Appendix A

DATE: September 2, 2020

TO: Responsible and Trustee Agencies
Interested Parties and Organizations

FROM: Christian Murdock, Senior Planner
City of Pacifica

SUBJECT: NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED ROCKAWAY QUARRY RECLAMATION PLAN PROJECT

REVIEW PERIOD: September 2, 2020 to October 12, 2020

The City of Pacifica ("City") is the lead agency for the preparation of an Environmental Impact Report (EIR) for the proposed Rockaway Quarry Reclamation Plan Project ("Project"). The scope of the EIR has been proposed based upon a determination by the City. The City has directed the preparation of this EIR in compliance with the California Environmental Quality Act (CEQA).

Once a decision is made to prepare an EIR, the lead agency must prepare a Notice of Preparation (NOP) to inform all responsible and trustee agencies that an EIR will be prepared (CEQA Guidelines Section 15082). The purpose of the NOP is to provide agencies with sufficient information describing both the proposed Project and the potential environmental effects to enable the agencies to make a meaningful response as to the scope and content of the information to be included in the EIR. The City is also soliciting comments on the scope of the EIR from the general public.

BACKGROUND

The Project site is the location of the Rockaway Quarry ("Quarry"), which is a side hill, open pit mine, from which limestone, greenstone, shale, and chert were harvested, crushed, screened, and sold for construction purposes. The Quarry site consists of two parcels: the Quarry Parcel, located in the west of the site nearest the Pacific Ocean, consisting of steep slopes; and, the Eastern Parcel, located in the east of the site nearest State Route (SR) 1, consisting of mostly flat areas.

The Quarry has been active since the mid-1700s when Spanish soldiers quarried lime for the Presidio in San Francisco, California. Under ownership of the E.B. and A.L. Stone Company, the Quarry supplied limestone for the rebuilding of San Francisco after the 1906 earthquake. From 1907-1920, the Ocean Shore Railroad ran through the site on its way to San Francisco. Extensive blasting was used in support of the mining in the 1920s and 1930s until blasting was halted by court order. By the 1970s, mining declined as the demand for limestone decreased, and the last commercial operator, Quarry Products, closed the Quarry in 1987. Subsequently, the Quarry Parcel was partially filled with earth taken from the Reina del Mar Avenue road cut, created for the expansion of SR 1. The Eastern Parcel of the Quarry was used for associated buildings and settling ponds, quarry roads, conveyor belts, a truck scale, and washing area, but by 1993 the uses were removed and the parcel was filled.

Once the Quarry operations were suspended, the property was used for a variety of enterprises, including an annual rodeo. In 1996, the City received permits to construct the Calera Creek Water Recycling Plant on the north edge of the Quarry. The permits also allowed the City to relocate Calera Creek, which had been a man-made ditch running through the center of the Eastern Parcel to a new, separate parcel of

17.21 acres running between the Quarry Parcel and the Eastern Parcel. As part of the permits, the City also agreed to grade the Eastern Parcel and to fill the old channelized creek and 7+ acres of previously damaged and scattered wetlands on site.

PROJECT DESCRIPTION

The proposed Project includes the reclamation of the Quarry site and is described in further detail below. The following is a discussion of the Project setting and surrounding land uses, discretionary actions, and Project components.

Project Setting and Surrounding Land Uses

The Project site consists of slightly more than 86 acres across two separate parcels along the coast in the City of Pacifica (see Figure 1). The two adjacent parcels, separated by Calera Creek and a City-owned multi-use trail, are referred to as the Quarry Parcel and the Eastern Parcel. The 47.13-acre Quarry Parcel on the western side of Calera Creek consists of the former Rockaway Quarry and is dominated by often steep slopes (elevations range from seven feet to 274 feet above mean sea level), non-native plant species and informal accessways.

The Quarry Parcel consists of the following five sections: the Hilltop (the high ground on the north edge of the Quarry Parcel); the East Flank (the hillside comprised mostly of old quarry debris on the east slope of the Quarry Parcel); the Quarry Face (the scarp left by mining in the Quarry Parcel center, consisting of limestone beds); the Quarry Pit (the bowl remaining in the bottom of the old Quarry); and the Southern Bluff (the old edge of the Quarry on the south, adjacent to the ocean) (see Figure 2).

The 39.09-acre Eastern Parcel is located adjacent to and directly east of SR 1 and south of Calera Creek. The topography of the Eastern Parcel is relatively flat, with elevations ranging from approximately 20 feet to 67 feet above mean sea level. The parcel contains natural features such as wetlands and a small ephemeral ditch running through the southern portion of the site. Although the Eastern Parcel was used in support of the Quarry operations and has been significantly disturbed, the parcel has been partially reclaimed by the City as part of construction of the Calera Creek Water Recycling Plant to the north.

The City of Pacifica General Plan designates both parcels of the Quarry site as Special Area and the sites are zoned Service Commercial (C-3) with Hillside Preservation District (HPD) overlay zone. The Quarry site is also located within the Coastal Zone and is in an area of deferred certification in the City of Pacifica Local Coastal Program, with the California Coastal Commission reserving authority for issuance of coastal development permits on both parcels. The City reserves coastal development permit authority for areas immediately surrounding the Quarry, including the SR 1 public right-of-way located immediately to the east of the Quarry site where physical impacts from the Project could occur, and has agreed to a consolidated coastal development permit process with the Project applicant and the California Coastal Commission under which the California Coastal Commission will process any and all required coastal development permits for the Project, including any areas within the City's permit coastal development permit jurisdiction. The California Coastal Commission will perform environmental review of the coastal development permit under its CEQA-equivalent process (State Public Resources Code Sections 21080.5 and 21080.9, and State CEQA Guidelines Sections 15250, 15251(f) and 15265).

In addition, the City is in the process of updating its General Plan, which may include land use designation changes for the Quarry site. However, the project proposes reclamation activities to restore the Quarry to a safe, undeveloped condition with improved trails for public use. Because the project does not propose additional development or a change in use of the Quarry, the land use designations applicable to the project site are not directly relevant for purposes of the EIR.

Surrounding existing land uses for the Quarry Parcel and Eastern Parcel include Mori Point Ridge (part of the Golden Gate National Recreation Area) and the Calera Creek Water Recycling Plant to the north, commercial businesses and single-family residential homes to the east across SR 1, commercial businesses and single-family residential homes in Rockaway Beach to the south, the Pacific Ocean to the west, and a City-owned multi-use trail located between the Quarry Parcel and the Eastern Parcel.

Discretionary Actions

Implementation of the proposed Project would require the following discretionary actions by the City:

- Certification and adoption of the Quarry Reclamation Plan EIR and Mitigation Monitoring and Reporting Program;
- Approval of a Quarry Use Permit pursuant to Pacifica Municipal Code (PMC) Section 9-2.04; and
- Approval of a Heritage tree removal authorization for removal of 11 heritage trees, pursuant to PMC Section 4-12.05.

The proposed Project would require the following discretionary approvals from other agencies:

- Coastal Development Permit (California Coastal Commission);
- Clean Water Act Section 404 Permit (US Army Corps of Engineers);
- Section 7 Biological Opinion (US Fish and Wildlife Service);
- Clean Water Act Section 401 Water Quality Certification/Waiver or Issuance of Waste Discharge Requirements (San Francisco Bay Regional Water Quality Control Board); and
- Surface Mining and Reclamation Act Compliance Review (California Department of Conservation, Division of Mine Reclamation).

Project Components

The Quarry is currently owned by Preserve at Pacifica LLC and operated by Baylands Soil Pacifica LLC. The Surface Mining and Reclamation Act of 1975 ("SMARA"), as amended, requires that the mine be reclaimed. Reclamation is the combined process by which adverse environmental effects of surface mining are minimized and mined lands are returned to a beneficial end use. End uses may be open space, wildlife habitat, agriculture, or residential and commercial development. Some components of reclamation include practices that control erosion and sedimentation, stabilize slopes, and avoid and repair impacts to wildlife habitat. The final step is typically topsoil replacement and revegetation with suitable plant species.

The proposed Project would include reclamation of the Quarry site. The majority of the reclamation activity would occur on the Quarry Parcel, with minor site improvements such as grading for access roads and through truck traffic occurring on the Eastern Parcel. The Project would involve earthwork to regrade the over steepened slopes of the former Quarry into a safe condition, installation of new drainage infrastructure, and construction of new unpaved trails. The Eastern Parcel would be reclaimed to include the restoration of a 0.60-acre seasonal wetland and a 0.15-acre California Red-Legged Frog pond. The details of the Project components are discussed below.

<u>Reclamation Plans</u>

Reclamation of the former Quarry would be performed in accordance with Chapter 2 of Title 9 of the City of Pacifica Municipal Code. All five sections of the Quarry Parcel and the entire Eastern Parcel are included in the Reclamation Plan. The proposed improvements within each section are discussed below, and illustrated in Figure 3.

<u>Quarry Parcel Reclamation</u>

The following is an overview of the reclamation plans for the Quarry Parcel of the Project site.

Hilltop

The Hilltop area of the Quarry Parcel currently consists of a mix of fill and cuts with mounds and hillocks of material at elevations ranging between 230 feet and 270 feet. The Reclamation Plan seeks to create a more natural, rounded appearance on the Hilltop, provide a safe accessway between the Hilltop and the ocean bluff, and even the slope on the south and southeast to provide for the transition of 2:1 slope above the preserved limestone face.

East Flank

Currently, the East Flank is an unevenly sloped area that includes both old quarry fills and a stable slope. The northern portion of the East Flank also includes remnant native-dominated vegetation, which would be preserved with reclamation. The Reclamation Plan would include development of a multi-use trail system that curves across the southern side of the East Flank to the top of the Hilltop. The new trails would replace the existing, heavily eroded informal trails that currently cross the slope area. The existing and proposed trail system is discussed in further detail below.

Quarry Face

The Quarry Face area currently consists of a steep rock face with a geologic shear zone. However, the slope has been determined to be geologically stable and would not require grading. In accordance with the Reclamation Plan, the Quarry Face would be preserved in the current state; however, some safety features, such as hazard signs, would be implemented.

Quarry Pit

Currently, the Quarry Pit consists of an uneven mix of pits, fills, and slopes. The Reclamation Plan includes filling the area to its natural pre-mining slope as determined from historic photographs. Additionally, a multi-use trail would be constructed in order to provide access to the existing lookout located on the western end of the property.

Southern Bluff

The Southern Bluff area consists of steep-sided remnants of the old hillside transformed by quarry mining and backfilled by old quarry fills. The Reclamation Plan includes regrading of the loose soil and uneven surface on the top of the southern end of the bluff to form a stable, gently sloping surface that would also afford ocean views. The existing elevation of the Southern Bluff would be preserved at 90 to 110 feet.

Eastern Parcel Reclamation

Under existing conditions, the Eastern Parcel is a relatively flat area containing several natural features such as wetlands and an ephemeral stream. The only work that would occur on the Eastern Parcel would be wetland mitigation and temporary reclamation improvements. The wetland mitigation would consist of a California Red-Legged Frog (CRLF) Mitigation Pond and a mitigation seasonal wetland. The CRLF Mitigation Pond would be a bentonite clay-lined pond that would mitigate for impacts to an existing man-made seasonal wetland pond on the Quarry Parcel. Further discussion of the proposed mitigation seasonal wetland is provided below. Existing access roads and trails would be used for temporary construction access and would then be left in place and only maintained as necessary. In addition, improvements to the drainage system are proposed, including placement of a temporary culvert and ultimate replacement of the culvert located near the site entrance along SR 1. Further details related to the proposed drainage system improvements are provided below.

Trail Improvements

Current internal access throughout the Quarry is comprised of the following three components: the City of Pacifica’s Calera Creek Multi-Purpose (CCMP) Trail, a network of well-used informal trails, and a number of lesser-used informal trails. The CCMP Trail is a paved, Americans with Disabilities Act (ADA)-accessible trail that is a part of the City’s Coastal Trail Network. The length of the CCMP Trail through the Quarry is approximately 0.35 miles. The trail connects a parking lot at the western end of San Marlo Way to a parking lot at the western end of Reina del Mar Avenue, adjacent to the Calera Creek Water Recycling Plant parking lot.

The internal Quarry trail system is currently composed of a variety of secondary and minor informal trails that extend to Mori Point on the north end of the site, through the Quarry Pit, up the slopes of the Southern Bluff, and throughout the Eastern Parcel. Access to the Quarry trails is provided by the CCMP Trail. Most of the trail area is relatively narrow and unmaintained.

The Reclamation Plan includes several measures to improve the safety, quality, and appearance of the internal hiking trails. For example, the existing Eastern Trail would be improved to provide a new, safer surface for walking and a more level slope from the Calera Creek crossing to the Hilltop. The improved Eastern Trail would also connect to several existing coastal trails and would continue to Mori Point. Native vegetation and landscaping would also be included. Another new trail, known as the Western Trail, would be constructed from the Calera Creek crossing to the west, along the Southern Bluff, and then eventually reach existing trails leading to Mori Point. The trail would be set back from the bluff to avoid potentially erosive areas and to prevent potential hazards. The new trails would be 12 feet wide and constructed with 12 inches of aggregate base and 4 inches of decomposed granite. Additionally, three hazard signs warning of steep slopes would be placed along the coastal bluffs.

The existing trails other than the Eastern Trail within the Eastern Parcel are currently in good condition and would be maintained as necessary. Access to the trails on the Eastern Parcel is provided from Rockaway Beach through the existing CCMP trail. The proposed trails after reclamation can be seen in Figure 4.

Throughout reclamation, the improvements could involve closure of trails for periods of time. The CCMP Trail and parts of the Eastern Trail would have occasional closures to provide construction equipment access, but both would be left generally undisturbed. The internal trails through the Quarry Parcel would be intermittently or permanently closed for improvements.

Wetlands

The majority of the Project site contains uplands, composed primarily of grasslands, dominated by invasive upland species and exposed rock slopes. In total, the Project site contains approximately 2.02 acres of features that could potentially be considered within the jurisdiction of the U.S. Army Corps of Engineers (USACE), the California Coastal Commission, and/or the San Francisco Bay Regional Water Quality Control Board (RWQCB), including 0.25 acres of seasonal wetlands in the Quarry Parcel, 0.86 acres of scrub-shrub wetlands in the Eastern Parcel, 0.88 acres of emergent wetlands in the Eastern Parcel, and 0.03 acres of ephemeral ditches in the Eastern Parcel. Of the total 2.02 acres, approximately 0.25 acres of jurisdictional wetlands would be impacted by grading.

The wetlands on the Quarry Parcel would be graded and filled as part of the reclamation activities. In order to mitigate for the loss of wetlands on the Quarry Parcel, 0.6 acres of mitigation seasonal wetlands would be created on the Eastern Parcel to account for a 2:1 mitigation-to-impact ratio that would likely be required by the USACE. The constructed wetland would restore the ecological function and values of wetlands on the Quarry site, as the wetland would provide a large, contiguous source of on-site hydrology and wetland habitat.

Revegetation

The current vegetation on the Project site consists primarily of the invasive shrub, pampas grass. However, the northern portion of the site is dominated by native vegetation associations. The Hilltop area, for example, is dominated by pampas grass but also includes the native coyote bush. The bottom of the East Flank is also dominated by pampas grass while the upper slope contains a variety of native coastal shrubs. The Quarry Face is predominately covered in non-native grasses, as is the Southern Bluff.

The Project includes the revegetation of the Project site to restore and blend native vegetation into the surrounding landscape, including the reclamation of disturbed lands to a self-sustaining community of native species. After regrading, revegetation would be designed to meet the post-extractive and unmanaged land use goals of the Revegetation Plan and stabilize the surface against the effects of long-term erosion. The planned end use of the area is open space. As a result, revegetation would be intended to visually integrate with the surrounding open space areas and provide for permanent soil protection. All proposed revegetation would be accomplished through hydroseeding, which would take place between October 15 and November 15 with an appropriate trafficker, such as wood fiber mulch.

Drainage

The proposed Project includes a drainage plan, which would ensure that drainage after reclamation is conveyed through a series of concrete ditches, vegetated swales, and pipes to the ultimate discharge point of Calera Creek. The upper section of the Hilltop would be graded to a rounded hillock that drains in a southerly direction. Two drainage terraces with a concrete ditch would be built along the graded slope on a southern face of the Hilltop to collect runoff. The two terraces would run parallel to each other, approximately 30 feet apart. A concrete ditch located along the existing CCMP trail would capture runoff from the hillside below the Hilltop. Both the upper six-foot wide drainage terrace and the lower 12-foot wide drainage terrace would be bordered by a two- to three-foot wide, v-shaped concrete ditch that would be built along the graded slope on the southern face of the Hilltop.

The East Flank of the Project site would be left in the current condition with the exception of a concrete ditch built along the existing CCMP trail, as noted above, and a four-foot wide vegetated swale also along the existing CCMP trail. The ditch would have inflows to the storm drain system below the access road, which would then flow to the sedimentation junction structure, and into Calera Creek.

The Quarry Face and Pit would be filled in with a slope that would mimic natural conditions, and drainage would travel through sheet flow down the hillside to the concrete ditch located alongside the proposed multi-use Western Trail. Runoff associated with the Southern Bluff would drain via sheet flow to a newly constructed four-foot wide vegetated swale that would be located along the base of the bluff. The Eastern Parcel would continue to drain to the culverts located at the southwest corner of the property, where stormwater ultimately discharges to Calera Creek. Improvements to the existing system would include replacement of the culverts near the site entrance along SR 1.

Grading Activities

The grading plan is meant to respond to the Quarry site's geotechnical issues and create safe slopes, safe drainage, safe access, or other conditions that conform to surrounding topography. The slope stability would be established to reflect requirements set by the California Division of Mine Reclamation, which would require that slopes steeper than 2:1 be stabilized – a standard requirement unless the slope is an exposed rock face with a relatively high integrity.

The Reclamation Plan includes cut slopes in only the following two areas: the south slope of the Hilltop area, where the greenstone layer at the shear zone and above is being cut to a 2:1 slope, to provide safe pedestrian access and a more natural form; and a small area at the south end of the Southern Bluff where an area of unstable dumped fill will be removed, that also will provide improved pedestrian access and views. Fill would occur on the inside of the Southern Bluff, where existing slopes are very steep. Where the fill is relatively minimal (the southern end), a 2:1 slope is proposed. Where the fill is more extensive (the northern end), a 5:1 slope is proposed. Fill would also occur within the Quarry Pit, which would be filled in and restored to natural conditions.

Soil hauling to grade the Quarry site would require approximately 1,000,000 cubic yards of imported fill.

Tree Removal

Protected heritage trees are defined by the City as trees that have a circumference of 50 inches or more, as measured at 24 inches above the natural grade. The proposed reclamation work would require removal of 11 heritage trees primarily in the Southern Bluff and the Quarry Pit. The Project does not include any replacement plantings as proposed; however, the Project will be required to comply with any applicable replacement standards, which will be further addressed in the Biological Resources chapter of the EIR.

PROBABLE ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR

The City anticipates that the EIR will contain the following chapters in accordance with Appendix G of the CEQA Guidelines and that the other impacts in Appendix G will not be found to be significant, as described in more detail below:

- Aesthetics
- Air Quality & Greenhouse Gas Emissions
- Biological Resources
- Cultural & Tribal Cultural Resources
- Geology & Soils/Mineral Resources
- Hydrology & Water Quality (Drainage)
- Land Use & Planning
- Noise
- Parks and Recreation
- Transportation
- Utilities & Service Systems

Each of the aforementioned chapters of the EIR will include identification of the thresholds of significance, identification of project-level and cumulative impacts, and the development of mitigation measures and monitoring strategies, as required. The EIR will also include chapters that discuss Statutorily Required Sections, Alternatives to the Proposed Project, as well as Effects Not Found to be Significant. The EIR will incorporate by reference the City of Pacific General Plan. In addition to this City document, Project-specific technical studies and technical study peer reviews are being prepared by various technical sub-consultants. An Initial Study will not be prepared for the proposed Project, as the EIR will address all CEQA-required environmental topics identified in the CEQA Guidelines.

The following paragraphs summarize the anticipated analyses that will be included in the EIR.

Aesthetics: The Aesthetics chapter of the EIR will summarize the existing regional and Project area aesthetics and visual setting. The chapter will describe Project-specific aesthetics issues regarding the end use of the Quarry after reclamation such as scenic vistas, trees, scenic highways, existing visual character or quality of the Project area, as well as light and glare. The chapter will include analysis of the existing setting, identification of the thresholds of significance, identification of impacts, and the development of mitigation measures and monitoring strategies as needed.

Air Quality and Greenhouse Gas Emissions: The Air Quality and Greenhouse Gas ("GHG") Emissions chapter will include analysis for the proposed Project performed using the California Emissions Estimator Model ("CalEEMOD") software program according to the Bay Area Air Quality Managements District's ("BAAQMD") CEQA Guidelines. The analysis will include potential effects regarding on-site equipment operation and trucking of fill material to the Quarry site. Vehicle trip generation and vehicle miles traveled data from the Project-specific Traffic Impact Analysis will be used as model input data. The Air Quality and GHG chapter will include the following sections:

> Air Quality: The air quality impact analysis will include a quantitative assessment of short-term (i.e., reclamation) and long-term (i.e., operational) increases of criteria air pollutant emissions of primary concern (i.e., ROG, NO_X, and PM_{10}) for the proposed Project. The analysis will account for the earthwork required to regrade the over-steepened slopes of the Quarry, installation of new drainage infrastructure, construction of new unpaved trails, and the removal of invasive plant species. The chapter will address toxic air contaminant ("TAC") emissions utilizing the California Air Resource Board's ("CARB") *Air Quality and Land Use Handbook: A Community Health Perspective*. The significance of air quality impacts will be determined in comparison to the BAAQMD's recommended thresholds of significance. Mitigation measures will be incorporated to reduce any identified significant air quality impacts, and anticipated reductions in emissions associated with proposed mitigation measures will be quantified.
>
> GHG Emissions: The GHG impact analysis will provide an estimation of GHG emissions as a result of the proposed Project. The chapter analysis will utilize CalEEMod to produce an estimate of GHG emissions resulting from the reclamation activities. The chapter will include a discussion of emissions in comparison to appropriate thresholds. Mitigation measures will be identified, as appropriate, using BAAQMD to identify feasible mitigations for GHG emissions.

Health Risk Assessment: A Health Risk Assessment ("HRA") is being conducted due to the Project's proximity to Vallemar Elementary School, which is located approximately 600 feet from the intersection of Highway 1 and the ingress/egress point of the Project site. The HRA will include an analysis of acute, chronic, carcinogenic, and non-carcinogenic health hazards, due to exposure of TACs. The significance of health risk impacts will be determined in comparison to the criteria identified in the California Office of Environmental Health Hazard Assessment ("OEHHA") Guidelines. The significance of carcinogenic health risk impacts will be expressed in terms of cancer cases per one million individuals. Non-carcinogenic health risk impacts will be determined using BAAQMD's recommended Hazard Index. Mitigation measures will be incorporated if necessary, to reduce any identified significant health risk impacts.

