]</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC					
8. Cause congestion of regional significance on a roadway segment on the Metropolitan Transportation System (MTS) evaluated per the requirements of the Land Use Analysis Program of the CMP? [NOTE: This threshold only applies to a land use development project that involves either (a) a general plan amendment that would generate 100 or more p.m. peak hour trips above the current general plan land use designation or (b) an EIR and the project would generate 100 or more p.m. peak hour trips above the existing condition. Factors to consider in evaluating the potential impact include, but are not limited to, the relationship between the project and planned improvements in the Countywide Transportation Plan, the project's consistency with City policies concerning infill and transit-oriented development, the proximity of the project to other jurisdictions, and the magnitude of the project's contribution based on V/C ratios.]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Result in substantially increased travel times for AC Transit buses? [NOTE: Factors to consider in evaluating the potential impact include, but are not limited to, the proximity of the project site to the transit corridor(s), the function of the roadway segment(s), and the characteristics of the potentially affected bus route(s). The evaluation may require a qualitative and/or quantitative analysis depending upon these relevant factors.]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Traffic Safety Thresholds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Directly or indirectly cause or expose roadway users (e.g., motorists, pedestrians, bus riders, bicyclists) to a permanent and substantial transportation hazard due to a new or existing physical design feature or incompatible uses? [NOTE: Factors to consider in evaluating the potential impact to roadway users due to physical design features and incompatible uses include, but are not limited to, collision history and the adequacy of existing traffic controls.]					

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC					
11. Directly or indirectly result in a permanent substantial decrease in pedestrian safety? [NOTE: Consider whether factors related to pedestrian safety such as, but not limited to, the following are substantial in nature:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • Degradation of existing pedestrian facilities, including the following: <ul style="list-style-type: none"> ○ Removal of existing pedestrian refuge islands and/or bulbouts ○ Increase of street crossing distance ○ Permanent removal or significant narrowing of an existing sidewalk, path, marked crossing, or pedestrian access way ○ Increase in pedestrian or vehicle volume at unsignalized or uncontrolled intersections ○ Sidewalk overcrowding • Addition of new vehicle travel lanes and/or turn lanes • Permanent removal of existing sidewalk-street buffering elements (e.g., on-street parking lane, planting strip, street trees) • Addition of vehicle driveway entrance(s) that degrade pedestrian safety, with considerations given to the following: <ul style="list-style-type: none"> ○ Number of proposed vehicle driveway entrances ○ Location of proposed vehicle driveway entrance(s) ○ Visibility between pedestrians on the sidewalk and motorists using the proposed vehicle driveway entrance(s)] 					
12. Directly or indirectly result in a permanent substantial decrease in bicyclist safety? [NOTE: Consider whether factors related to bicyclist safety such as, but not limited to, the following are substantial in nature:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • Removal or degradation of existing bikeways • Addition of new vehicle travel lanes and/or turn lanes • Addition of vehicle driveway entrance(s) that degrade(s) bicycle safety, with consideration given to the following: <ul style="list-style-type: none"> ○ Number of proposed vehicle driveway entrances ○ Location of proposed vehicle driveway entrance(s) ○ Visibility between bicyclists on travelway and motorists using the proposed vehicle driveway entrance(s)] 					

XV. TRANSPORTATION/TRAFFIC	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
<p>13. Directly or indirectly result in a permanent substantial decrease in bus rider safety [NOTE: Consider whether factors related to bus rider safety such as, but not limited to, the following are substantial in nature:</p> <ul style="list-style-type: none"> • Removal or degradation of existing bus facilities • Siting of bus stops in locations without marked crossings, with insufficient sidewalks, or in isolated or unlit areas • Addition of new bus riders that creates overcrowding at a bus stop] 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>14. Generate substantial multi-modal traffic traveling across at-grade railroad crossings that cause or expose roadway users (e.g., motorists, pedestrians, bus riders, bicyclists) to a permanent and substantial transportation hazard? [NOTE: If the project will generate substantial multi-modal traffic across an at-grade railroad crossing, a Diagnostic Review will be required in consultation with the California Public Utilities Commission. The Review should include roadway and rail descriptions, collision history, traffic volumes for all modes, train volumes, vehicular speeds, train speeds, and existing rail and traffic controls.]</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC					
Other Thresholds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15. Fundamentally conflict with adopted City policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities – adopted for the purpose of avoiding or mitigating an environmental effect – and actually result in a physical change in the environment? [NOTE: Factors to consider in evaluating the potential conflict include, but are not limited to, the following:					
<ul style="list-style-type: none"> • Does the project prevent or otherwise substantially adversely affect the future installation of a planned transportation improvement identified in an adopted City policy, plan, or program? • Does the project fundamentally conflict with the applicable goals, policies, and/or actions identified in an adopted City policy, plan, or program? Adopted City policies, plans, and programs to consider include, but are not limited to, the following: <ul style="list-style-type: none"> ○ Land Use and Transportation Element (LUTE) of the General Plan (March 1998) ○ Pedestrian Master Plan (November 2002) ○ Bicycle Master Plan (December 2007) ○ Public Transit and Alternative Modes Policy (formerly known as the “Transit-First Policy;” City Council Resolution 73036 C.M.S.) ○ Sustainable Development Initiative (City Council Resolution 74678 C.M.S.) ○ U.N. Environmental Accords (City Council Resolution 79808 C.M.S.) ○ Complete Streets Policy (City Council Resolution 84204 C.M.S.) ○ Capital Improvement Program] 					
16. Result in a substantial, though temporary, adverse effect on the circulation system during construction of the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
17. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
[NOTE: See the Hazards and Hazardous Materials thresholds for additional thresholds related to transportation.]					

XV. TRANSPORTATION/TRAFFIC	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
Cumulative Impacts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18. A project's contribution to cumulative impacts is considered "considerable" (i.e., significant) when the project exceeds at least one of the thresholds listed above in a future year scenario.					

SETTING

The project site is located in a wooded area of the Oakland Hills area of the City of Oakland. As described in the project description, the site is generally bounded by open space to the north, south and east, and McDonell Avenue, a narrow two lane road, and residential areas to the west. Vehicle access to the project site is available from McDonell Avenue. During the project construction period, McDonell Avenue will be utilized periodically as the main construction haul route. The primary staging area for construction equipment and materials would be located on an approximately 0.13-acre portion of the McDonell Avenue cul-de-sac right-of-way (the primary staging area).

The project also includes the temporary use of an approximately 1-acre portion of the overflow parking lot for Leona Lodge, located about 0.6 miles from the project site. The lodge staging area will be used for the temporary staging of materials and equipment. The materials to be used for construction (e.g., geomembrane liner, geogrid slope reinforcement materials, drain pipe, clean fill sand, cobbles and boulders and vegetative soil) will be initially delivered, in stages, to the lodge staging area. Materials will then be ferried up to the primary staging area using small 10-wheel trucks in phases as needed for construction. It is anticipated that this staging and ferrying of materials will occur five times during construction, and each stage will last approximately five days resulting in a total of 1,800 trips. Worker parking may also need to be accommodated at the lodge staging area

During the periods when construction materials and equipment are being delivered to the primary staging area, access along McDonell Avenue would be temporarily restricted to those people that live in homes along the road. This access limitation would occur 4 to 5 times during the total construction period and would last approximately 5 full days. Normal access would be restored immediately after each 4-5 day delivery event. At the completion of the construction project, demobilization of equipment and materials will be necessary, and access may be temporarily restricted for approximately 5 days in order to remove construction equipment from the site and complete improvements to the cul-de-sac.

During the restricted periods, the construction management team would utilize flagmen and radios in order to allow neighborhood traffic to access McDonell Avenue. Additionally, a traffic control plan will be submitted to the City of Oakland for approval. The traffic control plan will show the locations of traffic control, control device placement, and sign type and locations. At no time would emergency vehicle access to McDonell Avenue and/or the fire road be restricted. However, public access and parking near the McDonell Avenue cul-de-sac would not be allowed during the restricted access times. The Merritt College entrance to the trail would need to be utilized during these times.