Biological Resources: The Biological Resources chapter will include potential effects to plant communities, wildlife, and wetlands including adverse effects on rare, endangered, candidate, sensitive, and special-status species from the activities of the proposed Project. Analysis in the chapter will be based on a Tree Survey & Exhibit, Special Status Species Assessment, Vegetation Map & Assessment, Wetland and Habitats Delineation, and Wetlands Mitigation Program prepared specifically for the proposed Project. All reports will be subject to a peer review. Mitigation measures for all identified impacts will be developed consistent with applicable laws and regulations.

Cultural & Tribal Cultural Resources: The Cultural & Tribal Resources chapter will summarize the setting and briefly describe the potential effects to any on-site historical, archaeological, and/or paleontological resources due to implementation of the proposed Project. The chapter will also assess the potential for tribal cultural resources to be impacted by the Project, pursuant to Public Resources Code 21080.3.2. Analysis and any recommended mitigation measures within the chapter will be based on a peer-reviewed Historical/Cultural Resources Report prepared specifically for the proposed Project.

Geology & Soils/Mineral Resources: The Geology & Soils/Mineral Resources chapter of the EIR will summarize the setting and describe the potential effects from soil erosion, earthquakes, liquefaction, and expansive soils, as well as identify any unique geological features within the Project area. The chapter will be based on a site-specific peer-reviewed Geotechnical Report prepared for the Project. The chapter will consider all applicable geotechnical studies as they relate to the planned reclamation, and will include recommendation of mitigation measures to address geotechnical hazards.

Hydrology & Water Quality (Including Drainage): The Hydrology & Water Quality chapter will summarize the setting and identify potential impacts on storm water drainage, flooding, and water quality. The chapter will primarily be based on a Project-specific Development Review Checklist and Hydrology Report. Feasible and appropriate mitigation measures will be identified to avoid or reduce adverse impacts, as needed.

Land Use & Planning: The Land Use & Planning chapter will evaluate the consistency of the proposed Project with the City's adopted plans and policies. Specifically, the EIR will consider the City's General Plan and Zoning Ordinance, as well as any other appropriate documents to address any policy or consistency issues due to the proposed Project entitlements. Additionally, the chapter will discuss the compatibility of the proposed Project with the surrounding land uses, as well as the compatibility of proposed final land uses for the previously mined land. The chapter will identify land use impacts and mitigation measures and note any inconsistencies or incompatibilities with adopted plans and polices created by approval of the proposed Project.

Noise: The Noise chapter of the EIR will be based on a Project-specific technical noise report. The chapter will include an assessment of potential impacts upon nearby sensitive receptors from reclamation-phase noise and vibration. The chapter will compare predicted noise levels to the City of Pacifica General Plan Noise Element and Noise Ordinance standards to determine impact significance, and will include appropriate and practical recommendations for noise and vibration control.

Parks and Recreation: The Parks & Recreation chapter will summarize setting information and identify potential new demand resulting from the proposed Project on parks and recreation. Additionally, the chapter will discuss how the Project could affect the Project site's current parks and recreational facilities such as the Calera Creek Multi-Purpose Trail. In accordance with Appendix G, the focus of the analysis will be on whether the Project would require physical alteration of, or need for new governmental facilities, in order to maintain acceptable service ratios or other performance objectives, the construction of which could cause significant environmental impacts.

Transportation: The Transportation chapter will include an assessment of potential impacts resulting from traffic generated by construction activities associated with implementation of the proposed Project, as well as operational traffic impacts following the reclamation. Appropriate and practical recommendations for transportation, which are aimed at reducing any identified potential impacts to a level of insignificance, will be included in the chapter. The analysis and discussion will be based on a peer-reviewed, Project-specific Traffic Impact Analysis ("TIA"). The TIA will evaluate the internal site circulation and access plan, total Project trip generation, and analysis of truck routes and vehicle miles traveled to and from the Quarry. Mitigation measures required to reduce Project impacts to a less-than-significant level, or to meet Caltrans or City standards, would be identified within the chapter.

Utilities & Service Systems: The Utilities & Service Systems chapter will summarize setting information and identify potential new demand for services on water, sewer, and solid waste, as well as whether the reclamation plan will result in the need for new or expanded service facilities. Specifically, the chapter will address whether the reclamation activities over the four-year period would increase water demand or result in the generation of wastewater or solid waste to an extent that would require expanded facilities. The background research will include information regarding the Pacifica Wastewater Treatment Facility, located directly north of the Eastern Parcel and east of the Quarry Parcel, to ensure adequate wastewater treatment capacity, and coordination with the North Coast County Water District to ensure adequate water supply for reclamation activities. If existing water, sewer, or solid waste facilities would be impacted, mitigation measures will be identified to ensure that the Project's demand can be adequately accommodated.

Statutorily Required Sections: Pursuant to CEQA Guidelines, the Statutorily Required Sections chapter of the EIR will address the potential for growth-inducing impacts of the proposed Project, focusing on whether removal of any impediments to growth would occur with the Project. The chapter will summarize significant and unavoidable, significant irreversible, and growth-inducing impacts, to the extent that such impacts are identified in the EIR analysis. The chapter will also summarize the cumulative impact analyses, which will be provided in each technical chapter of the EIR.

Alternatives to the Proposed Project: The Alternatives chapter will evaluate, at a minimum, three alternatives, including the No Project Alternative required by CEQA. The Alternatives chapter will describe the alternatives and identify the environmentally superior alternative. The alternatives will be analyzed at a level of detail less than that of the proposed Project, which is permissible under CEQA; however, the analyses will include sufficient detail to allow a meaningful comparison of the impacts. The Alternatives chapter will include a qualitative-level analysis of all impacts for the alternatives. The Alternatives chapter will also include a section of alternatives considered but dismissed.

Effects Not Found to be Significant: This chapter will include abbreviated discussion of impacts determined not to be significant and, thus, not warranting detailed analysis in the EIR, which are anticipated to include but not necessarily be limited to: Agricultural and Forestry Resources; Energy; Hazards & Hazardous Materials; Population & Housing; Public Services; and Wildfire.

SUBMITTING COMMENTS

To ensure that the full range of issues related to this proposed Project are addressed and all significant issues are identified, written comments are invited from all interested parties on the scope and content of the EIR. Written comments should be directed to the name and address below:

Email (preferred):

murdockc@ci.pacifica.ca.us

Regular Mail:

City of Pacifica
Attn: Christian Murdock, Planning Dept.
170 Santa Maria Ave.
Pacifica, CA 94044

Written comments are due to the City of Pacifica at the location addressed above by 5:00 p.m. on October 12, 2020.

SCOPING MEETING

In addition to the opportunity to submit written comments, a public NOP scoping meeting will be held to inform interested parties about the proposed Project, and to provide agencies and the public an opportunity to provide comments on the scope and content of the EIR. Because of current COVID-19 health emergency, the scoping meeting will be conducted as a teleconference meeting (no physical location).

EIR Scoping Meeting on the Rockaway Quarry Reclamation Plan Project
Wednesday | September 16, 2020 | 6:00 p.m.
Teleconference Meeting (Online only – No physical location)
Zoom: https://zoom.us/j/99509925452
Phone: (669) 900-6833 | Webinar ID 995 0992 5452

Figure 1
Regional Location Map

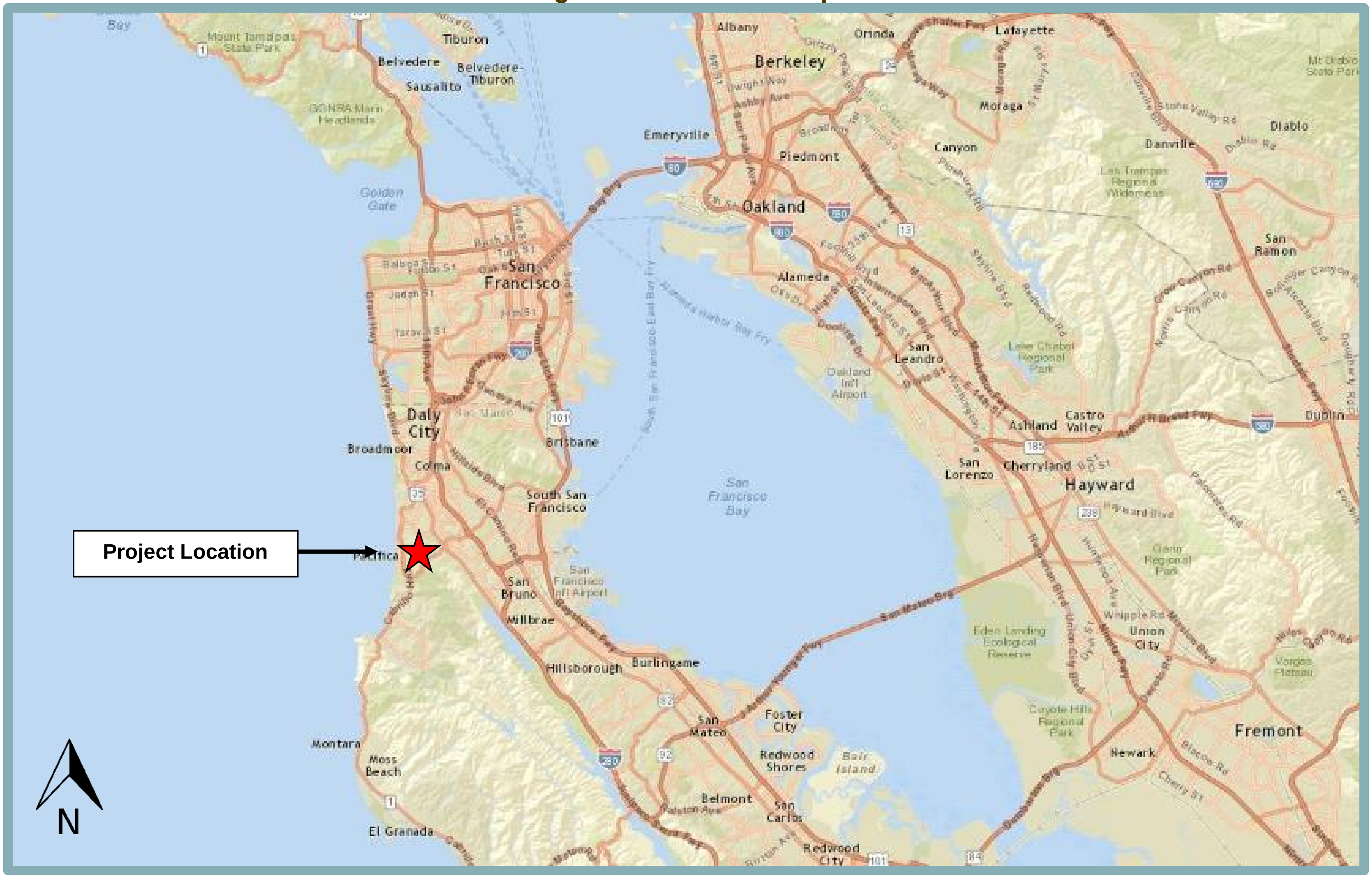


Figure 2
Project Vicinity Map

Figure 3
Reclaimed Site Plan

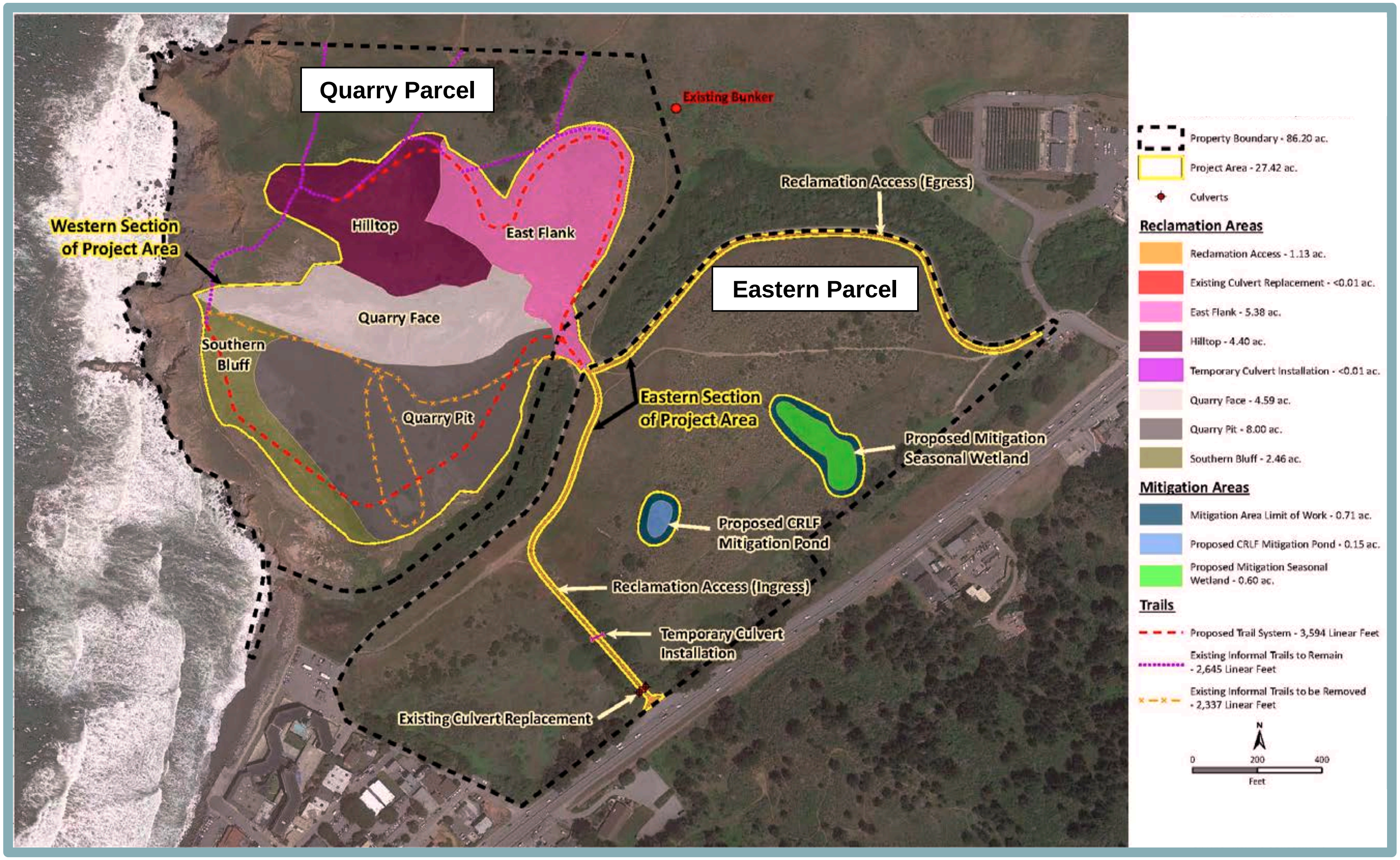
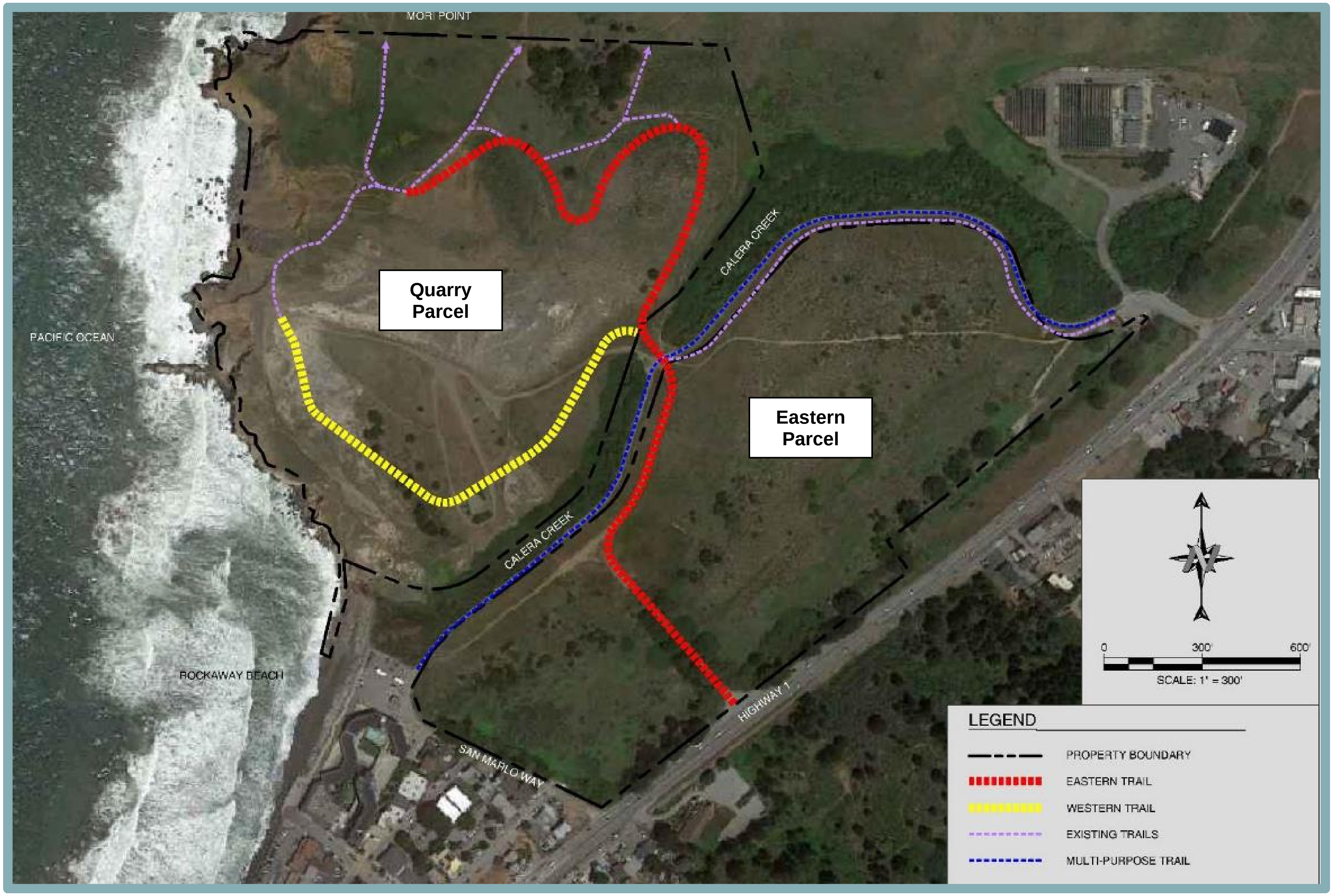


Figure 4
New Reclamation Trails



APPENDIX B

CALIFORNIA COASTAL COMMISSION

NORTH CENTRAL COAST DISTRICT
455 MARKET STREET, SUITE 300
SAN FRANCISCO, CA 94105
PHONE: (415) 904-5260
FAX: (415) 904-5400
WEB: WWW.COASTAL.CA.GOV

October 12, 2020

City of Pacifica
Attn: Christian Murdock, Planning Dept.
170 Santa Marina Ave.
Pacifica, CA 94044

Subject: ***Notice of Preparation of an Environmental Impact Report for the Proposed Rockaway Quarry Reclamation Plan Project***

Dear Mr. Murdock:

Thank you for sending the Notice of Preparation of an Environmental Impact Report for the proposed reclamation of the Rockaway Quarry. We received the digital version of the Notice of Preparation in the North Central Coast District Office on September 2, 2020. The proposed project seeks to reclaim the former Pacifica Quarry pursuant to the State Mining and Reclamation Act (SMARA) of 1975 and the City of Pacifica Mining and Reclamation Ordinance. The reclamation plan proposes grading, drainage, and environmental protection measures with the intention of reclaiming the site to a condition that is safe, stable, and readily adaptable to alternate land uses. Staff requests that the following be incorporated in the Environmental Impact Report for the project, as discussed below.

Aesthetics
Please include the following:

1) Incorporate visual simulations of the proposed project from key vantage points from the Coast Highway, the CCMP trail, the newly proposed trails, and Rockaway Beach;

2) Characterize the pre-quarry visual character of the area, informed by historic images, illustrations, and surveys as feasible, in order to substantiate claims of restoring natural slopes; and

3) Explain and analyze the visual impacts that might occur during the various phases of the project including construction, early revegetation, and established revegetation.

Air Quality & Greenhouse Gas Emissions
Please provide the following:

1) Explicitly estimate the quantity of emissions that would be produced as a result of hauling the approximate 1,000,000 cubic yards of imported fill as well as for an alternative that would reduce the amount of fill to the minimum extent required to meet SMARA requirements; and

2) In the case that revegetation fails to establish, consider appropriate strategies to reduce aerial erosion and suspension of the imported fill as dust.

Biological Resources
Please incorporate the following:

1) Consider an alternative that would avoid and minimize impacts to coastal wetlands on the project site to the greatest extent feasible while meeting the SMARA requirements;
2) Specify the technical basis for the native species mix proposed in the revegetation plan, including quantitative data from an appropriate reference site that addresses community composition and proportions, to ensure that what is planted on-site is appropriate for the local conditions and landscape;
3) Identify seed sources that will ensure the genetic integrity of local populations, including through certified local harvest within coastal San Mateo County;
4) Include information on how impacts to wetlands, environmentally sensitive habitat area (ESHA), and trees will be mitigated, considering the Coastal Commission's standard mitigation ratios of 4:1 for wetlands and 3:1 for ESHA where these ratios assume habitat creation or substantial restoration strategies;
5) Include rationale for why the proposed project would restore wetlands in the Eastern parcel when the wetlands being destroyed are located in the Western parcel, and why the proposed project would change the number and size of distinct wetland areas (i.e. from wetland complexes composed of multiple smaller features to one larger area that consolidates the acreage);
6) Consider the potential ecological effects of mitigating a mosaic of spatially dispersed smaller wetlands as one continuous larger feature, including potential isolation from the riparian corridor at Calera Creek, surrounding upland resources, connections to Mori Point resources in the north, and potentially reduced habitat complexity;
7) Include quantitative monitoring methods and a clear rationale for the methods proposed, as well as a detailed sampling design with quantitiative methods, statistical approaches, criteria for assessing success, and assessment methods; and
8) Clarify how the project will create a self-sustaining native vegetation community, including consideration for the impacts of any maintenance and vegetation management actions including, but not limited to, weeding, mowing, the application of herbicides, or irrigation inputs.

Hydrology & Water Quality
Please address the following:

1) How the project will minimize adverse changes to the site's runoff flows resulting from the increase in impervious surfaces;

2) How the proposed vegetated swales and other best management practices (BMPs) will be sized to infiltrate, retain, and/or treat the volume of runoff produced by the 85th percentile 24-hour design storm from the tributary Drainage Management Area;

3) How the project will minimize compaction of soils during construction activities to protect the site's natural infiltration capacity;

4) How the project will avoid the use of temporary erosion and sediment control products (such as fiber rolls, erosion control blankets, mulch control netting, and silt fences) that incorporate plastic netting (such as polypropylene, nylon, polyethylene, polyester, or other synthetic fibers), in order to minimize wildlife entanglement and plastic debris pollution;

5) How the project will minimize the use of landscaping chemicals for the revegetated areas, to the extent feasible; and

6) The project's use of irrigation, and if applicable, how the project will minimize potential adverse effects of dry-weather runoff resulting from irrigation.

Parks & Recreation

Please include the following:

1) Clarification of the statement that existing trails in the Western Parcel are "in good condition and would be maintained as necessary" to include a description of the existing trails that would remain as part of this project; the type of maintenance that would be conducted as necessary; and whether this includes the trail on the southern bluffs accessed from Rockaway Beach; and

2) Consider the impacts of loss of the informal trails on recreation and propose strategies for how and where additional "informal"-type trails could be reestablished safely.

If you have any questions regarding these comments please contact me via email at jeremy.smith@coastal.ca.gov.

Sincerely,

Jeremy Smith
California Sea Grant State Fellow
North Central Coast District Office
California Coastal Commission

October 12, 2020

Christian Murdock
City of Pacifica
Planning Department
170 Santa Maria Ave.
Pacifica, CA 94044

Copy sent via email: murdockc@ci.pacifica.ca.us

SUBJECT: ROCKAWAY QUARRY PROJECT; NOTICE OF PREPARATION; STATE CLEARINGHOUSE NO. 2020090036

Dear Mr. Murdock:

Thank you for including the Department of Conservation's Division of Mine Reclamation (Division) in the environmental review process for the Rockaway Quarry Project (Proposed Project) Notice of Preparation (NOP). The NOP indicates that the City of Pacifica (City), as lead agency under the California Environmental Quality Act (CEQA), will prepare an Environmental Impact Report (EIR) for the Proposed Project and that the City is soliciting comments on the scope of the EIR from the general public with this NOP.

As described in the NOP, the Proposed Project site is the location of the Rockaway Quarry, which is a sidehill, open pit mine. The Quarry site consists of two separate project sites, the Quarry Parcel and the Eastern Parcel, totaling approximately 86 acres. The Proposed Project would include reclamation of the former Quarry and would be performed in accordance with Chapter 2 of Title 9 of the City of Pacifica Municipal Code and the reclamation plan for the Quarry.

The Division's primary focus is on active surface mining operations; however, the Division also addresses issues related to abandoned (pre-1976) legacy mines. The Division has review responsibilities associated with lead agency implementation of SMARA. SMARA provides a comprehensive surface mining and reclamation policy to assure that:

- Adverse environmental effects of surface mining operations are prevented or minimized and mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses.
- Production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment.
- Residual hazards to the public health and safety are eliminated.

The Division requests to be included on the distribution list for this Proposed Project. Additionally, the Division requests that any subsequent project documents (e.g., the Draft EIR, hearing notices for the Draft and Final EIRs, and any supplemental environmental documents), as well as a copy of the certified Final EIR, be sent to the Division at DMR-Submittals@conservation.ca.gov or the mailing address on the bottom of page 1 of this letter. If you have any questions, please contact me at (916) 323-9198.

Sincerely,

DocuSigned by:
Carol E Atkins
73ECCB6738194DA...

Carol E. Atkins, Manager
Environmental Services Unit

ec: State Clearinghouse, state.clearinghouse@opr.ca.gov

Department of Conservation, Office of Legislative and Regulatory Affairs, OLRA@conservation.ca.gov

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
2825 Cordelia Road, Suite 100
Fairfield, CA 94534
(707) 428-2002
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

October 9, 2020

Mr. Christian Murdock
City of Pacifica Planning Department
170 Santa Maria Avenue
Pacifica, CA 94044
murdockc@ci.pacifica.ca.us

Dear Mr. Murdock:

Subject: Rockaway Quarry Reclamation Plan Project, Notice of Preparation of an Environmental Impact Report, SCH No. 2020090036, City of Pacifica, San Mateo County

The California Department of Fish and Wildlife (CDFW) reviewed the Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the Rockaway Quarry Reclamation Plan Project (Project), located at State Route (SR) 1 and Del Mar in the City of Pacifica (City).

CDFW is a Trustee Agency with responsibility under the California Environmental Quality Act (CEQA) §15386 for commenting on projects that could impact fish, plant and wildlife resources. CDFW is also considered a Responsible Agency if a project would require discretionary approval, such as permits issued under the California Endangered Species Act (CESA), the Native Plant Protection Act, the Lake and Streambed Alteration (LSA) Program and other provisions of the Fish and Game Code that afford protection to the State's fish and wildlife trust resources. Pursuant to our jurisdiction, CDFW has the following concerns, comments, and recommendations regarding the Project.

PROJECT DESCRIPTION AND LOCATION

Proponent: City of Pacifica

Location and Description: The Project is located at State Route 1 and Reina Del Mar Avenue, City of Pacifica, San Mateo County, Accessors Parcel Numbers (APNs): 018-150-120 and 018-150-150.

The Project involves the reclamation of an existing quarry to minimize adverse environmental impacts of surface mining and mined land areas. Project activities include regrading steep slopes of the former quarry into a safe condition, installing new drainage infrastructure, constructing new unpaved trails, restoring features to natural conditions, and improving stormwater drainage.

The following further describes each reclamation activity by site area:

Hilltop. The quarry hilltop would be graded to a lower elevation to create a safely sloped access road between the hilltop and ocean bluff, providing a transition of 2:1 slope above the preserved limestone face.

East Flank. This area contains former quarry fills within a stable slope. The northern part of the East Flank is dominated by native vegetation that would be preserved through reclamation activities. The Reclamation Plan includes installing a multi-use trail connecting the southern side of the East Flank to the Hilltop, replacing existing eroded informal trails.

Quarry Face. The Quarry face has a stable slope, so no activities will occur in this area aside from installing hazard warning signage.

Quarry Pit. The Quarry Pit has an uneven mix of slopes, fills, and pits. The Reclamation Plan includes grading the pit to resemble pre-mining slope conditions as determined by analyzing historic imagery. Additionally, a multi-use trail would be installed.

Southern Bluff. The Reclamation Plan involves regrading of the loose soil and uneven surface on the top of the southern end of the bluff to form a stable, gently sloping surface.

Eastern Parcel Reclamation. A total of 0.25 acres of seasonal wetlands would be graded and filled as part of the reclamation activities. In order to mitigate for the loss of wetlands, 0.6 acres of mitigation seasonal wetlands would be created on the Eastern Parcel to account for a 2:1 mitigation-to-impact ratio.

Stormwater/Stream Improvements (General). Two drainage terraces with a concrete ditch would be built to collect runoff from the Hilltop. Runoff from the Southern Bluff would drain via sheet flow to a newly constructed four-foot wide vegetated swale that would be located along the base of the bluff. A temporary culvert and then, ultimately a permanent culvert would be installed on the ephemeral stream along State Route 1.

ENVIRONMENTAL SETTING

Sufficient information regarding the environmental setting is necessary to understand the Project, and its significant impacts on the environment (CEQA Guidelines, §§15125 and 15360). CDFW recommends that the CEQA document prepared for the Project provide baseline habitat assessments for special-status plant, fish and wildlife species located and potentially located within the Project area and surrounding lands, including all rare, threatened, or endangered species (CEQA Guidelines, §15380). Fully protected, threatened or endangered, candidate, and other special-status species that are known to occur, or have the potential to occur in or near the Project site, include, but are not limited to:

- San Francisco garter snake (*Thamnophis sirtalis tetrataenia*; SFP, FE, SE),
- California red-legged frog (*Rana draytonii*; FT, SSC),
- San Francisco common yellowthroat (*Geothlypis trichas sinuosa*; SSC), and
- Pappose tarplant (*Centromadia parryi ssp. parryi,* 1B.2)

FE = Federally Endangered; FT = Federally Threatened; SE = State Endangered; SFP = State Fully Protected; SSC = State Species of Special Concern

CNPS Plant Ranks

- 1B = Rare, Threatened, or Endangered in California and Elsewhere
- 2A = Presumed Extirpated in California, But Common Elsewhere
- 2B = Rare, Threatened, or Endangered in California, But More Common Elsewhere

CNPS Threat Ranks

- 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- 0.2-Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
- 0.3-Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

CDFW recommends that prior to Project implementation surveys be conducted for special-status species with potential to occur, following recommended survey protocols if available. Survey and monitoring protocols and guidelines are available at: https://www.wildlife.ca.gov/Conservation/Survey-Protocols.

IMPACT ANALYSIS AND MITIGATION MEASURES

The CEQA Guidelines (§15126.2) necessitate that the draft EIR discuss all direct and indirect impacts (temporary and permanent) that may occur with implementation of the Project. This includes evaluating and describing impacts such as:

- Potential for “take” of special-status species;

- Loss or modification of breeding, nesting, dispersal and foraging habitat, including vegetation removal, alternation of soils and hydrology, and removal of habitat structural features (e.g. snags, roosts, overhanging banks);
- Permanent and temporary habitat disturbances associated with ground disturbance, noise, lighting, reflection, air pollution, traffic or human presence; and
- Obstruction of movement corridors, fish passage, or access to water sources and other core habitat features.

The CEQA document should also identify reasonably foreseeable future projects in the Project vicinity, disclose any cumulative impacts associated with these projects, determine the significance of each cumulative impact, and assess the significance of the Project's contribution to the impact (CEQA Guidelines, §15355). Although a project's impacts may be insignificant individually, its contributions to a cumulative impact may be considerable; a contribution to a significant cumulative impact – e.g., reduction of available habitat for a listed species – should be considered cumulatively considerable without mitigation to minimize or avoid the impact.

Based on the comprehensive analysis of the direct, indirect, and cumulative impacts of the Project, the CEQA Guidelines (§§ 15021, 15063, 15071, 15126.2, 15126.4 and 15370) direct the lead agency to consider and describe all feasible mitigation measures to avoid potentially significant impacts in the draft EIR, and/or mitigate significant impacts of the Project on the environment. This includes a discussion of take avoidance and minimization measures for special-status species, which are recommended to be developed in early consultation with the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service and CDFW. These measures can then be incorporated as enforceable Project conditions to reduce potential impacts to biological resources to less-than-significant levels.

COMMENTS AND RECOMMENDATIONS

CDFW offers the following comments and recommendations to assist the City of Pacifica in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on biological resources.

Comment 1: Botanical Surveys

Issue: The project has the potential to directly and/or indirectly impact pappose tarplant and/or its habitat. The scope of potential Project impacts to pappose tarplant individuals and populations is unclear.

Occurrence: There is a sighting of pappose tarplant in the southernmost part of the Eastern Parcel (California Natural Diversity Database (CNDDB) Accessed October 2020).

Recommendation: CDFW recommends completing full floristics surveys in impact areas within potentially suitable habitat with a focus on pappose tarplant.

Botanical surveys for special-status plant species, including those listed by the California Native Plant Society (http://www.cnps.org/cnps/rareplants/inventory/), must be conducted during the blooming period for all sensitive plant species potentially occurring within the Project area and require the identification of reference populations. Please refer to CDFW protocols for surveying and evaluating impacts to rare plants available at: https://www.wildlife.ca.gov/Conservation/Plants.

Comment 2: California Red-Legged Frog

Issue: Reclamation activities will include the restoration of a 0.60-acre seasonal wetland and creation of a 0.15-acre California red-legged frog pond. The Project has the potential to directly and/or indirectly impact California red-legged frog and/or its habitat. The scope of potential Project impacts to California red-legged frog individuals and/or populations is unclear.

Occurrences: There are two known detections of California red-legged frog at the Project site; one located on the former Quarry parcel and one on the eastern parcel where restoration activities will take place (CNDDB Accessed October 2020).

Recommendation: The draft EIR should analyze all groundwork activities, such as grading and filling, that may potentially impact California red-legged frog. It should also discuss all potentially significant impacts to California red-legged frog. CDFW recommends early consultation with CDFW and USFWS to develop appropriate avoidance, minimization and mitigation measures. Those measures should be specified in the draft EIR to reduce any potentially significant impacts to less-than-significant.

Comment 3: San Francisco Garter Snake

Issue: San Francisco garter snake, a state fully protected species, is known to occur throughout the Project area. CDFW has jurisdiction over fully protected species of birds, mammals, amphibians, reptiles, and fish pursuant to Fish and Game Code §§ 3511, 4700, 5050, and 5515. Take[1] of any fully protected species is prohibited. CDFW cannot authorize incidental take of fully protected species unless the take is

[1] Take is defined by Fish and Game Code § 86 as to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

for scientific purposes pursuant to Fish and Game Code Section 2081(a) or a project has an approved Natural Communities Conservation Plan pursuant to Fish and Game Code Section 2800.

The Project has the potential to disturb, injure, or kill San Francisco garter snake during Project construction, including use of heavy equipment for grading activities. Exclusion fencing and/or funnels are not always fully effective for snakes and can cause mortality or injury by capturing San Francisco garter snake within exclusion fencing and coverboards.

Recommendation: CDFW recommends a full-time biological monitor actively observe all vegetation removal and ground-disturbing activities. Vegetation removal should be done using hand tools. If work would occur in different areas of the site such that the biological monitor would not be able to fully monitor all activities, additional monitors may be needed. CDFW recommends early consultation with CDFW and USFWS to develop appropriate avoidance measures.

Issue: The proposed Project includes creating multi-use trails that could impact the state fully protected San Francisco garter snake. San Francisco garter snakes may utilize the trails for thermoregulation (basking) or move across trails during hunting and other movements. If bicyclists and equestrians do not observe San Francisco garter snakes on the trail, they have the potential to disturb, injure, and/or kill snakes.

Evidence of impacts: A San Francisco garter snake was run over by a bicyclist and killed along a road on San Francisco Public Utilities Commission (SFPUC) property in area surrounding Crystal Springs and San Andreas Reservoirs in San Mateo County (USFWS 2006). Several additional cases of San Francisco garter snake mortality have been reported in the vicinity under similar circumstances. Snake mortality associated with bicycle and vehicle traffic is common on trails where such uses are allowed (Miller and Alvarez, 2016).

Recommendation: CDFW recommends that the trails be limited to pedestrian use to completely avoid take of San Francisco garter snake.

Comment 4: Tree Removal

Issue: The Project will result in the removal of eleven heritage trees, defined as having a circumference of 50 inches diameter at breast height (dbh) or greater. Both native and non-native trees provide nesting habitat for birds, and habitat value for other wildlife. Large-diameter heritage trees found on the site (primarily native oaks) are expected to provide food and shelter for a variety of native species. Additionally, it would take many years for planted oaks to get to a size that could provide the same ecological benefits that old, native trees provide. Removal of heritage trees and potentially other trees on-site without adequate mitigation should be considered a substantial adverse change in the physical conditions within the area affected by the Project.

Recommendation: The draft EIR should include a clear analysis of potential impacts to all trees located within or adjacent to the Project area, and appropriate and effective compensatory mitigation to completely offset any permanent impacts of removing trees from the Project area. CDFW recommends the Project avoid heritage tree removal to the greatest extent feasible. On-site tree planning should be considered as a potential impact minimization measure but not sufficient to completely off-set temporal impacts from loss of heritage trees. CDFW recommends Project mitigation from loss of heritage trees should include off-site preservation of heritage trees in perpetuity.

Comment 5: Nesting Birds

Issue: If ground-disturbing or vegetation-disturbing activities occur during the bird breeding season (February through early-September), the Project could cause impacts to nesting birds.

Recommendation: To evaluate and avoid for potential impacts to nesting bird species, CDFW recommends incorporating the following mitigation measures into the Project's draft EIR, and that these measures be made conditions of approval for the Project.

1. Nesting Bird Surveys: If Project-related work is scheduled during the nesting season (typically February 15 to August 30 for small bird species such as passerines; January 15 to September 15 for owls; and February 15 to September 15 for other raptors), CDFW recommends that a qualified biologist conduct two surveys for active nests of such birds within 7 days prior to the beginning of Project construction, with a final survey conducted within 48 hours prior to construction. Appropriate minimum survey radii surrounding the work area are typically the following: i) 250 feet for passerines; ii) 500 feet for small raptors such as accipiters; and iii) 1,000 feet for larger raptors such as buteos. Surveys should be conducted at the appropriate times of day and during appropriate nesting times.

2. Active Nest Buffers: If the qualified biologist documents active nests within the Project area or in nearby surrounding areas, an appropriate buffer between the nest and active construction should be established. The buffer should be clearly marked and maintained until the young have fledged and are foraging independently. Prior to construction, the qualified biologist should conduct baseline monitoring of the nest to characterize "normal" bird behavior and establish a buffer distance which allows the birds to exhibit normal behavior. The

qualified biologist should monitor the nesting birds daily during construction activities and increase the buffer if the birds show signs of unusual or distressed behavior (e.g. defensive flights and vocalizations, standing up from a brooding position, and/or flying away from the nest). If buffer establishment is not possible, the qualified biologist or construction foreman should have the authority to cease all construction work in the area until the young have fledged and the nest is no longer active.

ENVIRONMENTAL DATA

CEQA requires that information developed in draft environmental impact reports be incorporated into a data base which may be used to make subsequent or supplemental environmental determinations. [Pub. Resources Code, § 21003, subd. (e)]. Accordingly, please report any special-status species and natural communities detected during Project surveys to CNDDB. The CNNDB field survey form, online field survey form, and contact information for CNDDB staff can be found at the following link: https://wildlife.ca.gov/data/CNDDB/submitting-data.

REGULATORY REQUIREMENTS

California Endangered Species Act

Please be advised that a CESA Permit must be obtained if the Project has the potential to result in “take” of plants or animals listed under CESA, either during construction or over the life of the Project. Issuance of a CESA Permit is subject to CEQA documentation; the CEQA document must specify impacts, mitigation measures, and a mitigation monitoring and reporting program. If the Project will impact CESA listed species, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain a CESA Permit.

CEQA requires a Mandatory Finding of Significance if a project is likely to substantially impact threatened or endangered species (CEQA section 21001(c), 21083, and CEQA Guidelines section 15380, 15064, 15065). Impacts must be avoided or mitigated to less-than-significant levels unless the CEQA Lead Agency makes and supports Findings of Overriding Consideration (FOC). The CEQA Lead Agency’s FOC does not eliminate the Project proponent’s obligation to comply with Fish and Game Code section 2080.

Lake and Streambed Alteration Program

Notification is required, pursuant to CDFW’s LSA Program (Fish and Game Code section 1600 et. seq.) for any Project-related activities that will substantially divert or obstruct the natural flow; change or use material from the bed, channel, or bank including associated riparian or wetland resources; or deposit or dispose of material where it may pass into a river, lake or stream. Work within ephemeral streams, washes, watercourses with a subsurface flow, and floodplains are subject to notification requirements. CDFW, as a Responsible Agency under CEQA, will consider the CEQA document for the Project. CDFW may not execute the final LSA Agreement until it has complied with CEQA (Public Resources Code section 21000 et seq.) as the responsible agency.

Nesting Birds

CDFW has jurisdiction over actions that may result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections protecting birds, their eggs, and nests include 3503 (regarding unlawful take, possession or needless destruction of the nests or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird). Fully protected species may not be taken or possessed at any time (Fish and Game Code Section 3511). Migratory raptors are also protected under the federal Migratory Bird Treaty Act.

FILING FEES

CDFW anticipates that the Project will have an impact on fish and/or wildlife, and assessment of filing fees is necessary (Fish and Game Code, § 711.4; Pub. Resources Code, § 21089). Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW.

CONCLUSION

CDFW appreciates the opportunity to comment on the NOP to assist the City in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Ms. Mia Bianchi, Environmental Scientist, at (707) 210-4531 or by email at mia.bianchi@wildlife.ca.gov; or Mr. Wes Stokes, Senior Environmental Scientist (Supervisory), at (707) 339-6066 or by email at wesley.stokes@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Gregg Erickson
BE74D4C93C604EA...

Gregg Erickson
Regional Manager
Bay Delta Region

cc: Office of Planning and Research, State Clearinghouse, Sacramento

REFERENCES

California Department of Fish & Wildlife (CDFW). 2020. California Natural Diversity Database (CNDDB) Rarefind Electronic database. Sacramento, CA. Search of U.S. Geological Survey 7.5-minute quadrangles Montara Mountain. Accessed July 2020.

Miller, Ariel and Jeff A. Alvarez. 2016. Habitat use and management considerations for the threatened Alameda whipsnake (*Masticophis lateralis euryxanthus*) in Central California. Western Wildlife 3:29-32.

U.S. Fish and Wildlife Service, 2006. San Francisco Garter Snake (Thamnophis sirtalis tetrataenia) 5-year review: Summary and Evaluation. U.S. Fish and Wildlife Service, Sacramento Field Office, Sacramento, California.

NATIVE AMERICAN HERITAGE COMMISSION

RECEIVED
SEP 09 2020
City of Pacifica

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

September 3, 2020

Christian Murdock
City of Pacifica
170 Santa Maria Ave.
Pacifica, CA 94044

Re: 2020090036, Rockaway Quarry Reclamation Plan Project, San Mateo County

Dear Mr. Murdock:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

a. A brief description of the project.

b. The lead agency contact information.

c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).

d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

a. Alternatives to the project.

b. Recommended mitigation measures.

c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

a. Type of environmental review necessary.

b. Significance of the tribal cultural resources.

c. Significance of the project's impacts on tribal cultural resources.

d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

a. Whether the proposed project has a significant impact on an identified tribal cultural resource.

b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
  a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
  b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
  a. If part or all of the APE has been previously surveyed for cultural resources.
  b. If any known cultural resources have already been recorded on or adjacent to the APE.
  c. If the probability is low, moderate, or high that cultural resources are located in the APE.
  d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
  b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Nancy.Gonzalez-Lopez@nahc.ca.gov.

Sincerely,

Nancy Gonzalez

Nancy Gonzalez-Lopez
Cultural Resources Analyst

cc: State Clearinghouse

From: Kelsey Mangione
To: Murdock, Christian
Subject: Quarry reclamation feedback
Date: Saturday, September 12, 2020 12:40:33 PM

Hello,

My name is Kelsey Mangione and I'm a resident of Rockaway Beach in Pacifica. I'm writing to share my feedback on the Quarry Reclamation plan. I was particularly disappointed to see the plans for a hotel and amphitheater. There are already 3 other hotels in the immediate area, including the Moonraker Hotel which has a waterfront view restaurant. I chose my home because of its quick beach access and waterfront views, and I feel disappointed that it's being taken away for hotels and shops. This plan feels especially unrealistic in light of our "new normal" of COVID-19 — hotels and shops just aren't necessary, but access to the outdoors is.