City of Oakland Standard Conditions of Approval. The City of Oakland provides the following Standard Condition of Approval regarding traffic during the construction period:

SCA TRA-1: Construction Traffic and Parking. Prior to the issuance of a demolition, grading or building permit:

The project applicant and construction contractor shall meet with appropriate City of Oakland agencies to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of this project and other nearby projects that could be simultaneously under construction. The project applicant shall develop a construction management plan for review and approval by the Planning and Zoning Division, the Building Services Division, and the Transportation Services Division. The plan shall include at least the following items and requirements:

- a. A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes.
- b. Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur.
- c. Location of construction staging areas for materials, equipment, and vehicles at an approved location.
- d. A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an onsite complaint manager. The manager shall determine the cause of the complaints and shall take prompt action to correct the problem. Planning and Zoning shall be informed who the Manager is prior to the issuance of the first permit issued by Building Services.
- e. Provision for accommodation of pedestrian flow.

Major Project Cases:

- f. Provision for parking management and spaces for all construction workers to ensure that construction workers do not park in on street spaces or Mountain Boulevard or McDonell Avenue, with the exception of the designated primary staging area in the cul-de-sac. Any damage to the street caused by heavy equipment, or as a result of this construction, shall be repaired, at the applicant's expense, within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair shall occur prior to issuance of a final inspection of the building permit. All damage that is a threat to public health or safety shall be repaired immediately. The street shall be restored to its condition prior to the new construction as established by the City Building Inspector and/or photo documentation, at the applicant's expense, before the issuance of a Certificate of Occupancy.
- g. Any heavy equipment brought to the construction site shall be transported by truck, where feasible.

- h. No materials or equipment shall be stored on the traveled roadway at any time.
- i. Prior to construction, a portable toilet facility and a debris box shall be installed on the site, and properly maintained through project completion.
- j. All equipment shall be equipped with mufflers.
- k. Prior to the end of each work day during construction, the contractor or contractors shall pick up and properly dispose of all litter resulting from or related to the project, whether located on the property, within the public rights-of-way, or properties of adjacent or nearby neighbors.

TRAFFIC LOAD AND CAPACITY

Would the project:

1. *At a study, signalized intersection which is located outside the Downtown area and that does not provide direct access to Downtown, the project would cause the motor vehicle level of service (LOS) to degrade to worse than LOS D (i.e., LOS E or F) and cause the total intersection average vehicle delay to increase by four (4) or more seconds;*
2. *At a study, signalized intersection which is located within the Downtown area or that provides direct access to Downtown, the project would cause the motor vehicle LOS to degrade to worse than LOS E (i.e., LOS F) and cause the total intersection average vehicle delay to increase by four (4) or more seconds;*
3. *At a study, signalized intersection outside the Downtown area and that does not provide direct access to Downtown where the motor vehicle level of service is LOS E, the project would cause the total intersection average vehicle delay to increase by four (4) or more seconds;*
4. *At a study, signalized intersection outside the Downtown area and that does not provide direct access to Downtown where the motor vehicle level of service is LOS E, the project would cause an increase in the average delay for any of the critical movements of six (6) seconds or more;*
5. *At a study, signalized intersection for all areas where the level of service is LOS F, the project would cause (a) the overall volume-to-capacity ("V/C") ratio to increase 0.03 or more or (b) the critical movement V/C ratio to increase 0.05 or more;*
6. *At a study, unsignalized intersection the project would add ten (10) or more vehicles to the critical movement and after project completion satisfy the California Manual on Uniform Traffic Control Devices (MUTCD) peak hour volume traffic signal warrant;*

The proposed project is a remediation project that would be limited to an approximately five-month construction period. The project would not result in impacts to traffic load or capacity because traffic to the project site would not change with implementation of the project. The project would not substantially degrade the LOS or V/C ratio for any network roadways or intersections. This impact would be *less than significant*.