Sincerely,
Kelsey Mangione

From: Roger Mascio
To: Murdock, Christian
Subject: Quarry reclamation suggestion
Date: Friday, September 11, 2020 9:41:47 PM

I would like to see better access to the fishing on the ocean side. This would make it safer and would provide fishing access to more people. Fishing is one of Pacifica's resources and good for one's health.
Thank you for asking for input.
Roger Mascio

Murdock, Christian

From: Claudia R <rockgarden13@hotmail.com>
Sent: Friday, September 18, 2020 7:28 PM
To: Murdock, Christian
Subject: Quarry Reclamation Plan Comments

[CAUTION: External Email]

Hi
if the quarry is privately owned, shouldn't they be making the EIR?

Does the city have a long range goal
To acquire the land?

Thanks
Claudia Reinhart

Sent from my iPhone

APPENDIX C

SOIL MANAGEMENT PLAN

for the

The Preserve @ Pacifica, LLC

AMENDED RECLAMATION PLAN

at the Pacifica Quarry
Pacifica, California

Prepared by:

Baylands Soil Pacifica, LLC

Created: November 2019
Updated: September 2021

1 INTRODUCTION

1.1 Purpose & Objectives

This Soil Management Plan was prepared to define the operations associated with completing the Approved Amended Reclamation Plan (the Facility) at the Pacifica Quarry site, identify operational requirements and limitations, and establish a reporting mechanism between the Operator (Baylands Soil Pacifica, LLC aka "BSP"), land owner (The Preserve @ Pacifica, LLC aka "PAP") and those governmental agencies with jurisdiction over the site and its operations.

The operation of the reclamation site (Facility) is an evolving process that must adapt to market conditions, and regulatory requirements. Likewise, this plan will serve as an evolving document taking into consideration those changes and will be updated, as needed.

The objectives of this Soil Management Plan are as follows:

- Identify the physical limits of operations at the Pacifica Quarry site under contractual control of the Operator. Under the direction of the landowner, the Operator is directly responsible for the daily operations and implementation of certain regulatory requirements as contractually obligated.

- Provide a description of the operations including site improvements, acceptable import materials, placement and compaction, final grading and vegetation per the Approved Amended Reclamation Plan.

- Establish standardized reports and distribution procedures.

1.2 Site Location & Map

The Pacifica Quarry site consists of APN # 180-150-110 and APN # 180-150-120 (the "West Parcel" shown as Exhibit A) together with APN # 180-150-150 (the "East Parcel" shown in Exhibit B), collectively described as the "Property". It is bounded by Rockaway Beach to the south, Mori Point Ridge to the north, Highway 1 to the east and the Pacific Ocean to the west in the City of Pacifica within San Mateo County, California. The Project Area consists of the West Parcel (Exhibit A) and existing access roads crossing the east parcel as shown in Section 1.7.

1.3 Site History & Context

The Pacifica Quarry, an open pit mine from which limestone, greenstone, shale and chert was extracted, is located on the Property. Mining operations at the Pacific Quarry ceased in 1987, and the Property requires reclamation. The Project Team has prepared and submitted to the City of Pacifica ("City"), revisions to an application for a Quarry Use Permit and an amendment to Reclamation Plan for the Property (collectively, the "Amended Reclamation Plan") pursuant to the Surface Mining and Reclamation Act ("SMARA") and the City's Mining and Reclamation Ordinance. The Amended Reclamation Plan will be subject to environmental review under the California Environmental Quality Act ("CEQA").

As part of the Amended Reclamation Plan, a grading plan (the "Grading Plan") was prepared by Walsh Engineering dated 03/16/2020. As shown on the Grading Plan, approximately 970,000cubic yards of soil imports are required to reclaim the West Parcel.

As the Contractor, BSP will reclaim the Property by (i) receiving, managing, and placing imported soil to the Property that satisfies certain environmental standards that will be set forth in this Soil Import Management Plan (the "Soil Management Plan"), (ii) depositing and compacting the Imported Soil, (iii) grading the Property, (iv) constructing a new access road on the Property, and (v) re-vegetating the Property. There is no proposal to develop the Property following the completion of the reclamation work at this time.

1.4 Owner's Name and Address:

The Preserve @ Pacifica, LLC
231 W. Fulton St.,
Grand Rapids, MI 49503
Attn: Paul C. Heule
Email: Pcheule@eenhoorn.com

1.5 Contracted Operator's Name and Address:

Baylands Soil Pacifica, LLC
225 3rd Street
Oakland CA 94607
Attn: Bill Gilmartin
Email: bgilmartin@thebaylands.com

1.6 Current Conditions

The Property is a former mine dominated by often-steep slopes, non- native plant species and informal accessways. For ease of discussion, the site includes the following elements from roughly north to south: the Hilltop (the high ground on the north edge of the parcel); the East Flank (the hillside comprised mostly of old quarry debris on the east slope of the parcel); the Quarry Face (the scarp left by mining in the parcel center), the Quarry Pit (the bowl remaining in the bottom of the old quarry),and the Southern Bluff (the old edge of the Quarry on the south adjacent to the ocean).

The Hilltop is the high ground of the parcel and is located above the Quarry Face and East Flank and south of the adjacent Golden Gate National Recreation Area's

(GGNRA's) Mori Point. The Hilltop is relatively flat and smooth and extends down over the south slope to a shear zone just above the limestone of the Quarry Face. The hilltop also has two mounds protruding approximately 20 feet above the surface. In contrast with its adjacent landscapes, the surface of the Hilltop has soil and moderate vegetation cover.

The East Flank is steeply sloped and is comprised predominately of exposed fill and gains approximately 220 feet in elevation. At the bottom of the East Flank an old access road cuts across and up the slope. The road cuts north across the East Flank and then turns south and continues across the Face. The grade of the slope varies throughout the section with several small, relatively flat, plateaus. The section is moderately vegetated; the lower slope is dominated by pampas grass while the upper, more stable slope contains a variety of native coastal shrubs.

The Quarry Face is predominately an exposed limestone face with approximately 170 feet in elevation gain. The lower two thirds of the Face are steep, comprised of exposed limestone, and are sparsely vegetated. Approximately 120 feet above the old quarry floor, two thirds of the way up the Face, an old access road cuts horizontally across the Face. Above the road, the Face gives way to the Hilltop at the geologic shear zone that separates the limestone from greenstone. The access road and upper slope have moderate vegetation cover.

The Quarry Pit is predominately flat and vegetated with non-native species. Steep slopes, including the Face, surround the Pit to the north, west, and south. To the east, the Quarry Pit abuts the City -owned parcel and Calera Creek. An approximately 7,800 square foot, 10-foot-deep depression is located near the eastern edge. North of the depression is an elevated, predominately exposed rock surface.

The Southern Bluff abuts the Pacific Ocean to the south, is steeply sloped, and is comprised on the surface of predominantly exposed and unstable rock slopes. The slopes are sparsely vegetated with pampas grass. The ridge has moderate vegetation cover comprised of predominately non-native species.

1.7 Site Access

Inbound trucks will come from the north and access the project site from southbound State Route 1 through the Old Quarry Road connection, an existing dirt access road located about one-third mile south of Reina Del Mar Avenue; this access point is currently blocked by large boulders that would be removed as part of the access plan. Vehicles egress from the site would be accommodated at the existing traffic signal at State Route 1/Reina Del Mar Avenue; trucks will turn left onto State Route 1 and return to the north via Interstate 280.

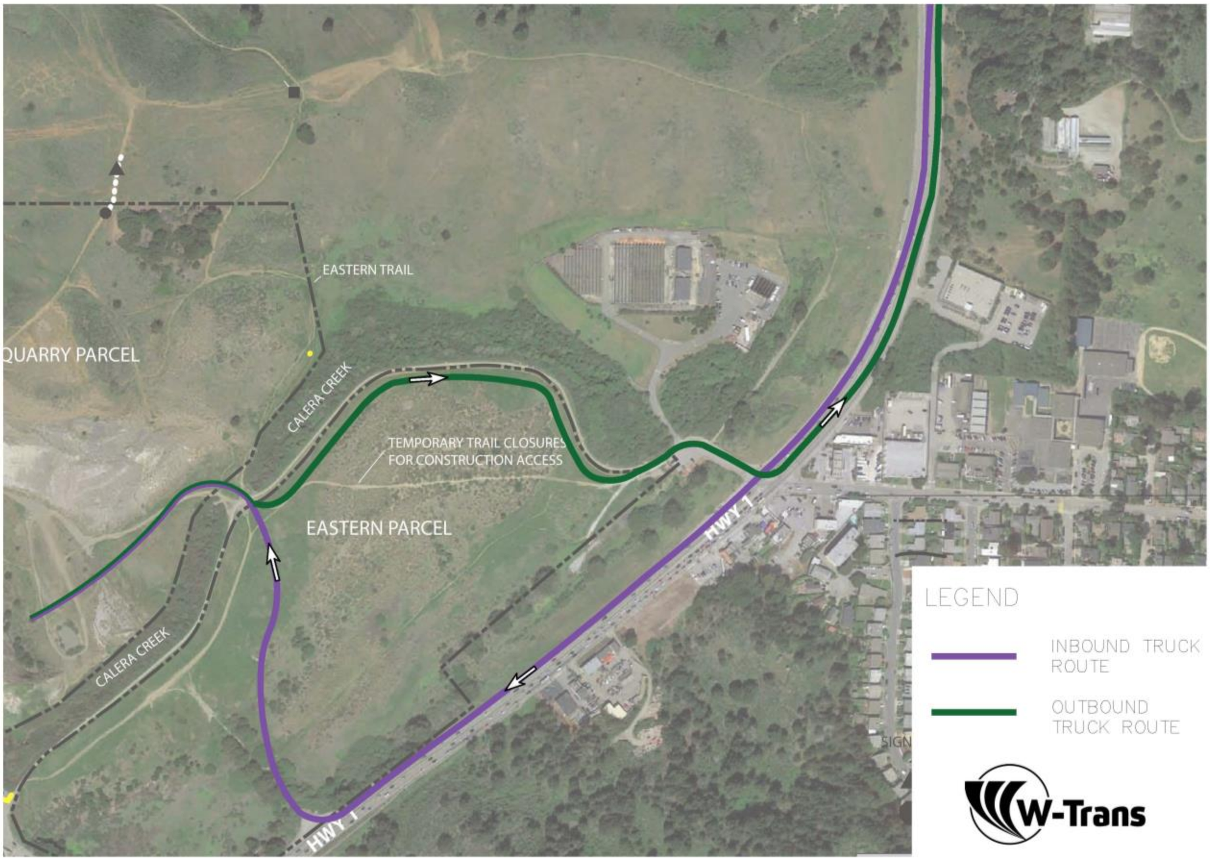


Exhibit 1— Truck Routes

PAC005 December 2018

1.8 Site Drainage

Site drainage is characterized by sheet flow across the unimproved surface of the Property and will be controlled by vegetated swales/channels and other approved Storm Water Pollution Prevention measures. In general, storm water flows to Calera Creek that divides the Property. This central drainage channel also receives storm water discharge from the wastewater treatment plant and other off-site developed areas upstream of the Property. Calera Creek discharges to the Pacific Ocean via Rockaway Beach.

2 DESCRIPTION OF OPERATIONS

2.1 Overview of Operations

The Facility's operations geographically consist of approximately 28.2acres of the Quarry Site located west of the existing creek. Access to the site will be as stated in Section 1.7.

The Facility accepts "Soil" that does not exceed the environmental screening limits as defined by the State of California Water Quality Control Board - San Francisco Region. Days and hours of operation are Monday through Friday, 6:00 AM to 7:00 PM. If requested by clientele, the Facility may be opened on the weekend during specific hours to accommodate their project's needs.

The Facility requires that materials go through an Environmental Screening Process (ESP) prior to being accepted as suitable import materials. The Environmental Screening Limits (ESL's) for the chemicals being evaluated align with the Regional Water Quality Control Board's (RWQCB) residential ESL's and generally accepted background levels previously accepted by the RWQCB and the State Department of Toxic Substance Control (DTSC).

Additionally, the materials must meet the requirements contained in the Geotechnical Investigation Dated December 2018 by Geocon, which includes: a Plasticity Index not greater than 20, and an Expansion Index less than 90 to ensure the materials comply with the project's structural fill and compaction requirements.

Once approved by the Materials Regulation Specialist (MRS), a list of approved projects will be given a designated, unique identification number by the Operator and given to BSP's Gate Operator and PAP's designated representative. Quantity and timing of material deliveries are dependent on the individual project and vary daily.

When deliveries arrive at the Facility, the Gate Operator will check them against the "approved list" to confirm compliance with the prior approvals. If the Gate Operator determines that the import materials are not associated with the "approved list" or appears to have been tampered with, the Gate Operator will reject the load.

2.2 Related On-Site Operations

Proposed activities include the following:

1. Administrative office and related equipment in a temporary modular unit;

2. Heavy Equipment storage and maintenance; (2) screening plants, (2) loaders, (1) excavator, (1) water truck, (1) tractor, and (2) pick-up trucks, as needed;

3. Miscellaneous tools and equipment including lab equipment, tool box containers, power generator;

4. Vehicle parking – ranging between 3 to 6 vehicles;

5. Implementation of the Site's Storm Water Pollution Prevention Plan (SWPPP);

6. Site grading and maintenance of SWPPP measures and access road,

7. Temporary stockpiling of soil prior to placement and compaction;

8. Temporary storage and off-haul of site generated debris which includes debris boxes.

9. Temporary storage of BSP's, and its representatives, construction equipment, miscellaneous tools in containers and various framing and structural support materials.

10. Revegetate the Property in accordance with the Approved Amended Reclamation Plan

2.3 Source for Imported Materials.

The sources of imported soil would be from public works projects and soil excavation associated with private development projects located in San Francisco, San Mateo, and Santa Clara Counties. The source materials to be received on the project site would be limited to these three counties in order to 1) conduct reclamation activities within the anticipated schedule, and 2) limit total greenhouse gas emissions based on accessibility to regional transportation facilities between the source locations and the project site consistent with the Reclamation Project Application.

3 REGULATORY REQUIREMENTS

The following section identifies those entities that have regulatory jurisdiction over the operations of the Facility as they apply to the Project Site. Sections 3.1 through 3.5 are specific to the primary operations pertaining to importing, processing and exporting soil.

3.1 City of Pacifica

The City of Pacifica has ultimate permitting authority of the site. In accordance with Pacifica Municipal Code (PMC) Chapter 2 entitled "Quarries," consisting of sections 9-2.01 through 9-2.17 codified from Ordinance No. 365, as amended by Ord. 151-C.S. eff. August 13, 1975, Ord. 349-C.S., eff. November 10, 1982, and Ord. 414-C.S., eff. August 8, 1984), the Project's Operating Permit will comply with the City approved Amended Reclamation Plan and requirements outlined in the Projects certified EIR.

3.2 Regional Water Quality Control Board (RWQCB)

The site is required to comply with the Order issued by the Regional Water Quality Control Board - San Francisco Bay Region and State of California's General Storm Water Permit associated with Industrial Activities.

3.2.1 General Storm Water Permit associated with Industrial Activities Requirements Applicable to the Operator

The site is required to comply with the California's General Storm Water Permit associated with Industrial Activities which generally requires facility operators to:

1. Eliminate unauthorized non-storm water discharges;
2. Develop and implement a storm water pollution prevention plan (SWPPP); and
3. Perform monitoring of storm water discharges and authorized non-storm water discharges.

This General Permit requires development and implementation of an SWPPP emphasizing the use of BMPs. This approach provides the flexibility necessary to establish appropriate BMPs for different types of industrial activities and pollutant sources. As this General Permit covers vastly different types of facilities, the State Water Board recognizes that there is no single best way of developing or organizing an SWPPP.

A Notice of Intent in conformance with the California National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharges associated with industrial activities was filed on on behalf of the current reclamation activities. A storm water pollution prevention plan (SWPPP) that incorporated best management practices (BMPs) was submitted to the California State Water Resources Board (State Board).

The State Water Resources Control Board, Division of Water Quality issued a Waste Discharger Identification (WDID) number prior to site operations.

3.3 United States Army Corp of Engineers (USACOE)

PAP received a Nationwide Permit from the Department of the Army authorizing the filling of Pacifica Quarry site. Mitigation shall be completed in accordance with the Permit.

3.4 California Air Resources Board (CARB)

On July 26, 2007, the California Air Resources Board (CARB) adopted a regulation to reduce diesel particulate matter (PM) and oxides of nitrogen (NOx) emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations.

As required by the In-Use Off-Road Diesel Regulation, CARB requires that off-road heavy-duty diesel vehicles are registered using CARB’s Diesel Off-Road On-Line Reporting System (DOORS). This program provides a public database which includes CARB certification by an Executive Order that the equipment is in compliance with all regulatory standards.

Operator’s current equipment is registered with the DOORS program and all proposed equipment will be registered to ensure compliance.

4 STORM WATER POLLUTION PREVENTION PLAN

4.1 Baseline Conditions

The majority of best management practices implemented on site include, but not limited to: silt fences, check dams, vegetated non-operational/undisturbed areas and drainage swales. The site is watered twice a day for dust control. For vehicles exiting the site, a wheel wash and rumble strips are installed adjacent to the portable trailer.

SWPPP BMP’s are proactively updated and corrected, as needed. Working with PAP, the Operator will ensure proper monitoring and reporting per the existing SWPPP. Erosion control measures (e.g., hydro-seeding) are applied to undisturbed operational areas while active areas are maintained daily.

4.2 Proposed SWPPP

Based on the proposed operations described within this Plan, the SWPPP will be amended as necessary to identify an effective combination of erosion and sediment control for all disturbed areas during the rainy season, as required by permit. Note that active (or disturbed) areas are operational year-round. The amount of active operations can be significantly less during the winter season.

Erosion and sediment controls will be designed and implemented using guidance in the latest editions of the California Storm Water Quality Association's (CASQA) Industrial and Construction Best Management Practice (BMP) Handbooks or the Regional Water Quality Control Board's Erosion and Sediment Control Field Manual. Disturbed areas include roadways, slopes, and stockpiles.

Erosion and sediment controls will be inspected on a weekly basis, before expected rain events and immediately after rain events. They will be maintained per CASQA guidelines and vendor instructions. Repairs will be made immediately or as soon as weather permits. A log of inspections and repairs will be kept in addition to a schedule for annual maintenance for items between April and October.

5 Operations Reporting

5.1 Bi- Monthly Reports

BSP will submit a bi-monthly report the City of Pacifica. The report will contain information from the Operator and summarize the following information:

a. Field Activities

b. Storm Water
   i. BMP's Status and Location Map

c. Imported Materials
   i. Estimated Monthly Quantities
   ii. Load Counts by truck type/size.

d. Approved list of Projects & Supporting Documentation

APPENDIX D

Baylands Soil Pacifica, LLC

Submittal Guidelines for Imported Soil

The following guidelines are provided as a prescriptive step process to ensure the contractual and regulatory requirements for Baylands Soil Pacifica are met and the appropriate quality control documentation is provided in a timely manner. Please contact info@thebaylands.com for questions.

Soil Review & Acceptance Guidelines

1. **Complete Source Information Form (SIF)**
   a. See Exhibit A
   b. Do not leave any area blank.
   c. Submit via email to info@thebaylands.com

2. **Determine Number of Samples for Environmental Analysis by type of project**:
   a. Borrow Area (e.g., one common piece of property with the same use; commonly referred to as a Mass Excavation)
   b. Stockpile (e.g., pipelines, multiple locations, multiple uses on one site)

Environmental Sampling Requirements	
Borrow Area (aka Mass Excavation)	
2 acres or less	4 discreet samples
2 to 4 acres	Minimum 1 sample per ½ acre
4 to 10 acres	Minimum 8 samples
Greater than 10 acres	Minimum of 8 locations with 4 subsamples per location
Stockpile[1]	
Up to 1,000 cubic yards (CY)	1 sample per 250 CY
1,000 CY to 5,000 CY	4 samples for first 1,000CY's plus 1 sample for each additional 500 CY
Greater than 5,000 CY	12 samples for first 5,000CY's plus 1 sample for each additional 500 CY

1. Composite samples are acceptable provided they don't exceed 4:1 ratio.
   For example: 2-point (2:1) composite may represent up to 500 CY for stockpile material.
   4-point (4:1) composite may represent up to 1,000 CY for stockpile material.

3. Determine Number of Samples for Geotechnical Analysis:

a. Plasticity Index:
   - **i.** Every import source/project seeking approval to import material into BSP Pacifica Site must submit at least one (1) test for Plasticity Index.
   - **ii.** Plasticity Index Freqeuncy:
     - **1.** For projects that are 1,000 Cubic Yards or more – 1 EA Plasticity Index is required for every 2,500 Cubic Yards of Material to be imported.

b. Expansion Index:
   - **i.** Import sources/projects seeking approval to import material into BSP Pacifica Site must submit one (1) test for Expansion Index test for every 5,000 Cubic Yards of Import which exceed the first 5,000 Cubic Yards of import.
   - **ii.** Expansion Index Frequency:
     - **1.** For projects that are 5,000 Cubic Yards or less – No Expansion Index test is required.
     - **2.** For projects 5,000 cubic yards or more:
       - **a.** 1 test for every 5,000 Cubic Yards after the first 5,000 Cubic Yards of Import.

4. Testing:

a. Normally provided by contractor but can be performed by BSP staff <u>at an additional cost</u>. Contact BSP for pricing.

b. **<u>ONLY</u>** BSP Staff are allowed to conduct sampling and testing for materials located on BSP facilities. This includes materials imported beyond the estimated volume as shown on the Source Information Form.

c. Prior Environmental and Geotechnical Reports may be used for preliminary screening; however, BSP requires laboratory testing <u>performed within the past 6 months for purposes of review and approval</u>.

d. Composited soil samples shall be analyzed for the following constituents:
   - VOCs, including MTBE and TPH – GRO (EPA Method 8260B);
   - SVOCs (EPA Method 8270C); **<u>8270C SIM may be used to augment 8270C</u>**
   - Organochlorine Pesticides (EPA Method 8081);
   - PCBs (EPA Method 8082);
   - TPH – D and MO (EPA Method 8015);
   - Chromium +6 (EPA Method 7199); and
   - 17 CAM metals (EPA Method 6000/7000 series):
     - antimony (EPA Method 6010B);
     - arsenic (EPA Method 200.8);
     - barium (EPA Method 6010B);
     - beryllium (EPA Method 6010B);
     - cadmium (EPA Method 6010B);
     - chromium (EPA Method 6010B);
     - cobalt (EPA Method 6010B);
     - copper (EPA Method 6010B);
     - lead (EPA Method 6010B);

  - mercury (EPA Method 7470A);
  - Molybdenum (EPA Method 200.8)
  - nickel (EPA Method 6010B);
  - selenium (EPA Method 6010B);
  - silver (EPA Method 6010B);
  - thallium (EPA Method 6010B);
  - vanadium (EPA Method 6010B); and
  - zinc (EPA Method 6010B).
- ph (EPA Method 9045C)
- Plasticity Index (Atterberg Limits – ASTM D 4318)
- Expansion Index (ASTM D 4829)

e. **Additional requirements**

i. Maximum Detection Limits (MDL's) shall be included in lab reports for tests 8081, 8082 and 8270. MDL's shall be at or below the Environmental Screening Limits (ESL's) shown in Table 1 and Table 2.

ii. If a CAM-17 TTLC test result is ten (10) times **greater** than its Table 2 value, BSP requires an STLC test to be submitted to determine soluble concentration. Results must be less than the STLC ESL's shown in Table 2 to be accepted.

iii. pH results that are less than 5 or greater than 10 may result in higher dump fees.

iv. Chain of Custody form to state if sample is a composite and the ratio (e.g., 1:2 or 4:1). BSP does not accept composites greater than 4:1.

5. Review Process

a. Submit SIF and Test Results from an ELAP certified laboratory for BSP review via email to: info@thebaylands.com

b. Material Review Notes:

   i. Summary tables are useful to facilitate review, but actual lab reports are required to confirm values.

   ii. If "Background" value in Table 1 is shown, the higher value between Background value and ESL shall be used to determine acceptance.

c. If the materials are deemed acceptable, BSP will issue a unique project ID number, Purchase Order and Soil Acceptance Letter stating conditions of approval including maximum import volume limit.

d. BSP will reply via email if the materials are unacceptable, or if corrective action is required to properly determine material acceptance.

ALTERNATIVE: At the sole discretion of BSP, materials may be imported into BSP's Material Containment Area (MCA) prior to approval provided that the Source Generator submits a letter acknowledging: (1) they are the Generator and (2) responsible for all associated cost should the materials received by the Generator are found to be unacceptable. The Letter shall be accompanied with preliminary test information sufficient for BSP to determine if materials can be imported into the MCA. All materials imported into the MCA are subject to confirmation testing by BSP at additional costs to the Generator, or as mutually agreed to by BSP and the Generator.

Table 1

Environmental Screening Levels (ESLs)

For

Imported Materials

Table 1 Notes:
" -- " not applicable or not available; " mg/kg " milligrams per kilogram

If background value is available, the higher value between background and ESL shall be used.

* ESL not available; USEPA Risk-Based Soil Screening Levels (SSLs) for the protection of groundwater were used (4).

References:

(1) Background Metals Concentrations in Soil in Northern Santa Clara County (Scott, 1995)

(2) Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory (LBNL June 2002, Revised April 2009)

(3) All proposed concentrations are from California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB). Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final. rev June 2016. Minimum ESL between GW protection and Direct contact for soils < 3 meters below ground surface unless highlighted in red.

(4) USEPA, 2011. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites.

(5) 95% Upper Confidence Limit of the Mean Concentration for Benzo(a)pyrene equivalents from Use of the Northern and Southern California Polynuclear Aromatic Hydrocarbon (PAH) Studies in the Manufactured Gas Plant Site Cleanup Process Draft for Public Comment – Cal-EPA May 8, 2009

(6) SF RWQCB Letter dated 9/14/17 regarding Concurrence with Proposed Revisions to the Baylands Soil Processing Acceptance Criteria, Brisbane Landfill, San Mateo County

(7) SF RWQCB correspondence dated 10/23/17 regarding Concurrence with Proposed Revisions to the Baylands Soil Processing Acceptance Criteria, Brisbane Landfill, San Mateo County

Table 1

Chemical	Background (mg/kg) (1)	BSP ESL (mg/kg) (3)
Inorganics		
Antimony	22	31
Arsenic (1)	11	11
Barium (2)	410	3000
Beryllium	3.2	42
Cadmium	14	39
Chromium	170	120,000
Chromium VI	-	0.3
Cobalt (2)	25	25
Copper	67	3,100
Lead (2)	54	80
Mercury	1.3	13
Molybdenum (2)	4.8	390
Nickel	145	150
Selenium (2)	4.9	390
Silver	4.8	390
Thallium	3.8	3.8
Vanadium (2)	90	390
Zinc	120	23,000

PAH's		
Chemical	**Background (mg/kg)**	**BSP ESL (mg/kg)** (3)
Acenaphthene	-	1.6
Acenaphthylene	-	13
Anthracene	-	2.8
Benzo[a]anthracene	-	0.16
Benzo[a]pyrene	0.4 (5)	0.4
Benzo[b]fluoranthene	-	0.16
Benzo[g,h,i]perylene	-	2.5
Benzo[k]fluoranthene	-	1.6
Chrysene	-	3.8
Dibenz[a,h]anthracene	-	0.016
Fluoranthene	-	60
Fluorene	-	8.9
Indeno[1,2,3-c,d]pyrene	-	0.16
Methylnaphthalene, 2	-	0.25
Naphthalene	-	0.03
Phenanthrene	-	11
Pyrene	-	85

Chemical	Background (mg/kg)	BSP ESL (mg/kg) (3)
Pesticides/PCBs		
4,4'-DDD	-	2.7
4,4'-DDE	-	1.9
4,4'-DDT	-	1.9
Aldrin		0.036
Aroclor 1248	-	0.23
Aroclor 1254	-	0.24
Aroclor 1260	-	0.24
Chlordane	-	0.48
Dieldrin	0.002(6)	0.002
Endosulfan I		0.0046
Endosulfan II		0.0046
Endosulfan sulfate		0.0046
Endrin	0.002(6)	0.002
Endrin aldehyde	0.002(6)	0.002
Endrin ketone	0.002(6)	0.002
Heptachlor	0.002(6)	0.002
Heptachlor epoxide	0.002(6)	0.002
Lindane	-	0.0098
Methoxychlor	-	19

SVOCs		
Chemical	**Background (mg/kg)**	**BSP ESL (mg/kg)** [(3)]
2,4,6-Trichlorophenol	-	0.21
2,4-Dichlorophenol	-	0.3
2,4-Dinitrotoluene	0.13[(7)]	0.0018
Benzoic Acid		34*
Bis(2-Ethylhexyl) Phthalate	-	39
Butyl-benzyl-phthalate		0.51*
Diethyl phthalate	-	0.035
Dimethyl Phthalate	-	0.035
Hexachlorobutadiene		0.68
Hexachloroethane	-	1.1
Phenol	-	0.076

TPH	
Chemical	**BSP ESL (mg/kg)** [(3)]
TPH Gasoline (GRO) C6 - C10	100
TPH Diesel (DRO) C11- C28	230
TPH Motor oil C23 – C36	5,100

Chemical	Background (mg/kg)	BSP ESL (mg/kg) [(3)]
VOCs		
1,1,1,2-Tetrachloroethane	-	0.01
1,1,1-Trichloroethane	-	7.8
1,1,2,2-Tetrachloroethane	-	0.018
1,1,2-Trichloroethane	-	0.07
1,1-Dichloroethane	-	0.2
1,1-Dichloroethylene	-	0.55
1,2,4-Trichlorobenzene	-	1.5
1,2,4-Trimethylbenzene		0.081
1,2-Dibromo-3-chloropropane	-	0.0045
1,2-Dibromoethane	0.004[(6)]	0.00033
1,2-Dichlorobenzene	-	1.6
1,2-Dichloroethane	-	0.0045
1,2-Dichloropropane	-	0.12
1,3,5-Trimethylbenzene		0.087*
1,3-Dichloropropene	-	0.059
1,4-Dichlorobenzene	-	0.59
2,2-Dichloropropane		0.25*
2-Chlorotoluene		0.23
4-Isopropyltoluene (p-cymene)		1.1*
4-Methyl-2-pentanone (MIBK)	-	2.8
Acetone	-	0.5

Benzene	-	0.044
Bromodichloromethane	-	0.52
Bromoform	-	1.7
Bromomethane	-	0.3
Butylbenzene, n-		5.9*
Carbon disulfide		0.24
Carbon tetrachloride	-	0.048
Chlorobenzene	-	1.5
Chloroethane	-	1.1
Chloroform	-	0.68
Chloromethane (methyl chloride)	-	2.9
Dibromochloromethane	-	3.8
Dichloroethylene, cis-1,2	-	0.19

Chemical	Background (mg/kg)	BSP ESL (mg/kg) (3)
VOCs		
Dichloroethylene, trans-1,2	-	1
Ethylbenzene	-	1.4
Methyl ethyl ketone (2-butanone)	-	5.1
Methyl tert-butyl ether (MTBE)	-	0.023
Methylene chloride	-	0.077
Naphthalene	-	0.033
Propylbenzene, n-		1.2

Styrene	-	1.5
Tetrachloroethylene	-	0.42
Toluene	-	2.9
Trichloroethylene	-	0.46
Trichlorofluoromethane		0.838
Vinyl chloride	-	0.008
Xylene (total)	-	2.3

Table 2

STLC Limits for Imported Materials

Chemical	STLC (mg/L)
Antimony	15
Arsenic	5
Barium	100
Beryllium	0.8
Cadmium	1.0
Chromium	5
Cobalt	80
Copper	25
Lead	5
Mercury	0.2
Molybdenum	350

Nickel	20
Selenium	1
Silver	5
Thallium	7
Vanadium	24
Zinc	250

EXHIBIT A

SOURCE INFORMATION FORM

INSTRUCTIONS: COMPLETE **ALL** AREAS OF FORM
WHEN COMPLETED, EMAIL TO: Info@thebaylands.com

GENERATOR (Property/Soil Owner)	**MAIN CONTACT (Soil/Project Representative)**
Company: **Address:** **Name:** **Title:** **Phone #:** **Mobile #:**	**Company:** **Address:** **Name:** **Title:** **Phone #:** **Mobile #:** **Email:**

Transporter Name (if different than Generator or Owner / Representative):

Address: **Phone #:** **Mobile #:**

SITE INFORMATION

Project / Site Address: ____

Excavation Type: Classification: ☐ Stockpile ☐ Borrow Area/Mass Excavation Acreage: ______________

General Property Classification: ☐ Residential ☐ Commercial ☐ Industrial ☐ Open Space (undeveloped)

Current Land Use / Site Operations: ____

Historical Site Information (prior use): ____

TESTING INFORMATION (include sample map for locations; if composite, state ratio per Chain of Custody form**)**

Sample ID#______________ Type of Sample: ___________ Sample ID#____________ Type of Sample: ___________
Sample ID#______________ Type of Sample: ___________ Sample ID#____________ Type of Sample: ___________
Sample ID#______________ Type of Sample: ___________ Sample ID#____________ Type of Sample: ___________
Sample ID#______________ Type of Sample: ___________ Sample ID#____________ Type of Sample: ___________
Sample ID#______________ Type of Sample: ___________ Sample ID#____________ Type of Sample: ___________

Lab results shall be from ELAP accredited laboratory and accompanied with Chain of Custody letter

SOIL & HAUL INFORMATION

Physical Description, e.g. wet, dry, sand, clay, debris contaminated, terrain, etc.: ______________________________

Total Amount of Soil to be Removed (estimated cubic yards): ____________ Estimated # of truckloads: _________________

Project Time Frame (for soil removal from site): __________Days ___________Weeks ____________Months

Project Start/End dates (approx dates for soil removal): Start________________________ End_________________________

EXHIBIT A

Soil Source Information Form

CERTIFICATION

As an authorized representative and transporter for the generator, I certify individually and as an authorized representative of the Generator that I understand that Baylands Soil Pacifica (BSP) shall only receive materials that comply with its soil management plan, submittal guidelines and terms and conditions of acceptance and purchase order, if provided.

I certify, under penalty of law, that the soil I am disposing of (1) does not contain and is not contaminated with any hazardous materials/substances, as defined under any provision of federal, California or local law, (2) meets established acceptance criteria for this site per its Soil Management Plan, (3) was taken from the address and site location(s), as indicated above and has not been combined with any substance from any other site or location, (4) was tested by a State-accredited environmental testing laboratory and that such sampling was not conducted at an unauthorized location and (5) that all information submitted in this Soil Certification form is true and correct. Furthermore, I am fully aware that there are significant penalties for submitting false information, including the possibility of fines and/or imprisonment under federal, state and local law.

I certify that I understand that BSP and the landowner are relying on the information stated in this *Form* and *other submitted documentation* to make a determination of acceptance or rejection of Clean Soil, that the I and the Generator of the soil, severally and jointly, agree to indemnify, defend and hold harmless BSP and landowner with respect to the presence of contaminants in the materials in excess of unrestricted Environmental Screening Levels and/or any misrepresentation in the Certification and/or related documents.

I and the Generator accept complete liability for any and all costs associated with the materials should it be found to contain contaminants or be rejected by BSP staff. I understand that BSP reserves all rights to reject any materials at its sole discretion.

____
(Individually and as authorized representative for Generator)

______________________________ ____________________
(Print Name) (Date)

APPENDIX E

BREEZE AERMOD Model Results

Max. Annual (5 YEARS) Results of Pollutant: OTHER (ug/m**3)

Group ID	High	Avg. Conc.	UTM		Elev.	Hill Ht.	Flag Ht.	Rec. Type	Grid ID
			East (m)	North (m)	(m)	(m)	(m)		
ALL	1ST	0.00268	544518.00	4162717.80	0.00	0.00	1.80	DC	
	2ND	0.00266	544523.00	4162717.80	0.00	0.00	1.80	DC	
	3RD	0.00261	544513.00	4162712.80	0.00	0.00	1.80	DC	
	4TH	0.00260	544518.00	4162712.80	0.00	0.00	1.80	DC	
	5TH	0.00258	544523.00	4162712.80	0.00	0.00	1.80	DC	
	6TH	0.00256	544528.00	4162712.80	0.00	0.00	1.80	DC	
	7TH	0.00254	544533.00	4162712.80	0.00	0.00	1.80	DC	
	8TH	0.00253	544513.00	4162707.80	0.00	0.00	1.80	DC	
	9TH	0.00252	544518.00	4162707.80	0.00	0.00	1.80	DC	
	10TH	0.00250	544523.00	4162707.80	0.00	0.00	1.80	DC	

Highest Results of Pollutant: OTHER

Avg. Per.	Grp ID	High	Type	Val	Units	Date	UTM		Elev.	Hill Ht.	Flag Ht.	Rec. Type	Grid ID
						YYMMDDHH	East (m)	North (m)	(m)	(m)	(m)		
1-HR	ALL	1ST	Avg. Conc.	0.61114	ug/m**3	13122308	544518.00	4162717.80	0.00	0.00	1.80	DC	

Summary of Total Messages

#	Message Type
0	Fatal Error Message(s)
3	Warning Message(s)
6306	Informational Message(s)
43872	Hours Were Processed
5804	Calm Hours Identified
502	Missing Hours Identified (1.14 Percent)

Error & Warning Messages

Msg. Type	Pathway	Ref. #	Description
WARNING	OU	W565	Possible Conflict With Dynamically Allocated FUNIT PLOTFILE
WARNING	OU	W565	Possible Conflict With Dynamically Allocated FUNIT PLOTFILE

WARNING	MX	W481	Data Remaining After End of Year. Number of Hours= 48

www.breeze-software.com

AERMOD Model Options

Model Options

Pathway	Keyword	Description	Value
CO	TITLEONE	Project title 1	Rockaway Quarry Reclamation Plan
CO	TITLETWO	Project title 2	
CO	MODELOPT	Model options	DFAULT,CONC,NODRYDPLT,NOWETDPLT
CO	AVERTIME	Averaging times	1,ANNUAL
CO	URBANOPT	Urban options	
CO	POLLUTID	Pollutant ID	OTHER
CO	HALFLIFE	Half life	
CO	DCAYCOEF	Decay coefficient	
CO	FLAGPOLE	Flagpole receptor heights	1.8
CO	RUNORNOT	Run or Not	RUN
CO	EVENTFIL	Event file	F
CO	SAVEFILE	Save file	F
CO	INITFILE	Initialization file	
CO	MULTYEAR	Multiple year option	N/A
CO	DEBUGOPT	Debug options	N/A
CO	ERRORFIL	Error file	F
SO	ELEVUNIT	Elevation units	METERS
SO	EMISUNIT	Emission units	N/A
RE	ELEVUNIT	Elevation units	METERS
ME	SURFFILE	Surface met file	C:\Users\bshea\Desktop\METEOR~1\SANFRA~1.SFC
ME	PROFFILE	Profile met file	C:\Users\bshea\Desktop\METEOR~1\SANFRA~1.PFL
ME	SURFDATA	Surf met data info.	23234 2009
ME	UAIRDATA	U-Air met data info.	23230 2009
ME	SITEDATA	On-site met data info.	
ME	PROFBASE	Elev. above MSL	2.4
ME	STARTEND	Start-end met dates	
ME	WDROTATE	Wind dir. rot. adjust.	
ME	WINDCATS	Wind speed cat. max.	
ME	SCIMBYHR	SCIM sample params	
EV	DAYTABLE	Print summary opt.	N/A
OU	EVENTOUT	Output info. level	N/A

OU	DAYTABLE	Print summary opt.	

Source Parameter Tables

All Sources

Source ID / Pollutant ID	Source Type	Description	UTM		Elev.	Emiss. Rate	Emiss. Units	Release Height
			East (m)	North (m)	(m)			(m)
933S6000	POINT	6 - Vertical	545251.5	4163097.5	0	0.00000012187	(g/s)	3.8405
933S6001	POINT	6 - Horizontal Low	545251.5	4163097.5	0	0.00000012187	(g/s)	0.01829
933S6002	POINT	6 - Horizontal High	545251.5	4163097.5	0	0.00000012187	(g/s)	3.8405
933S6003	POINT	7 - Vertical	544511.9	4162957.3	0	0.00000012187	(g/s)	3.8405
933S6005	POINT	7 - Horizontal Low	544511.9	4162957.3	0	0.00000012187	(g/s)	0.01829
933S6006	POINT	7 - Horizotnal High	544511.9	4162957.3	0	0.00000012187	(g/s)	3.8405
RWIEO001	VOLUME		544424.2	4162916.6	0	7.973828E-05	(g/s)	5
RWIEO002	VOLUME		544487.8	4162916.6	0	7.973828E-05	(g/s)	5
RWIEO003	VOLUME		544551.5	4162916.6	0	7.973828E-05	(g/s)	5
RWIEO004	VOLUME		544360.6	4162980.2	0	7.973828E-05	(g/s)	5
RWIEO005	VOLUME		544424.2	4162980.2	0	7.973828E-05	(g/s)	5
RWIEO006	VOLUME		544487.8	4162980.2	0	7.973828E-05	(g/s)	5
RWIEO007	VOLUME		544551.5	4162980.2	0	7.973828E-05	(g/s)	5
RWIEO008	VOLUME		544615.1	4162980.2	0	7.973828E-05	(g/s)	5
RWIEO009	VOLUME		544360.6	4163043.8	0	7.973828E-05	(g/s)	5
RWIEO00A	VOLUME		544424.2	4163043.8	0	7.973828E-05	(g/s)	5
RWIEO00B	VOLUME		544487.8	4163043.8	0	7.973828E-05	(g/s)	5
RWIEO00C	VOLUME		544551.5	4163043.8	0	7.973828E-05	(g/s)	5
RWIEO00D	VOLUME		544615.1	4163043.8	0	7.973828E-05	(g/s)	5
RWIEO00E	VOLUME		544360.6	4163107.5	0	7.973828E-05	(g/s)	5
RWIEO00F	VOLUME		544424.2	4163107.5	0	7.973828E-05	(g/s)	5
RWIEO00G	VOLUME		544487.8	4163107.5	0	7.973828E-05	(g/s)	5
RWIEO00H	VOLUME		544551.5	4163107.5	0	7.973828E-05	(g/s)	5
RWIEO00I	VOLUME		544615.1	4163107.5	0	7.973828E-05	(g/s)	5
RWIEO00J	VOLUME		544678.7	4163107.5	0	7.973828E-05	(g/s)	5
RWIEO00K	VOLUME		544360.6	4163171.1	0	7.973828E-05	(g/s)	5
RWIEO00L	VOLUME		544424.2	4163171.1	0	7.973828E-05	(g/s)	5
RWIEO00M	VOLUME		544487.8	4163171.1	0	7.973828E-05	(g/s)	5
RWIEO00N	VOLUME		544551.5	4163171.1	0	7.973828E-05	(g/s)	5
RWIEO00O	VOLUME		544615.1	4163171.1	0	7.973828E-05	(g/s)	5
RWIEO00P	VOLUME		544678.7	4163171.1	0	7.973828E-05	(g/s)	5
RWIEO00Q	VOLUME		544742.3	4163171.1	0	7.973828E-05	(g/s)	5
RWIEO00R	VOLUME		544360.6	4163234.7	0	7.973828E-05	(g/s)	5
RWIEO00S	VOLUME		544424.2	4163234.7	0	7.973828E-05	(g/s)	5