ALTERNATIVE TRANSPORTATION AND TRANSIT

Would the project:

7. *For a roadway segment of the Congestion Management Program (CMP) Network, the project would cause (a) the LOS to degrade from LOS E or better to LOS F or (b) the V/C ratio to increase 0.03 or more for a roadway segment that would operate at LOS F without the project?*
8. *Cause congestion of regional significance on a roadway segment on the Metropolitan Transportation System (MTS) evaluated per the requirements of the Land Use Analysis Program of the CMP?*
9. *Result in substantially increased travel times for AC Transit buses?*
15. *Fundamentally conflict with adopted City policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities – adopted for the purpose of avoiding or mitigating an environmental effect – and actually result in a physical change in the environment?*

The proposed project is a remediation project that would be limited to and approximately five-month construction period. The project would not degrade the level of service of Congestion Management Program network roadways and would not result in impacts to regionally significant roadways. The project would also not impact AC Transit bus service. After construction, traffic to or in the vicinity of the site is not expected to change from current conditions. Therefore, the project would have ***no impact*** on alternative transportation and transit.

TRAFFIC SAFETY

Would the project:

10. *Directly or indirectly cause or expose roadway users (e.g., motorists, pedestrians, bus riders, bicyclists) to a permanent and substantial transportation hazard due to a new or existing physical design feature or incompatible uses?*
11. *Directly or indirectly result in a permanent substantial decrease in pedestrian safety?*
12. *Directly or indirectly result in a permanent substantial decrease in bicyclist safety?*
13. *Directly or indirectly result in a permanent substantial decrease in bus rider safety?*
14. *Generate substantial multi-modal traffic traveling across at-grade railroad crossings that cause or expose roadway users (e.g., motorists, pedestrians, bus riders, bicyclists) to a permanent and substantial transportation hazard?*

To protect public safety, access to McDonnell Avenue (and to the fire road) would be restricted to the general public when materials are being moved from the lodge staging area to the primary staging area. The fire road that is currently used by pedestrians and bicyclists would also be restricted although trail users can still access the trail from Merritt College. Fire road users will be notified of the road closure through construction signage which would be installed at least one month prior to construction and would remain throughout the five-month construction period. Work area and trail closure signs will be posted at trail entrances to the project area and staging areas. Barricades and signage would be installed at the end of McDonnell Avenue prior to and throughout the construction period.

After the five-month construction period has ended, the project would remove all barricades and signage and public access to the fire road from McDonell Avenue would resume. The proposed project would result in a *less-than-significant* impact to public safety for bicyclists, pedestrians, bus riders, or any other multi-modal users.

CONSTRUCTION EFFECTS

Would the project:

16. *Result in a substantial, though temporary, adverse effect on the circulation system during construction of the project?*

Construction of the project would require an average of approximately 15 pieces of equipment for the duration of the project.¹¹⁵ After initial transport of the equipment to the site, it would be stored on site in the primary staging area. During initial transport, temporary delays would occur at intersections on the delivery route, however, with implementation of **SCA TRA-1** these impacts are not expected to be substantial, would be temporary and limited to the days of delivery and equipment removal.

Additionally, the project would employ a maximum of 15 workers (however, the average number of workers on the site would be five to six on a daily basis) who would park at the lodge staging area or in the primary staging area at the cul-de-sac, but not on Mountain Avenue. Workers at the lodge staging area may be taken by a single van to the work site. Workers could therefore generate approximately 30 trips per day, plus 2 trips per day for the shuttle van.¹¹⁶ Once project construction is complete, the project includes improving the cul-de-sac at the end McDonell Avenue including regrading (see Figure 23). Activities would occur for the duration of five days with the use of five trucks and two water trucks, resulting in approximately 14 trips per day.

During the peak period of project construction, deliveries to the lodge staging area would occur for five days a total of five times over the course of the five-month construction period using the State Route 13 Frontage Road to Mountain Boulevard to the Leona Lodge overflow parking lot. Deliveries would be made by a fleet of six 10-wheeled trucks making 10 trips per day for a total of 60 trips per day for each of the five-day periods. To deliver equipment and materials to the remediation site, trucks would drive on Mountain Boulevard to McDonell Avenue to the primary staging area.

It is estimated that maximum daily traffic generated by construction of the project would be 92 trips per day with an average of approximately 15 trips per hour. The segment of Mountain Boulevard and McDonell Avenue which would be utilized by the haul trucks is the primary access road for residents directly adjacent to the road. Trip delays would temporarily occur during the limited access periods; however, a traffic control plan would be submitted to the City of Oakland for approval prior to project construction. Major truck trips and deliveries would be scheduled to avoid peak traffic hours and limit impacts to residents in the project vicinity. Therefore, trips associated with the project are not expected to cause a substantial temporary adverse impact on the surrounding circulation system.

¹¹⁵ E2C, 2014. Xu, Aiguo, Engineer. Personal communication with LSA Associates, Inc. March.

¹¹⁶ Ibid.

As stated previously, implementation of **SCA TRA-1** and signage, flagmen, and traffic controls would reduce the potential for substantial impacts on the circulation system.

Resulting Level of Significance. The proposed project consists of temporary construction and remediation activities. Traffic associated with these operations would cease after completion of the project. Additionally, the City of Oakland would require a traffic control plan to be submitted for approval by the City which would show the locations of traffic control, control device placement, and sign type and locations. Implementation of the project would not result in degradation of level of service or volume-to-capacity ratios within the City of Oakland. Additionally, implementation of **SCA TRA-1** would help to alleviate the temporary effects of construction traffic. Therefore, construction traffic impacts would be *less than significant*.

AIR TRAFFIC PATTERNS

Would the project:

17. *Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?*

The proposed project would only consist of temporary construction and remediation activities. The project would result in *no impact* to air traffic patterns.

CUMULATIVE IMPACTS

Would the project:

18. *Exceed at least one of the thresholds listed above in a future year scenario?*

Once the remediation effort is complete, the project would not be a source of traffic. Therefore, the project would have *no impact* on cumulative traffic impacts and would not exceed thresholds in a future year scenario.

PLANNING-RELATED NON-CEQA ISSUES

The proposed project would not impact parking supply or transit ridership. Once the five-month construction period is complete, the project would not generate traffic. To ensure that construction of the project would not adversely impact the surrounding roadways, a traffic control plan would be submitted to the City of Oakland for approval. The traffic control plan would show the locations of traffic control, control device placement, with sign type and locations.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
XVI. UTILITIES AND SERVICE SYSTEMS					
Would the project:					
1. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Require or result in construction of new storm water drainage facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Exceed water supplies available to serve the project from existing entitlements and resources, and require or result in construction of water facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the providers' existing commitments and require or result in construction of new wastewater treatment facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs and require or result in construction of landfill facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Violate applicable federal, State, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Violate applicable federal, State and local statutes and regulations relating to energy standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Result in a determination by the energy provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the providers' existing commitments and require or result in construction of new energy facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The project site is located in an urban area already served by utilities. There is no residential or utility component included as part of the proposed project. Similarly, the project proposes to remediate and restore the Leona Creek channel to improve water quality.

WASTEWATER COLLECTION, TREATMENT, DISPOSAL

Would the project:

1. *Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?*
4. *Result in a determination by the wastewater treatment provider which serves or may serve the Project that it does not have adequate capacity to serve the Project's projected demand in addition to the providers' existing commitments and require or result in construction of new wastewater treatment facilities or expansion of existing facilities, construction of which could cause significant environmental effects?*

The proposed project includes the remediation of mine tailings and the restoration of a creek channel. The project would improve water quality due to the proposed design which would eliminate contact between exposed mine tailings and run-off from the site. Similarly, the project does not include housing, nor would the project connect to any existing or neighboring wastewater treatment facilities. Therefore, the project would have **no impact** upon demand for new or expanded wastewater treatment facilities.

STORM DRAINAGE FACILITIES

Would the project:

2. *Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*

The proposed project includes the remediation of mine tailings and the restoration of a creek channel as discussed above. The project would not result in the construction of new storm water drainage facilities or the expansion of existing facilities, and the project would not connect to any existing facilities. Therefore, the project would have **no impact** upon storm water drainage facilities.