RWIEO00T	VOLUME		544487.8	4163234.7	0	7.973828E-05	(g/s)	5
RWIEO00U	VOLUME		544551.5	4163234.7	0	7.973828E-05	(g/s)	5
RWIEO00V	VOLUME		544615.1	4163234.7	0	7.973828E-05	(g/s)	5
RWIEO00W	VOLUME		544678.7	4163234.7	0	7.973828E-05	(g/s)	5
RWIEO00X	VOLUME		544742.3	4163234.7	0	7.973828E-05	(g/s)	5
RWIEO00Y	VOLUME		544805.9	4163234.7	0	7.973828E-05	(g/s)	5
RWIEO00Z	VOLUME		544360.6	4163298.3	0	7.973828E-05	(g/s)	5
RWIEO010	VOLUME		544424.2	4163298.3	0	7.973828E-05	(g/s)	5
RWIEO011	VOLUME		544487.8	4163298.3	0	7.973828E-05	(g/s)	5
RWIEO012	VOLUME		544551.5	4163298.3	0	7.973828E-05	(g/s)	5
RWIEO013	VOLUME		544615.1	4163298.3	0	7.973828E-05	(g/s)	5
RWIEO014	VOLUME		544678.7	4163298.3	0	7.973828E-05	(g/s)	5
RWIEO015	VOLUME		544742.3	4163298.3	0	7.973828E-05	(g/s)	5
RWIEO016	VOLUME		544805.9	4163298.3	0	7.973828E-05	(g/s)	5
RWIEO017	VOLUME		544424.2	4163361.9	0	7.973828E-05	(g/s)	5
RWIEO018	VOLUME		544487.8	4163361.9	0	7.973828E-05	(g/s)	5
RWIEO019	VOLUME		544551.5	4163361.9	0	7.973828E-05	(g/s)	5
RWIEO01A	VOLUME		544615.1	4163361.9	0	7.973828E-05	(g/s)	5
RWIEO01B	VOLUME		544678.7	4163361.9	0	7.973828E-05	(g/s)	5
RWIEO01C	VOLUME		544742.3	4163361.9	0	7.973828E-05	(g/s)	5
RXXG200L	VOLUME	Roadway Segment 1	545416.9	4163544.8	0	1.595043E-06	(g/s)	2.3
RXXG200M	VOLUME	Roadway Segment 1	545417.1	4163520.8	0	1.595043E-06	(g/s)	2.3
RXXG200N	VOLUME	Roadway Segment 1	545417.4	4163496.8	0	1.595043E-06	(g/s)	2.3
RXXG200O	VOLUME	Roadway Segment 1	545417.6	4163472.8	0	1.595043E-06	(g/s)	2.3
RXXG200P	VOLUME	Roadway Segment 1	545417.8	4163448.8	0	1.595043E-06	(g/s)	2.3
RXXG200Q	VOLUME	Roadway Segment 1	545418.1	4163424.8	0	1.595043E-06	(g/s)	2.3
RXXG200R	VOLUME	Roadway Segment 1	545418.2	4163400.8	0	1.595043E-06	(g/s)	2.3
RXXG200S	VOLUME	Roadway Segment 1	545413.6	4163377.3	0	1.595043E-06	(g/s)	2.3
RXXG200T	VOLUME	Roadway Segment 1	545409.1	4163353.7	0	1.595043E-06	(g/s)	2.3
RXXG200U	VOLUME	Roadway Segment 1	545404.6	4163330.1	0	1.595043E-06	(g/s)	2.3
RXXG200V	VOLUME	Roadway Segment 1	545397.3	4163307.3	0	1.595043E-06	(g/s)	2.3
RXXG200W	VOLUME	Roadway Segment 1	545388.8	4163284.9	0	1.595043E-06	(g/s)	2.3
RXXG200X	VOLUME	Roadway Segment 1	545380.2	4163262.5	0	1.595043E-06	(g/s)	2.3
RXXG200Y	VOLUME	Roadway Segment 1	545371.0	4163240.4	0	1.595043E-06	(g/s)	2.3
RXXG200Z	VOLUME	Roadway Segment 1	545359.6	4163219.2	0	1.595043E-06	(g/s)	2.3
RXXG2010	VOLUME	Roadway Segment 1	545348.2	4163198.1	0	1.595043E-06	(g/s)	2.3
RXXG2011	VOLUME	Roadway Segment 1	545336.4	4163177.3	0	1.595043E-06	(g/s)	2.3
RXXG2012	VOLUME	Roadway Segment 1	545320.2	4163159.6	0	1.595043E-06	(g/s)	2.3
RXXG2013	VOLUME	Roadway Segment 1	545304.0	4163141.9	0	1.595043E-06	(g/s)	2.3
RXXG2014	VOLUME	Roadway Segment 1	545287.1	4163124.8	0	1.595043E-06	(g/s)	2.3
RXXG2015	VOLUME	Roadway Segment 1	545269.5	4163108.6	0	1.595043E-06	(g/s)	2.3
RXXG2018	VOLUME	Roadway Segment 2	544893.1	4162802.5	0	9.222912E-07	(g/s)	2.3
RXXG2019	VOLUME	Roadway Segment 2	544904.4	4162810.4	0	9.222912E-07	(g/s)	2.3
RXXG201A	VOLUME	Roadway Segment 2	544915.7	4162818.3	0	9.222912E-07	(g/s)	2.3
RXXG201B	VOLUME	Roadway Segment 2	544927.0	4162826.3	0	9.222912E-07	(g/s)	2.3
RXXG201C	VOLUME	Roadway Segment 2	544938.3	4162834.2	0	9.222912E-07	(g/s)	2.3

RXXG201D	VOLUME	Roadway Segment 2	544949.6	4162842.1	0	9.222912E-07	(g/s)	2.3
RXXG201E	VOLUME	Roadway Segment 2	544960.9	4162850.1	0	9.222912E-07	(g/s)	2.3
RXXG201F	VOLUME	Roadway Segment 2	544972.0	4162858.3	0	9.222912E-07	(g/s)	2.3
RXXG201G	VOLUME	Roadway Segment 2	544982.7	4162867.0	0	9.222912E-07	(g/s)	2.3
RXXG201H	VOLUME	Roadway Segment 2	544993.4	4162875.7	0	9.222912E-07	(g/s)	2.3
RXXG201I	VOLUME	Roadway Segment 2	545004.1	4162884.3	0	9.222912E-07	(g/s)	2.3
RXXG201J	VOLUME	Roadway Segment 2	545014.9	4162893.0	0	9.222912E-07	(g/s)	2.3
RXXG201K	VOLUME	Roadway Segment 2	545025.6	4162901.7	0	9.222912E-07	(g/s)	2.3
RXXG201L	VOLUME	Roadway Segment 2	545036.3	4162910.4	0	9.222912E-07	(g/s)	2.3
RXXG201M	VOLUME	Roadway Segment 2	545047.0	4162919.1	0	9.222912E-07	(g/s)	2.3
RXXG201N	VOLUME	Roadway Segment 2	545057.7	4162927.8	0	9.222912E-07	(g/s)	2.3
RXXG201O	VOLUME	Roadway Segment 2	545068.5	4162936.5	0	9.222912E-07	(g/s)	2.3
RXXG201P	VOLUME	Roadway Segment 2	545079.2	4162945.2	0	9.222912E-07	(g/s)	2.3
RXXG201Q	VOLUME	Roadway Segment 2	545089.9	4162953.9	0	9.222912E-07	(g/s)	2.3
RXXG201R	VOLUME	Roadway Segment 2	545100.6	4162962.5	0	9.222912E-07	(g/s)	2.3
RXXG201S	VOLUME	Roadway Segment 2	545111.1	4162971.5	0	9.222912E-07	(g/s)	2.3
RXXG201T	VOLUME	Roadway Segment 2	545121.5	4162980.6	0	9.222912E-07	(g/s)	2.3
RXXG201U	VOLUME	Roadway Segment 2	545131.8	4162989.8	0	9.222912E-07	(g/s)	2.3
RXXG201V	VOLUME	Roadway Segment 2	545142.1	4162998.9	0	9.222912E-07	(g/s)	2.3
RXXG201W	VOLUME	Roadway Segment 2	545152.5	4163008.1	0	9.222912E-07	(g/s)	2.3
RXXG201X	VOLUME	Roadway Segment 2	545162.8	4163017.2	0	9.222912E-07	(g/s)	2.3
RXXG201Y	VOLUME	Roadway Segment 2	545173.2	4163026.3	0	9.222912E-07	(g/s)	2.3
RXXG201Z	VOLUME	Roadway Segment 2	545183.5	4163035.5	0	9.222912E-07	(g/s)	2.3
RXXG2020	VOLUME	Roadway Segment 2	545193.8	4163044.6	0	9.222912E-07	(g/s)	2.3
RXXG2021	VOLUME	Roadway Segment 2	545204.2	4163053.8	0	9.222912E-07	(g/s)	2.3
RXXG2022	VOLUME	Roadway Segment 2	545214.5	4163062.9	0	9.222912E-07	(g/s)	2.3
RXXG2023	VOLUME	Roadway Segment 2	545224.9	4163072.0	0	9.222912E-07	(g/s)	2.3
RXXG2024	VOLUME	Roadway Segment 2	545235.2	4163081.2	0	9.222912E-07	(g/s)	2.3
RXXG2025	VOLUME	Roadway Segment 2	545245.5	4163090.3	0	9.222912E-07	(g/s)	2.3
RXXG2028	VOLUME		544839.9	4162762.2	0	6.9834E-07	(g/s)	2.3
RXXG2029	VOLUME		544850.9	4162770.6	0	6.9834E-07	(g/s)	2.3
RXXG202A	VOLUME		544861.8	4162778.9	0	6.9834E-07	(g/s)	2.3
RXXG202B	VOLUME		544872.8	4162787.3	0	6.9834E-07	(g/s)	2.3
RXXG202C	VOLUME		544883.8	4162795.7	0	6.9834E-07	(g/s)	2.3
RXXG202F	VOLUME		544827.9	4162756.5	0	7.854414E-07	(g/s)	2.3
RXXG202G	VOLUME		544819.2	4162756.5	0	7.854414E-07	(g/s)	2.3
RXXG202H	VOLUME		544811.1	4162759.2	0	7.854414E-07	(g/s)	2.3
RXXG202I	VOLUME		544803.2	4162763.0	0	7.854414E-07	(g/s)	2.3
RXXG202J	VOLUME		544795.4	4162766.8	0	7.854414E-07	(g/s)	2.3
RXXG202K	VOLUME		544787.9	4162771.0	0	7.854414E-07	(g/s)	2.3
RXXG202L	VOLUME		544781.6	4162777.0	0	7.854414E-07	(g/s)	2.3
RXXG202M	VOLUME		544775.4	4162783.1	0	7.854414E-07	(g/s)	2.3
RXXG202N	VOLUME		544769.1	4162789.1	0	7.854414E-07	(g/s)	2.3
RXXG202O	VOLUME		544763.4	4162795.5	0	7.854414E-07	(g/s)	2.3
RXXG202P	VOLUME		544761.5	4162804.0	0	7.854414E-07	(g/s)	2.3

RXXG202Q	VOLUME		544759.5	4162812.5	0	7.854414E-07	(g/s)	2.3
RXXG202R	VOLUME		544757.6	4162820.9	0	7.854414E-07	(g/s)	2.3
RXXG202S	VOLUME		544756.1	4162829.5	0	7.854414E-07	(g/s)	2.3
RXXG202T	VOLUME		544755.6	4162838.2	0	7.854414E-07	(g/s)	2.3
RXXG202U	VOLUME		544755.1	4162846.9	0	7.854414E-07	(g/s)	2.3
RXXG202V	VOLUME		544755.2	4162855.5	0	7.854414E-07	(g/s)	2.3
RXXG202W	VOLUME		544755.9	4162864.2	0	7.854414E-07	(g/s)	2.3
RXXG202X	VOLUME		544756.7	4162872.9	0	7.854414E-07	(g/s)	2.3
RXXG202Y	VOLUME		544757.4	4162881.5	0	7.854414E-07	(g/s)	2.3
RXXG202Z	VOLUME		544758.2	4162890.2	0	7.854414E-07	(g/s)	2.3
RXXG2030	VOLUME		544759.0	4162898.9	0	7.854414E-07	(g/s)	2.3
RXXG2031	VOLUME		544759.7	4162907.5	0	7.854414E-07	(g/s)	2.3
RXXG2032	VOLUME		544760.5	4162916.2	0	7.854414E-07	(g/s)	2.3
RXXG2033	VOLUME		544761.2	4162924.9	0	7.854414E-07	(g/s)	2.3
RXXG2034	VOLUME		544762.0	4162933.5	0	7.854414E-07	(g/s)	2.3
RXXG2035	VOLUME		544762.7	4162942.2	0	7.854414E-07	(g/s)	2.3
RXXG2036	VOLUME		544763.5	4162950.9	0	7.854414E-07	(g/s)	2.3
RXXG2037	VOLUME		544764.2	4162959.5	0	7.854414E-07	(g/s)	2.3
RXXG2038	VOLUME		544765.0	4162968.2	0	7.854414E-07	(g/s)	2.3
RXXG2039	VOLUME		544765.7	4162976.9	0	7.854414E-07	(g/s)	2.3
RXXG203A	VOLUME		544765.0	4162985.5	0	7.854414E-07	(g/s)	2.3
RXXG203B	VOLUME		544763.9	4162994.1	0	7.854414E-07	(g/s)	2.3
RXXG203C	VOLUME		544762.7	4163002.8	0	7.854414E-07	(g/s)	2.3
RXXG203D	VOLUME		544761.5	4163011.4	0	7.854414E-07	(g/s)	2.3
RXXG203E	VOLUME		544760.4	4163020.0	0	7.854414E-07	(g/s)	2.3
RXXG203F	VOLUME		544759.2	4163028.6	0	7.854414E-07	(g/s)	2.3
RXXG203G	VOLUME		544755.6	4163036.5	0	7.854414E-07	(g/s)	2.3
RXXG203H	VOLUME		544751.9	4163044.4	0	7.854414E-07	(g/s)	2.3
RXXG203I	VOLUME		544748.2	4163052.3	0	7.854414E-07	(g/s)	2.3
RXXG203J	VOLUME		544744.5	4163060.2	0	7.854414E-07	(g/s)	2.3
RXXG203K	VOLUME		544740.8	4163068.0	0	7.854414E-07	(g/s)	2.3
RXXG203L	VOLUME		544744.2	4163072.6	0	7.854414E-07	(g/s)	2.3
RXXG203M	VOLUME		544752.5	4163074.9	0	7.854414E-07	(g/s)	2.3
RXXG203N	VOLUME		544760.3	4163078.4	0	7.854414E-07	(g/s)	2.3
RXXG203O	VOLUME		544767.0	4163083.9	0	7.854414E-07	(g/s)	2.3
RXXG203P	VOLUME		544773.8	4163089.4	0	7.854414E-07	(g/s)	2.3
RXXG203Q	VOLUME		544780.5	4163094.9	0	7.854414E-07	(g/s)	2.3
RXXG203R	VOLUME		544786.9	4163100.8	0	7.854414E-07	(g/s)	2.3
RXXG203S	VOLUME		544792.4	4163107.5	0	7.854414E-07	(g/s)	2.3
RXXG203T	VOLUME		544797.9	4163114.2	0	7.854414E-07	(g/s)	2.3
RXXG203U	VOLUME		544803.5	4163121.0	0	7.854414E-07	(g/s)	2.3
RXXG203V	VOLUME		544809.0	4163127.7	0	7.854414E-07	(g/s)	2.3
RXXG203W	VOLUME		544814.5	4163134.4	0	7.854414E-07	(g/s)	2.3
RXXG203X	VOLUME		544820.0	4163141.2	0	7.854414E-07	(g/s)	2.3
RXXG203Y	VOLUME		544825.5	4163147.9	0	7.854414E-07	(g/s)	2.3
RXXG203Z	VOLUME		544831.0	4163154.6	0	7.854414E-07	(g/s)	2.3

RXXG2040	VOLUME		544836.5	4163161.3	0	7.854414E-07	(g/s)	2.3
RXXG2041	VOLUME		544842.1	4163168.1	0	7.854414E-07	(g/s)	2.3
RXXG2042	VOLUME		544847.6	4163174.8	0	7.854414E-07	(g/s)	2.3
RXXG2043	VOLUME		544853.1	4163181.5	0	7.854414E-07	(g/s)	2.3
RXXG2044	VOLUME		544859.8	4163186.7	0	7.854414E-07	(g/s)	2.3
RXXG2045	VOLUME		544867.7	4163190.2	0	7.854414E-07	(g/s)	2.3
RXXG2046	VOLUME		544875.7	4163193.6	0	7.854414E-07	(g/s)	2.3
RXXG2047	VOLUME		544883.7	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG2048	VOLUME		544892.4	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG2049	VOLUME		544901.1	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204A	VOLUME		544909.8	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204B	VOLUME		544918.5	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204C	VOLUME		544927.2	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204D	VOLUME		544935.9	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204E	VOLUME		544944.6	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204F	VOLUME		544953.3	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204G	VOLUME		544962.0	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204H	VOLUME		544970.7	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204I	VOLUME		544979.4	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204J	VOLUME		544988.1	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204K	VOLUME		544996.8	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204L	VOLUME		545005.5	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204M	VOLUME		545014.2	4163197.0	0	7.854414E-07	(g/s)	2.3
RXXG204N	VOLUME		545022.7	4163196.1	0	7.854414E-07	(g/s)	2.3
RXXG204O	VOLUME		545030.1	4163191.5	0	7.854414E-07	(g/s)	2.3
RXXG204P	VOLUME		545037.5	4163187.0	0	7.854414E-07	(g/s)	2.3
RXXG204Q	VOLUME		545042.6	4163180.4	0	7.854414E-07	(g/s)	2.3
RXXG204R	VOLUME		545046.0	4163172.4	0	7.854414E-07	(g/s)	2.3
RXXG204S	VOLUME		545049.5	4163164.4	0	7.854414E-07	(g/s)	2.3
RXXG204T	VOLUME		545053.0	4163156.4	0	7.854414E-07	(g/s)	2.3
RXXG204U	VOLUME		545056.4	4163148.5	0	7.854414E-07	(g/s)	2.3
RXXG204V	VOLUME		545059.9	4163140.5	0	7.854414E-07	(g/s)	2.3
RXXG204W	VOLUME		545063.4	4163132.5	0	7.854414E-07	(g/s)	2.3
RXXG204X	VOLUME		545066.9	4163124.5	0	7.854414E-07	(g/s)	2.3
RXXG204Y	VOLUME		545070.3	4163116.6	0	7.854414E-07	(g/s)	2.3
RXXG204Z	VOLUME		545073.8	4163108.6	0	7.854414E-07	(g/s)	2.3
RXXG2050	VOLUME		545079.7	4163103.1	0	7.854414E-07	(g/s)	2.3
RXXG2051	VOLUME		545087.8	4163100.0	0	7.854414E-07	(g/s)	2.3
RXXG2052	VOLUME		545096.0	4163097.0	0	7.854414E-07	(g/s)	2.3
RXXG2053	VOLUME		545104.1	4163094.8	0	7.854414E-07	(g/s)	2.3
RXXG2054	VOLUME		545111.9	4163098.6	0	7.854414E-07	(g/s)	2.3
RXXG2055	VOLUME		545119.7	4163102.4	0	7.854414E-07	(g/s)	2.3
RXXG2056	VOLUME		545127.5	4163106.2	0	7.854414E-07	(g/s)	2.3
RXXG2057	VOLUME		545135.3	4163110.0	0	7.854414E-07	(g/s)	2.3
RXXG2058	VOLUME		545143.2	4163113.8	0	7.854414E-07	(g/s)	2.3

RXXG2059	VOLUME		545151.0	4163117.6	0	7.854414E-07	(g/s)	2.3
RXXG205A	VOLUME		545158.8	4163121.4	0	7.854414E-07	(g/s)	2.3
RXXG205B	VOLUME		545166.6	4163125.2	0	7.854414E-07	(g/s)	2.3
RXXG205C	VOLUME		545174.5	4163129.0	0	7.854414E-07	(g/s)	2.3
RXXG205D	VOLUME		545182.3	4163132.9	0	7.854414E-07	(g/s)	2.3
RXXG205E	VOLUME		545190.5	4163130.2	0	7.854414E-07	(g/s)	2.3
RXXG205F	VOLUME		545198.7	4163127.2	0	7.854414E-07	(g/s)	2.3
RXXG205G	VOLUME		545206.4	4163123.3	0	7.854414E-07	(g/s)	2.3
RXXG205H	VOLUME		545213.9	4163119.0	0	7.854414E-07	(g/s)	2.3
RXXG205I	VOLUME		545221.5	4163114.7	0	7.854414E-07	(g/s)	2.3
RXXG205J	VOLUME		545229.0	4163110.3	0	7.854414E-07	(g/s)	2.3
RXXG205K	VOLUME		545236.6	4163106.0	0	7.854414E-07	(g/s)	2.3
RXXG205L	VOLUME		545244.1	4163101.7	0	7.854414E-07	(g/s)	2.3
RXXG205M	VOLUME		545251.7	4163097.4	0	7.854414E-07	(g/s)	2.3
RXXG205P	VOLUME		544522.1	4162962.3	0	1.76724E-06	(g/s)	2.3
RXXG205Q	VOLUME		544537.4	4162970.7	0	1.76724E-06	(g/s)	2.3
RXXG205R	VOLUME		544552.6	4162979.0	0	1.76724E-06	(g/s)	2.3
RXXG205S	VOLUME		544567.9	4162987.4	0	1.76724E-06	(g/s)	2.3
RXXG205T	VOLUME		544583.1	4162995.8	0	1.76724E-06	(g/s)	2.3
RXXG205U	VOLUME		544598.0	4163004.6	0	1.76724E-06	(g/s)	2.3
RXXG205V	VOLUME		544609.7	4163017.5	0	1.76724E-06	(g/s)	2.3
RXXG205W	VOLUME		544621.3	4163030.5	0	1.76724E-06	(g/s)	2.3
RXXG205X	VOLUME		544633.0	4163043.4	0	1.76724E-06	(g/s)	2.3
RXXG205Y	VOLUME		544645.4	4163055.5	0	1.76724E-06	(g/s)	2.3
RXXG205Z	VOLUME		544660.0	4163064.9	0	1.76724E-06	(g/s)	2.3
RXXG2060	VOLUME		544674.6	4163074.3	0	1.76724E-06	(g/s)	2.3
RXXG2061	VOLUME		544689.8	4163082.2	0	1.76724E-06	(g/s)	2.3
RXXG2062	VOLUME		544707.0	4163084.7	0	1.76724E-06	(g/s)	2.3
RXXG2063	VOLUME		544722.9	4163080.3	0	1.76724E-06	(g/s)	2.3

Point Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Stack Height	Stack Temp	Stack Velocity	Stack Diameter
		East (m)	North (m)	(m)	(g/s)	(m)	(K)	(m/s)	(m)
933S6000	6 - Vertical	545251.5	4163097.5	0	0.00000012187	3.8405	366	50	0.1
933S6001	6 - Horizontal Low	545251.5	4163097.5	0	0.00000012187	0.01829	366	0.001	0.1
933S6002	6 - Horizontal High	545251.5	4163097.5	0	0.00000012187	3.8405	366	0.001	0.1
933S6003	7 - Vertical	544511.9	4162957.3	0	0.00000012187	3.8405	366	50	0.1
933S6005	7 - Horizontal Low	544511.9	4162957.3	0	0.00000012187	0.01829	366	0.001	0.1
933S6006	7 - Horizotnal High	544511.9	4162957.3	0	0.00000012187	3.8405	366	0.001	0.1

Volume Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	Init. Lat. Dim.	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s)	(m)	(m)	(m)