WATER DISTRIBUTION AND SUPPLY

Would the project:

3. *Exceed water supplies available to serve the Project from existing entitlements and resources, and require or result in construction of water facilities or expansion of existing facilities, construction of which could cause significant environmental effects?*

The proposed project includes the remediation of mine tailings and the restoration of a creek channel as discussed above. Water for construction dust control and any post-construction irrigation would be supplied from water tanks or pumper trucks and brought to the site. The project would not result in the construction of new water facilities or the expansion of existing facilities, and the project would not connect to any existing facilities. Therefore, the project would have **no impact** upon water facilities.

SOLID WASTE MANAGEMENT

Would the project:

5. *Be served by a landfill with insufficient permitted capacity to accommodate the Project's solid waste disposal needs and require or result in construction of landfill facilities or expansion of existing facilities, construction of which could cause significant environmental effects?*
6. *Violate applicable federal, state, and local statutes and regulations related to solid waste?*

The proposed project includes the remediation of mine tailings and the restoration of a creek channel as discussed above. The project does not include housing or commercial facilities and therefore would not produce waste. The project would not result in the construction of new landfill facilities or the expansion of existing facilities, and the project would not produce demand from any existing facilities. Similarly, the project would not violate any federal, State or local statutes or regulations related to solid waste. Therefore, the project would have ***no impact*** upon waste facilities.

ENERGY

Would the project:

7. *Violate applicable federal, state and local statutes and regulations relating to energy standards?*
8. *Result in a determination by the energy provider which serves or may serve the Project that it does not have adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments and require or result in construction of new energy facilities or expansion of existing facilities, construction of which could cause significant environmental effects?*

The proposed project includes the remediation of mine tailings and the restoration of a creek channel as discussed above. The project would not violate applicable federal, State and local statutes and regulations relating to energy standards because the project does not contain any elements that are reliant upon the provision of energy. Similarly, the project would not result in an increases demand for energy. Therefore, the project would have ***no impact*** upon energy facility expansion.

XVII. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact with Standard Condition(s) of Approval	Less Than Significant Impact	No Impact
Does the Project:					
1. Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

OVERALL EFFECTS

Does the project:

1. *Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*

As described Sections IV. Biological Resources and V. Cultural Resources, the proposed project would not degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. The project would remediate steeply sloping piles of mining waste rock, would stabilize the Leona Creek channel and would result in improved water quality and soil conditions.

CUMULATIVE EFFECTS

Does the project:

2. *Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)*

The proposed project's impacts are individually limited and not cumulatively considerable. In addition, most of the project's impacts result from construction-period activities and would be temporary. All environmental impacts that could occur as a result of the proposed project would be reduced to a *less than significant* level through implementation of the City of Oakland's Standard Conditions of Approval and mitigation measures recommended in this document.

EFFECTS ON HUMAN BEINGS

Does the project:

3. *Have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?*

The proposed project would not result in any environmental effects that would cause substantial direct or indirect adverse effects to human beings. Therefore, the proposed project would result in *no adverse impacts* to human beings.

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REPORT PREPARATION

A. PREPARERS

LSA Associates, Inc.: *Aesthetics, Agriculture and Forestry Services, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, Utilities and Service Systems, Transportation and Traffic, and Mandatory Findings of Significance.*

2215 Fifth Street
Berkeley, CA 94710

Judith H. Malamut, AICP, Principal-in-Charge/Project Manager
Kelly Bray, Planner
Patty Linder, Graphics Manager
Charis Hanshaw, Word Processor

157 Park Place
Point Richmond, CA 94801

Tim Lacy, Principal Biologist
Matt Ricketts, Senior Biologist
Tim Milliken, Arborist
Molly Notestine, Senior Biologist
Andrew Pucheon, Principal, Cultural Resources
Tim Jones, Senior Cultural Resources Manager
Neal Kaptain, Associate, Cultural Resources

5084 North Fruit Avenue
Fresno, CA 93711

Amy Fischer, Associate, Air Quality and Global Climate Change
Phil Ault, Air Quality and Noise Analyst

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C. COMMUNICATION

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