RWIEO001		544424.2	4162916.6	0	7.973828E-05	5	29.59	1
RWIEO002		544487.8	4162916.6	0	7.973828E-05	5	29.59	1
RWIEO003		544551.5	4162916.6	0	7.973828E-05	5	29.59	1
RWIEO004		544360.6	4162980.2	0	7.973828E-05	5	29.59	1
RWIEO005		544424.2	4162980.2	0	7.973828E-05	5	29.59	1
RWIEO006		544487.8	4162980.2	0	7.973828E-05	5	29.59	1
RWIEO007		544551.5	4162980.2	0	7.973828E-05	5	29.59	1
RWIEO008		544615.1	4162980.2	0	7.973828E-05	5	29.59	1
RWIEO009		544360.6	4163043.8	0	7.973828E-05	5	29.59	1
RWIEO00A		544424.2	4163043.8	0	7.973828E-05	5	29.59	1
RWIEO00B		544487.8	4163043.8	0	7.973828E-05	5	29.59	1
RWIEO00C		544551.5	4163043.8	0	7.973828E-05	5	29.59	1
RWIEO00D		544615.1	4163043.8	0	7.973828E-05	5	29.59	1
RWIEO00E		544360.6	4163107.5	0	7.973828E-05	5	29.59	1
RWIEO00F		544424.2	4163107.5	0	7.973828E-05	5	29.59	1
RWIEO00G		544487.8	4163107.5	0	7.973828E-05	5	29.59	1
RWIEO00H		544551.5	4163107.5	0	7.973828E-05	5	29.59	1
RWIEO00I		544615.1	4163107.5	0	7.973828E-05	5	29.59	1
RWIEO00J		544678.7	4163107.5	0	7.973828E-05	5	29.59	1
RWIEO00K		544360.6	4163171.1	0	7.973828E-05	5	29.59	1
RWIEO00L		544424.2	4163171.1	0	7.973828E-05	5	29.59	1
RWIEO00M		544487.8	4163171.1	0	7.973828E-05	5	29.59	1
RWIEO00N		544551.5	4163171.1	0	7.973828E-05	5	29.59	1
RWIEO00O		544615.1	4163171.1	0	7.973828E-05	5	29.59	1
RWIEO00P		544678.7	4163171.1	0	7.973828E-05	5	29.59	1
RWIEO00Q		544742.3	4163171.1	0	7.973828E-05	5	29.59	1
RWIEO00R		544360.6	4163234.7	0	7.973828E-05	5	29.59	1
RWIEO00S		544424.2	4163234.7	0	7.973828E-05	5	29.59	1
RWIEO00T		544487.8	4163234.7	0	7.973828E-05	5	29.59	1
RWIEO00U		544551.5	4163234.7	0	7.973828E-05	5	29.59	1
RWIEO00V		544615.1	4163234.7	0	7.973828E-05	5	29.59	1
RWIEO00W		544678.7	4163234.7	0	7.973828E-05	5	29.59	1
RWIEO00X		544742.3	4163234.7	0	7.973828E-05	5	29.59	1
RWIEO00Y		544805.9	4163234.7	0	7.973828E-05	5	29.59	1
RWIEO00Z		544360.6	4163298.3	0	7.973828E-05	5	29.59	1
RWIEO010		544424.2	4163298.3	0	7.973828E-05	5	29.59	1
RWIEO011		544487.8	4163298.3	0	7.973828E-05	5	29.59	1
RWIEO012		544551.5	4163298.3	0	7.973828E-05	5	29.59	1
RWIEO013		544615.1	4163298.3	0	7.973828E-05	5	29.59	1
RWIEO014		544678.7	4163298.3	0	7.973828E-05	5	29.59	1
RWIEO015		544742.3	4163298.3	0	7.973828E-05	5	29.59	1
RWIEO016		544805.9	4163298.3	0	7.973828E-05	5	29.59	1
RWIEO017		544424.2	4163361.9	0	7.973828E-05	5	29.59	1
RWIEO018		544487.8	4163361.9	0	7.973828E-05	5	29.59	1
RWIEO019		544551.5	4163361.9	0	7.973828E-05	5	29.59	1
RWIEO01A		544615.1	4163361.9	0	7.973828E-05	5	29.59	1

RWIEO01B		544678.7	4163361.9	0	7.973828E-05	5	29.59	1
RWIEO01C		544742.3	4163361.9	0	7.973828E-05	5	29.59	1
RXXG200L	Roadway Segment 1	545416.9	4163544.8	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200M	Roadway Segment 1	545417.1	4163520.8	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200N	Roadway Segment 1	545417.4	4163496.8	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200O	Roadway Segment 1	545417.6	4163472.8	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200P	Roadway Segment 1	545417.8	4163448.8	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200Q	Roadway Segment 1	545418.1	4163424.8	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200R	Roadway Segment 1	545418.2	4163400.8	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200S	Roadway Segment 1	545413.6	4163377.3	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200T	Roadway Segment 1	545409.1	4163353.7	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200U	Roadway Segment 1	545404.6	4163330.1	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200V	Roadway Segment 1	545397.3	4163307.3	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200W	Roadway Segment 1	545388.8	4163284.9	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200X	Roadway Segment 1	545380.2	4163262.5	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200Y	Roadway Segment 1	545371.0	4163240.4	0	1.595043E-06	2.3	11.16279	2.139535
RXXG200Z	Roadway Segment 1	545359.6	4163219.2	0	1.595043E-06	2.3	11.16279	2.139535
RXXG2010	Roadway Segment 1	545348.2	4163198.1	0	1.595043E-06	2.3	11.16279	2.139535
RXXG2011	Roadway Segment 1	545336.4	4163177.3	0	1.595043E-06	2.3	11.16279	2.139535
RXXG2012	Roadway Segment 1	545320.2	4163159.6	0	1.595043E-06	2.3	11.16279	2.139535
RXXG2013	Roadway Segment 1	545304.0	4163141.9	0	1.595043E-06	2.3	11.16279	2.139535
RXXG2014	Roadway Segment 1	545287.1	4163124.8	0	1.595043E-06	2.3	11.16279	2.139535
RXXG2015	Roadway Segment 1	545269.5	4163108.6	0	1.595043E-06	2.3	11.16279	2.139535
RXXG2018	Roadway Segment 2	544893.1	4162802.5	0	9.222912E-07	2.3	6.418605	2.139535
RXXG2019	Roadway Segment 2	544904.4	4162810.4	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201A	Roadway Segment 2	544915.7	4162818.3	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201B	Roadway Segment 2	544927.0	4162826.3	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201C	Roadway Segment 2	544938.3	4162834.2	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201D	Roadway Segment 2	544949.6	4162842.1	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201E	Roadway Segment 2	544960.9	4162850.1	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201F	Roadway Segment 2	544972.0	4162858.3	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201G	Roadway Segment 2	544982.7	4162867.0	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201H	Roadway Segment 2	544993.4	4162875.7	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201I	Roadway Segment 2	545004.1	4162884.3	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201J	Roadway Segment 2	545014.9	4162893.0	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201K	Roadway Segment 2	545025.6	4162901.7	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201L	Roadway Segment 2	545036.3	4162910.4	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201M	Roadway Segment 2	545047.0	4162919.1	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201N	Roadway Segment 2	545057.7	4162927.8	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201O	Roadway Segment 2	545068.5	4162936.5	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201P	Roadway Segment 2	545079.2	4162945.2	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201Q	Roadway Segment 2	545089.9	4162953.9	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201R	Roadway Segment 2	545100.6	4162962.5	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201S	Roadway Segment 2	545111.1	4162971.5	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201T	Roadway Segment 2	545121.5	4162980.6	0	9.222912E-07	2.3	6.418605	2.139535

RXXG201U	Roadway Segment 2	545131.8	4162989.8	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201V	Roadway Segment 2	545142.1	4162998.9	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201W	Roadway Segment 2	545152.5	4163008.1	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201X	Roadway Segment 2	545162.8	4163017.2	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201Y	Roadway Segment 2	545173.2	4163026.3	0	9.222912E-07	2.3	6.418605	2.139535
RXXG201Z	Roadway Segment 2	545183.5	4163035.5	0	9.222912E-07	2.3	6.418605	2.139535
RXXG2020	Roadway Segment 2	545193.8	4163044.6	0	9.222912E-07	2.3	6.418605	2.139535
RXXG2021	Roadway Segment 2	545204.2	4163053.8	0	9.222912E-07	2.3	6.418605	2.139535
RXXG2022	Roadway Segment 2	545214.5	4163062.9	0	9.222912E-07	2.3	6.418605	2.139535
RXXG2023	Roadway Segment 2	545224.9	4163072.0	0	9.222912E-07	2.3	6.418605	2.139535
RXXG2024	Roadway Segment 2	545235.2	4163081.2	0	9.222912E-07	2.3	6.418605	2.139535
RXXG2025	Roadway Segment 2	545245.5	4163090.3	0	9.222912E-07	2.3	6.418605	2.139535
RXXG2028		544839.9	4162762.2	0	6.9834E-07	2.3	6.418605	2.139535
RXXG2029		544850.9	4162770.6	0	6.9834E-07	2.3	6.418605	2.139535
RXXG202A		544861.8	4162778.9	0	6.9834E-07	2.3	6.418605	2.139535
RXXG202B		544872.8	4162787.3	0	6.9834E-07	2.3	6.418605	2.139535
RXXG202C		544883.8	4162795.7	0	6.9834E-07	2.3	6.418605	2.139535
RXXG202F		544827.9	4162756.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202G		544819.2	4162756.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202H		544811.1	4162759.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202I		544803.2	4162763.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202J		544795.4	4162766.8	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202K		544787.9	4162771.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202L		544781.6	4162777.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202M		544775.4	4162783.1	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202N		544769.1	4162789.1	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202O		544763.4	4162795.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202P		544761.5	4162804.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202Q		544759.5	4162812.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202R		544757.6	4162820.9	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202S		544756.1	4162829.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202T		544755.6	4162838.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202U		544755.1	4162846.9	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202V		544755.2	4162855.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202W		544755.9	4162864.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202X		544756.7	4162872.9	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202Y		544757.4	4162881.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG202Z		544758.2	4162890.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2030		544759.0	4162898.9	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2031		544759.7	4162907.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2032		544760.5	4162916.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2033		544761.2	4162924.9	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2034		544762.0	4162933.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2035		544762.7	4162942.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2036		544763.5	4162950.9	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2037		544764.2	4162959.5	0	7.854414E-07	2.3	4.046512	2.139535

RXXG2038		544765.0	4162968.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2039		544765.7	4162976.9	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203A		544765.0	4162985.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203B		544763.9	4162994.1	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203C		544762.7	4163002.8	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203D		544761.5	4163011.4	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203E		544760.4	4163020.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203F		544759.2	4163028.6	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203G		544755.6	4163036.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203H		544751.9	4163044.4	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203I		544748.2	4163052.3	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203J		544744.5	4163060.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203K		544740.8	4163068.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203L		544744.2	4163072.6	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203M		544752.5	4163074.9	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203N		544760.3	4163078.4	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203O		544767.0	4163083.9	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203P		544773.8	4163089.4	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203Q		544780.5	4163094.9	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203R		544786.9	4163100.8	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203S		544792.4	4163107.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203T		544797.9	4163114.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203U		544803.5	4163121.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203V		544809.0	4163127.7	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203W		544814.5	4163134.4	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203X		544820.0	4163141.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203Y		544825.5	4163147.9	0	7.854414E-07	2.3	4.046512	2.139535
RXXG203Z		544831.0	4163154.6	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2040		544836.5	4163161.3	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2041		544842.1	4163168.1	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2042		544847.6	4163174.8	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2043		544853.1	4163181.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2044		544859.8	4163186.7	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2045		544867.7	4163190.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2046		544875.7	4163193.6	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2047		544883.7	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2048		544892.4	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2049		544901.1	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204A		544909.8	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204B		544918.5	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204C		544927.2	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204D		544935.9	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204E		544944.6	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204F		544953.3	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204G		544962.0	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535

RXXG204H		544970.7	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204I		544979.4	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204J		544988.1	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204K		544996.8	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204L		545005.5	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204M		545014.2	4163197.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204N		545022.7	4163196.1	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204O		545030.1	4163191.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204P		545037.5	4163187.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204Q		545042.6	4163180.4	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204R		545046.0	4163172.4	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204S		545049.5	4163164.4	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204T		545053.0	4163156.4	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204U		545056.4	4163148.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204V		545059.9	4163140.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204W		545063.4	4163132.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204X		545066.9	4163124.5	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204Y		545070.3	4163116.6	0	7.854414E-07	2.3	4.046512	2.139535
RXXG204Z		545073.8	4163108.6	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2050		545079.7	4163103.1	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2051		545087.8	4163100.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2052		545096.0	4163097.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2053		545104.1	4163094.8	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2054		545111.9	4163098.6	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2055		545119.7	4163102.4	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2056		545127.5	4163106.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2057		545135.3	4163110.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2058		545143.2	4163113.8	0	7.854414E-07	2.3	4.046512	2.139535
RXXG2059		545151.0	4163117.6	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205A		545158.8	4163121.4	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205B		545166.6	4163125.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205C		545174.5	4163129.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205D		545182.3	4163132.9	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205E		545190.5	4163130.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205F		545198.7	4163127.2	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205G		545206.4	4163123.3	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205H		545213.9	4163119.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205I		545221.5	4163114.7	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205J		545229.0	4163110.3	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205K		545236.6	4163106.0	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205L		545244.1	4163101.7	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205M		545251.7	4163097.4	0	7.854414E-07	2.3	4.046512	2.139535
RXXG205P		544522.1	4162962.3	0	1.76724E-06	2.3	8.093023	2.139535
RXXG205Q		544537.4	4162970.7	0	1.76724E-06	2.3	8.093023	2.139535
RXXG205R		544552.6	4162979.0	0	1.76724E-06	2.3	8.093023	2.139535
RXXG205S		544567.9	4162987.4	0	1.76724E-06	2.3	8.093023	2.139535

RXXG205T		544583.1	4162995.8	0	1.76724E-06	2.3	8.093023	2.139535
RXXG205U		544598.0	4163004.6	0	1.76724E-06	2.3	8.093023	2.139535
RXXG205V		544609.7	4163017.5	0	1.76724E-06	2.3	8.093023	2.139535
RXXG205W		544621.3	4163030.5	0	1.76724E-06	2.3	8.093023	2.139535
RXXG205X		544633.0	4163043.4	0	1.76724E-06	2.3	8.093023	2.139535
RXXG205Y		544645.4	4163055.5	0	1.76724E-06	2.3	8.093023	2.139535
RXXG205Z		544660.0	4163064.9	0	1.76724E-06	2.3	8.093023	2.139535
RXXG2060		544674.6	4163074.3	0	1.76724E-06	2.3	8.093023	2.139535
RXXG2061		544689.8	4163082.2	0	1.76724E-06	2.3	8.093023	2.139535
RXXG2062		544707.0	4163084.7	0	1.76724E-06	2.3	8.093023	2.139535
RXXG2063		544722.9	4163080.3	0	1.76724E-06	2.3	8.093023	2.139535

HARP2 - HRACalc (dated 19044) 11/17/2021 9:09:57 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: All
Calculation Method: HighEnd

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 4

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 2
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors

Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: ON

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk saved to: C:\Users\bshea\Desktop\HARP\Quarry Reclamation_CancerRisk.csv
Calculating chronic risk
Chronic risk saved to: C:\Users\bshea\Desktop\HARP\Quarry Reclamation_NCChronicRisk.csv
Calculating acute risk
Acute risk saved to: C:\Users\bshea\Desktop\HARP\Quarry Reclamation_NCAcuteRisk.csv
HRA ran successfully

*HARP - HRACalc v19044 11/17/2021 9:09:57 AM - Cancer Risk - Input File: C:\Users\bshea\Desktop\HARP\Quarry Reclamation_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBREV	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK
1			9901	DieselExhPM	0.00268	1.13E-06	4YrCancerHighEnd_Inh_FAH16to70	*	1.13E-06	0.00E+00

DERMAL_RISK	MMILK_RISK	WATER_RISK	FISH_RISK	CROP_RISK	BEEF_RISK	DAIRY_RISK	PIG_RISK	CHICKEN_RISK	EGG_RISK	1ST_DRIVER
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA

2ND_DRIVER	PASTURE_CONC	FISH_CONC	WATER_CONC
NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v19044 11/17/2021 9:09:57 AM - Chronic Risk - Input File: C:\Users\bshea\Desktop\HARP\Quarry Reclamation_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBREV	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV
1			9901	DieselExhPM	0.00268	NonCancerChronicHighEnd_Inh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

REPRO/DEVEL	RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL	DETAILS	INH_CONC	SOIL_DOSE
0.00E+00	5.36E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	*	2.68E-03	0.00E+00

DERMAL_DOSE	MMILK_DOSE	WATER_DOSE	FISH_DOSE	CROP_DOSE	BEEF_DOSE	DAIRY_DOSE	PIG_DOSE	CHICKEN_DOSE	EGG_DOSE
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

1ST_DRIVER	2ND_DRIVER	3RD_DRIVER	PASTURE_CONC	FISH_CONC	WATER_CONC
INHALATION	NA	NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v19044 11/17/2021 9:09:57 AM - Acute Risk - Input File: C:\Users\bshea\Desktop\HARP\Quarry Reclamation_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBREV	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL
1			9901	DieselExhPM	0.61114	NonCancerAcute	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Appendix F

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarry Reclamation Plan Construction - Criteria Pollutants Only

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	47.13	User Defined Unit	47.13	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2026
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage adjusted per site plan.

Construction Phase - Total days set to entire construction period.

Off-road Equipment - HP updated per applicant-provided equipment information.

Off-road Equipment - HP updated per applicant-provided equipment information.

Grading -

Trips and VMT - Trip rates adjusted per project-specific traffic report by W-Trans.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	75.00	1,000.00
tblConstructionPhase	PhaseEndDate	11/4/2025	3/31/2026

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	PhaseStartDate	1/4/2023	6/1/2022
tblGrading	MaterialImported	0.00	970,000.00
tblLandUse	LotAcreage	0.00	47.13
tblOffRoadEquipment	HorsePower	158.00	444.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	158.00	264.00
tblOffRoadEquipment	HorsePower	187.00	183.00
tblOffRoadEquipment	HorsePower	402.00	380.00
tblOffRoadEquipment	HorsePower	8.00	284.00
tblOffRoadEquipment	HorsePower	80.00	33.00
tblOffRoadEquipment	HorsePower	247.00	215.00
tblOffRoadEquipment	HorsePower	247.00	307.00
tblOffRoadEquipment	HorsePower	97.00	315.00
tblOffRoadEquipment	HorsePower	97.00	197.00
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.32
tblOffRoadEquipment	UsageHours	8.00	0.64
tblOffRoadEquipment	UsageHours	8.00	4.80
tblOffRoadEquipment	UsageHours	8.00	0.64
tblOffRoadEquipment	UsageHours	8.00	3.20
tblOffRoadEquipment	UsageHours	8.00	4.80
tblOffRoadEquipment	UsageHours	8.00	6.40
tblOffRoadEquipment	UsageHours	8.00	0.96
tblTripsAndVMT	HaulingTripNumber	121,250.00	161,667.00
tblTripsAndVMT	WorkerTripNumber	28.00	10.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1838	3.3083	1.3528	0.0102	1.0171	0.0688	1.0858	0.3516	0.0640	0.4156						
2023	0.2413	4.6084	2.1342	0.0167	1.4897	0.0967	1.5864	0.5701	0.0898	0.6598						
2024	0.2369	4.5328	2.1123	0.0166	1.4986	0.0927	1.5913	0.5742	0.0862	0.6603						
2025	0.2208	4.2834	2.0001	0.0163	1.4942	0.0826	1.5768	0.5721	0.0769	0.6490						
2026	0.0540	1.0442	0.4904	3.9400e-003	0.6239	0.0202	0.6441	0.1699	0.0188	0.1887						
Maximum	**0.2413**	**4.6084**	**2.1342**	**0.0167**	**1.4986**	**0.0967**	**1.5913**	**0.5742**	**0.0898**	**0.6603**						

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1838	3.3083	1.3528	0.0102	0.5760	0.0688	0.6448	0.1907	0.0640	0.2547						
2023	0.2413	4.6084	2.1342	0.0167	0.8715	0.0967	0.9682	0.3118	0.0898	0.4016						
2024	0.2369	4.5328	2.1123	0.0166	0.8771	0.0927	0.9698	0.3141	0.0862	0.4002						
2025	0.2208	4.2834	2.0001	0.0163	0.8743	0.0826	0.9569	0.3130	0.0769	0.3898						
2026	0.0540	1.0442	0.4904	3.9400e-003	0.3303	0.0202	0.3505	0.0901	0.0188	0.1089						
Maximum	**0.2413**	**4.6084**	**2.1342**	**0.0167**	**0.8771**	**0.0967**	**0.9698**	**0.3141**	**0.0898**	**0.4016**						

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**42.37**	**0.00**	**40.01**	**45.50**	**0.00**	**39.57**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
1	**6-1-2022**	**8-31-2022**	1.4675	1.4675
2	**9-1-2022**	**11-30-2022**	1.4835	1.4835
3	**12-1-2022**	**2-28-2023**	1.3055	1.3055
4	**3-1-2023**	**5-31-2023**	1.2131	1.2131
5	**6-1-2023**	**8-31-2023**	1.1998	1.1998
6	**9-1-2023**	**11-30-2023**	1.2130	1.2130
7	**12-1-2023**	**2-29-2024**	1.2066	1.2066

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8	**3-1-2024**	**5-31-2024**	1.1837	1.1837
9	**6-1-2024**	**8-31-2024**	1.1704	1.1704
10	**9-1-2024**	**11-30-2024**	1.1838	1.1838
11	**12-1-2024**	**2-28-2025**	1.1436	1.1436
12	**3-1-2025**	**5-31-2025**	1.1215	1.1215
13	**6-1-2025**	**8-31-2025**	1.1083	1.1083
14	**9-1-2025**	**11-30-2025**	1.1223	1.1223
15	**12-1-2025**	**2-28-2026**	1.1185	1.1185
16	**3-1-2026**	**5-31-2026**	0.3845	0.3845
		Highest	1.4835	1.4835

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.0000e-005	0.0000	4.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Waste						0.0000	0.0000		0.0000	0.0000						
Water						0.0000	0.0000		0.0000	0.0000						
Total	**4.0000e-005**	**0.0000**	**4.3000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**						

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.0000e-005	0.0000	4.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Waste						0.0000	0.0000		0.0000	0.0000						
Water						0.0000	0.0000		0.0000	0.0000						
Total	**4.0000e-005**	**0.0000**	**4.3000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**						

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	6/1/2022	3/31/2026	5	1000	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 540

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	0.32	444	0.38
Grading	Excavators	1	0.64	345	0.38
Grading	Excavators	1	4.80	264	0.38
Grading	Graders	1	0.64	183	0.41
Grading	Off-Highway Trucks	1	3.20	380	0.38
Grading	Plate Compactors	1	1.60	284	0.43
Grading	Rollers	1	0.64	33	0.38
Grading	Rubber Tired Dozers	1	3.20	215	0.40
Grading	Rubber Tired Dozers	1	4.80	307	0.40
Grading	Tractors/Loaders/Backhoes	1	6.40	315	0.37
Grading	Tractors/Loaders/Backhoes	1	0.96	197	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	11	10.00	0.00	161,667.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.8019	0.0000	0.8019	0.2925	0.0000	0.2925						
Off-Road	0.1240	1.1777	0.8817	2.3200e-003		0.0496	0.0496		0.0457	0.0457						
Total	**0.1240**	**1.1777**	**0.8817**	**2.3200e-003**	**0.8019**	**0.0496**	**0.8515**	**0.2925**	**0.0457**	**0.3381**						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0577	2.1291	0.4529	7.8500e-003	0.2091	0.0191	0.2282	0.0575	0.0183	0.0758						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	2.1000e-003	1.5100e-003	0.0183	5.0000e-005	6.0400e-003	3.0000e-005	6.0800e-003	1.6100e-003	3.0000e-005	1.6400e-003						
Total	**0.0598**	**2.1306**	**0.4712**	**7.9000e-003**	**0.2152**	**0.0191**	**0.2343**	**0.0591**	**0.0183**	**0.0774**						

3.2 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3608	0.0000	0.3608	0.1316	0.0000	0.1316						
Off-Road	0.1240	1.1777	0.8817	2.3200e-003		0.0496	0.0496		0.0457	0.0457						
Total	**0.1240**	**1.1777**	**0.8817**	**2.3200e-003**	**0.3608**	**0.0496**	**0.4105**	**0.1316**	**0.0457**	**0.1773**						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0577	2.1291	0.4529	7.8500e-003	0.2091	0.0191	0.2282	0.0575	0.0183	0.0758						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	2.1000e-003	1.5100e-003	0.0183	5.0000e-005	6.0400e-003	3.0000e-005	6.0800e-003	1.6100e-003	3.0000e-005	1.6400e-003						
Total	**0.0598**	**2.1306**	**0.4712**	**7.9000e-003**	**0.2152**	**0.0191**	**0.2343**	**0.0591**	**0.0183**	**0.0774**						

3.2 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1241	0.0000	1.1241	0.4696	0.0000	0.4696						
Off-Road	0.1942	1.7561	1.4351	3.9500e-003		0.0735	0.0735		0.0677	0.0677						
Total	**0.1942**	**1.7561**	**1.4351**	**3.9500e-003**	**1.1241**	**0.0735**	**1.1976**	**0.4696**	**0.0677**	**0.5372**						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0438	2.8501	0.6704	0.0127	0.3554	0.0231	0.3785	0.0978	0.0221	0.1198						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	3.3200e-003	2.2800e-003	0.0288	9.0000e-005	0.0103	5.0000e-005	0.0103	2.7300e-003	5.0000e-005	2.7800e-003						
Total	**0.0472**	**2.8523**	**0.6991**	**0.0128**	**0.3657**	**0.0231**	**0.3888**	**0.1005**	**0.0221**	**0.1226**						

3.2 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5058	0.0000	0.5058	0.2113	0.0000	0.2113						
Off-Road	0.1942	1.7561	1.4350	3.9500e-003		0.0735	0.0735		0.0677	0.0677						
Total	**0.1942**	**1.7561**	**1.4350**	**3.9500e-003**	**0.5058**	**0.0735**	**0.5794**	**0.2113**	**0.0677**	**0.2790**						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0438	2.8501	0.6704	0.0127	0.3554	0.0231	0.3785	0.0978	0.0221	0.1198						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	3.3200e-003	2.2800e-003	0.0288	9.0000e-005	0.0103	5.0000e-005	0.0103	2.7300e-003	5.0000e-005	2.7800e-003						
Total	**0.0472**	**2.8523**	**0.6991**	**0.0128**	**0.3657**	**0.0231**	**0.3888**	**0.1005**	**0.0221**	**0.1226**						

3.2 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1301	0.0000	1.1301	0.4729	0.0000	0.4729						
Off-Road	0.1898	1.6570	1.4060	3.9800e-003		0.0692	0.0692		0.0637	0.0637						
Total	**0.1898**	**1.6570**	**1.4060**	**3.9800e-003**	**1.1301**	**0.0692**	**1.1993**	**0.4729**	**0.0637**	**0.5366**						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0440	2.8738	0.6793	0.0126	0.3582	0.0234	0.3816	0.0985	0.0224	0.1210						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	3.1300e-003	2.0500e-003	0.0270	8.0000e-005	0.0104	5.0000e-005	0.0104	2.7500e-003	5.0000e-005	2.8000e-003						
Total	**0.0471**	**2.8758**	**0.7063**	**0.0127**	**0.3685**	**0.0235**	**0.3920**	**0.1013**	**0.0225**	**0.1238**						

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5085	0.0000	0.5085	0.2128	0.0000	0.2128						
Off-Road	0.1898	1.6570	1.4060	3.9800e-003		0.0692	0.0692		0.0637	0.0637						
Total	**0.1898**	**1.6570**	**1.4060**	**3.9800e-003**	**0.5085**	**0.0692**	**0.5778**	**0.2128**	**0.0637**	**0.2765**						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0440	2.8738	0.6793	0.0126	0.3582	0.0234	0.3816	0.0985	0.0224	0.1210						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	3.1300e-003	2.0500e-003	0.0270	8.0000e-005	0.0104	5.0000e-005	0.0104	2.7500e-003	5.0000e-005	2.8000e-003						
Total	**0.0471**	**2.8758**	**0.7063**	**0.0127**	**0.3685**	**0.0235**	**0.3920**	**0.1013**	**0.0225**	**0.1238**						

3.2 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1271	0.0000	1.1271	0.4712	0.0000	0.4712						
Off-Road	0.1743	1.4367	1.2961	3.9700e-003		0.0593	0.0593		0.0545	0.0545						
Total	**0.1743**	**1.4367**	**1.2961**	**3.9700e-003**	**1.1271**	**0.0593**	**1.1864**	**0.4712**	**0.0545**	**0.5258**						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0435	2.8448	0.6788	0.0123	0.3568	0.0233	0.3801	0.0982	0.0223	0.1205						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	2.9400e-003	1.8400e-003	0.0252	8.0000e-005	0.0103	5.0000e-005	0.0104	2.7400e-003	4.0000e-005	2.7900e-003						
Total	**0.0465**	**2.8467**	**0.7040**	**0.0124**	**0.3671**	**0.0234**	**0.3905**	**0.1009**	**0.0223**	**0.1232**						

3.2 Grading - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5072	0.0000	0.5072	0.2120	0.0000	0.2120						
Off-Road	0.1743	1.4367	1.2961	3.9700e-003		0.0593	0.0593		0.0545	0.0545						
Total	**0.1743**	**1.4367**	**1.2961**	**3.9700e-003**	**0.5072**	**0.0593**	**0.5665**	**0.2120**	**0.0545**	**0.2666**						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0435	2.8448	0.6788	0.0123	0.3568	0.0233	0.3801	0.0982	0.0223	0.1205						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	2.9400e-003	1.8400e-003	0.0252	8.0000e-005	0.0103	5.0000e-005	0.0104	2.7400e-003	4.0000e-005	2.7900e-003						
Total	**0.0465**	**2.8467**	**0.7040**	**0.0124**	**0.3671**	**0.0234**	**0.3905**	**0.1009**	**0.0223**	**0.1232**						

3.2 Grading - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5339	0.0000	0.5339	0.1452	0.0000	0.1452						
Off-Road	0.0428	0.3523	0.3178	9.7000e-004		0.0145	0.0145		0.0134	0.0134						
Total	**0.0428**	**0.3523**	**0.3178**	**9.7000e-004**	**0.5339**	**0.0145**	**0.5484**	**0.1452**	**0.0134**	**0.1585**						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0106	0.6915	0.1667	2.9500e-003	0.0875	5.6700e-003	0.0932	0.0241	5.4300e-003	0.0295						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	6.8000e-004	4.1000e-004	5.8400e-003	2.0000e-005	2.5300e-003	1.0000e-005	2.5400e-003	6.7000e-004	1.0000e-005	6.8000e-004						
Total	**0.0113**	**0.6919**	**0.1726**	**2.9700e-003**	**0.0900**	**5.6800e-003**	**0.0957**	**0.0247**	**5.4400e-003**	**0.0302**						

3.2 Grading - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2403	0.0000	0.2403	0.0653	0.0000	0.0653						
Off-Road	0.0428	0.3523	0.3178	9.7000e-004		0.0145	0.0145		0.0134	0.0134						
Total	**0.0428**	**0.3523**	**0.3178**	**9.7000e-004**	**0.2403**	**0.0145**	**0.2548**	**0.0653**	**0.0134**	**0.0787**						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0106	0.6915	0.1667	2.9500e-003	0.0875	5.6700e-003	0.0932	0.0241	5.4300e-003	0.0295						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	6.8000e-004	4.1000e-004	5.8400e-003	2.0000e-005	2.5300e-003	1.0000e-005	2.5400e-003	6.7000e-004	1.0000e-005	6.8000e-004						
Total	**0.0113**	**0.6919**	**0.1726**	**2.9700e-003**	**0.0900**	**5.6800e-003**	**0.0957**	**0.0247**	**5.4400e-003**	**0.0302**						

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.554285	0.058871	0.188253	0.120585	0.022598	0.005697	0.010798	0.007525	0.000977	0.000545	0.026246	0.000848	0.002771

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000						
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000						
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0				
Total					

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0				
Total					

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.0000e-005	0.0000	4.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						
Unmitigated	4.0000e-005	0.0000	4.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000						
Landscaping	4.0000e-005	0.0000	4.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						
Total	**4.0000e-005**	**0.0000**	**4.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000						
Landscaping	4.0000e-005	0.0000	4.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						
Total	**4.0000e-005**	**0.0000**	**4.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated				
Unmitigated				

7.2 Water by Land Use

Unmitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0				
Total					

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0				
Total					

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated				
Unmitigated				

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0				
Total					

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0				
Total					

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarry Reclamation Plan Construction - Criteria Pollutants Only

Bay Area AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	47.13	User Defined Unit	47.13	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2026
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage adjusted per site plan.

Construction Phase - Total days set to entire construction period.

Off-road Equipment - HP updated per applicant-provided equipment information.

Off-road Equipment - HP updated per applicant-provided equipment information.

Grading -

Trips and VMT - Trip rates adjusted per project-specific traffic report by W-Trans.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	75.00	1,000.00
tblConstructionPhase	PhaseEndDate	11/4/2025	3/31/2026

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	PhaseStartDate	1/4/2023	6/1/2022
tblGrading	MaterialImported	0.00	970,000.00
tblLandUse	LotAcreage	0.00	47.13
tblOffRoadEquipment	HorsePower	158.00	444.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	158.00	264.00
tblOffRoadEquipment	HorsePower	187.00	183.00
tblOffRoadEquipment	HorsePower	402.00	380.00
tblOffRoadEquipment	HorsePower	8.00	284.00
tblOffRoadEquipment	HorsePower	80.00	33.00
tblOffRoadEquipment	HorsePower	247.00	215.00
tblOffRoadEquipment	HorsePower	247.00	307.00
tblOffRoadEquipment	HorsePower	97.00	315.00
tblOffRoadEquipment	HorsePower	97.00	197.00
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.32
tblOffRoadEquipment	UsageHours	8.00	0.64
tblOffRoadEquipment	UsageHours	8.00	4.80
tblOffRoadEquipment	UsageHours	8.00	0.64
tblOffRoadEquipment	UsageHours	8.00	3.20
tblOffRoadEquipment	UsageHours	8.00	4.80
tblOffRoadEquipment	UsageHours	8.00	6.40
tblOffRoadEquipment	UsageHours	8.00	0.96
tblTripsAndVMT	HaulingTripNumber	121,250.00	161,667.00
tblTripsAndVMT	WorkerTripNumber	28.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	2.4114	42.2510	17.6659	0.1337	9.6140	0.8989	10.5128	4.1854	0.8361	5.0215						
2023	1.8665	34.6502	16.4082	0.1286	9.6142	0.7433	10.3575	4.1855	0.6904	4.8759						
2024	1.8184	33.8014	16.1141	0.1270	9.6144	0.7077	10.3221	4.1856	0.6576	4.8432						
2025	1.7021	32.0277	15.3148	0.1251	9.6146	0.6330	10.2477	4.1857	0.5889	4.7746						
2026	1.6981	31.8437	15.3128	0.1232	9.6148	0.6318	10.2466	4.1857	0.5877	4.7735						
Maximum	**2.4114**	**42.2510**	**17.6659**	**0.1337**	**9.6148**	**0.8989**	**10.5128**	**4.1857**	**0.8361**	**5.0215**						

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	2.4114	42.2510	17.6659	0.1337	5.9265	0.8989	6.8254	2.3217	0.8361	3.1578						
2023	1.8665	34.6502	16.4082	0.1286	5.9268	0.7433	6.6701	2.3217	0.6904	3.0121						
2024	1.8184	33.8014	16.1141	0.1270	5.9270	0.7077	6.6347	2.3218	0.6576	2.9795						
2025	1.7021	32.0277	15.3148	0.1251	5.9272	0.6330	6.5602	2.3219	0.5889	2.9108						
2026	1.6981	31.8437	15.3128	0.1232	5.9273	0.6318	6.5591	2.3220	0.5877	2.9097						
Maximum	**2.4114**	**42.2510**	**17.6659**	**0.1337**	**5.9273**	**0.8989**	**6.8254**	**2.3220**	**0.8361**	**3.1578**						

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**38.35**	**0.00**	**35.67**	**44.53**	**0.00**	**38.37**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.4000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Total	**4.4000e-004**	**4.0000e-005**	**4.8000e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**						

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.4000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Total	**4.4000e-004**	**4.0000e-005**	**4.8000e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**						

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	6/1/2022	3/31/2026	5	1000	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 540

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	0.32	444	0.38
Grading	Excavators	1	0.64	345	0.38
Grading	Excavators	1	4.80	264	0.38
Grading	Graders	1	0.64	183	0.41
Grading	Off-Highway Trucks	1	3.20	380	0.38
Grading	Plate Compactors	1	1.60	284	0.43
Grading	Rollers	1	0.64	33	0.38
Grading	Rubber Tired Dozers	1	3.20	215	0.40
Grading	Rubber Tired Dozers	1	4.80	307	0.40
Grading	Tractors/Loaders/Backhoes	1	6.40	315	0.37

Grading	Tractors/Loaders/Backhoes	1	0.96	197	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	11	10.00	0.00	161,667.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7045	0.0000	6.7045	3.3887	0.0000	3.3887						
Off-Road	1.6210	15.3944	11.5251	0.0304		0.6489	0.6489		0.5970	0.5970						
Total	**1.6210**	**15.3944**	**11.5251**	**0.0304**	**6.7045**	**0.6489**	**7.3534**	**3.3887**	**0.5970**	**3.9857**						

3.2 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7613	26.8390	5.8826	0.1026	2.8274	0.2495	3.0769	0.7750	0.2387	1.0137						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0291	0.0175	0.2582	7.4000e-004	0.0822	4.3000e-004	0.0826	0.0218	3.9000e-004	0.0222						
Total	**0.7904**	**26.8566**	**6.1407**	**0.1033**	**2.9095**	**0.2500**	**3.1595**	**0.7968**	**0.2391**	**1.0359**						

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0170	0.0000	3.0170	1.5249	0.0000	1.5249						
Off-Road	1.6210	15.3944	11.5251	0.0304		0.6489	0.6489		0.5970	0.5970						
Total	**1.6210**	**15.3944**	**11.5251**	**0.0304**	**3.0170**	**0.6489**	**3.6659**	**1.5249**	**0.5970**	**2.1219**						

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7613	26.8390	5.8826	0.1026	2.8274	0.2495	3.0769	0.7750	0.2387	1.0137						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0291	0.0175	0.2582	7.4000e-004	0.0822	4.3000e-004	0.0826	0.0218	3.9000e-004	0.0222						
Total	**0.7904**	**26.8566**	**6.1407**	**0.1033**	**2.9095**	**0.2500**	**3.1595**	**0.7968**	**0.2391**	**1.0359**						

3.2 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7045	0.0000	6.7045	3.3887	0.0000	3.3887						
Off-Road	1.4935	13.5082	11.0388	0.0304		0.5657	0.5657		0.5205	0.5205						
Total	**1.4935**	**13.5082**	**11.0388**	**0.0304**	**6.7045**	**0.5657**	**7.2702**	**3.3887**	**0.5205**	**3.9091**						

3.2 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3460	21.1264	5.1310	0.0975	2.8276	0.1772	3.0048	0.7751	0.1695	0.9446						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0270	0.0155	0.2384	7.1000e-004	0.0822	4.1000e-004	0.0826	0.0218	3.7000e-004	0.0222						
Total	**0.3731**	**21.1420**	**5.3694**	**0.0982**	**2.9098**	**0.1776**	**3.0874**	**0.7968**	**0.1699**	**0.9667**						

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0170	0.0000	3.0170	1.5249	0.0000	1.5249						
Off-Road	1.4935	13.5082	11.0388	0.0304		0.5657	0.5657		0.5205	0.5205						
Total	**1.4935**	**13.5082**	**11.0388**	**0.0304**	**3.0170**	**0.5657**	**3.5827**	**1.5249**	**0.5205**	**2.0454**						

3.2 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3460	21.1264	5.1310	0.0975	2.8276	0.1772	3.0048	0.7751	0.1695	0.9446						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0270	0.0155	0.2384	7.1000e-004	0.0822	4.1000e-004	0.0826	0.0218	3.7000e-004	0.0222						
Total	**0.3731**	**21.1420**	**5.3694**	**0.0982**	**2.9098**	**0.1776**	**3.0874**	**0.7968**	**0.1699**	**0.9667**						

3.2 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7045	0.0000	6.7045	3.3887	0.0000	3.3887						
Off-Road	1.4485	12.6487	10.7327	0.0304		0.5286	0.5286		0.4863	0.4863						
Total	**1.4485**	**12.6487**	**10.7327**	**0.0304**	**6.7045**	**0.5286**	**7.2330**	**3.3887**	**0.4863**	**3.8749**						

3.2 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3447	21.1389	5.1596	0.0959	2.8278	0.1788	3.0066	0.7751	0.1710	0.9461						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0252	0.0139	0.2218	6.9000e-004	0.0822	3.9000e-004	0.0825	0.0218	3.6000e-004	0.0221						
Total	**0.3700**	**21.1528**	**5.3814**	**0.0966**	**2.9100**	**0.1791**	**3.0891**	**0.7969**	**0.1714**	**0.9683**						

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0170	0.0000	3.0170	1.5249	0.0000	1.5249						
Off-Road	1.4485	12.6487	10.7327	0.0304		0.5286	0.5286		0.4863	0.4863						
Total	**1.4485**	**12.6487**	**10.7327**	**0.0304**	**3.0170**	**0.5286**	**3.5456**	**1.5249**	**0.4863**	**2.0112**						

3.2 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3447	21.1389	5.1596	0.0959	2.8278	0.1788	3.0066	0.7751	0.1710	0.9461						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0252	0.0139	0.2218	6.9000e-004	0.0822	3.9000e-004	0.0825	0.0218	3.6000e-004	0.0221						
Total	**0.3700**	**21.1528**	**5.3814**	**0.0966**	**2.9100**	**0.1791**	**3.0891**	**0.7969**	**0.1714**	**0.9683**						

3.2 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7045	0.0000	6.7045	3.3887	0.0000	3.3887						
Off-Road	1.3358	11.0093	9.9321	0.0304		0.4543	0.4543		0.4179	0.4179						
Total	**1.3358**	**11.0093**	**9.9321**	**0.0304**	**6.7045**	**0.4543**	**7.1587**	**3.3887**	**0.4179**	**3.8066**						

3.2 Grading - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3425	21.0059	5.1753	0.0940	2.8280	0.1784	3.0064	0.7752	0.1707	0.9459						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0237	0.0125	0.2075	6.7000e-004	0.0822	3.7000e-004	0.0825	0.0218	3.4000e-004	0.0221						
Total	**0.3662**	**21.0184**	**5.3828**	**0.0947**	**2.9102**	**0.1788**	**3.0889**	**0.7970**	**0.1710**	**0.9680**						

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0170	0.0000	3.0170	1.5249	0.0000	1.5249						
Off-Road	1.3358	11.0093	9.9321	0.0304		0.4543	0.4543		0.4179	0.4179						
Total	**1.3358**	**11.0093**	**9.9321**	**0.0304**	**3.0170**	**0.4543**	**3.4713**	**1.5249**	**0.4179**	**1.9428**						

3.2 Grading - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3425	21.0059	5.1753	0.0940	2.8280	0.1784	3.0064	0.7752	0.1707	0.9459						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0237	0.0125	0.2075	6.7000e-004	0.0822	3.7000e-004	0.0825	0.0218	3.4000e-004	0.0221						
Total	**0.3662**	**21.0184**	**5.3828**	**0.0947**	**2.9102**	**0.1788**	**3.0889**	**0.7970**	**0.1710**	**0.9680**						

3.2 Grading - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7045	0.0000	6.7045	3.3887	0.0000	3.3887						
Off-Road	1.3358	11.0093	9.9321	0.0304		0.4543	0.4543		0.4179	0.4179						
Total	**1.3358**	**11.0093**	**9.9321**	**0.0304**	**6.7045**	**0.4543**	**7.1587**	**3.3887**	**0.4179**	**3.8066**						

3.2 Grading - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3399	20.8231	5.1851	0.0921	2.8282	0.1772	3.0054	0.7753	0.1695	0.9448						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0224	0.0114	0.1956	6.5000e-004	0.0822	3.5000e-004	0.0825	0.0218	3.2000e-004	0.0221						
Total	**0.3623**	**20.8344**	**5.3807**	**0.0928**	**2.9103**	**0.1775**	**3.0879**	**0.7971**	**0.1698**	**0.9669**						

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0170	0.0000	3.0170	1.5249	0.0000	1.5249						
Off-Road	1.3358	11.0093	9.9321	0.0304		0.4543	0.4543		0.4179	0.4179						
Total	**1.3358**	**11.0093**	**9.9321**	**0.0304**	**3.0170**	**0.4543**	**3.4713**	**1.5249**	**0.4179**	**1.9428**						

3.2 Grading - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3399	20.8231	5.1851	0.0921	2.8282	0.1772	3.0054	0.7753	0.1695	0.9448						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0224	0.0114	0.1956	6.5000e-004	0.0822	3.5000e-004	0.0825	0.0218	3.2000e-004	0.0221						
Total	**0.3623**	**20.8344**	**5.3807**	**0.0928**	**2.9103**	**0.1775**	**3.0879**	**0.7971**	**0.1698**	**0.9669**						

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.554285	0.058871	0.188253	0.120585	0.022598	0.005697	0.010798	0.007525	0.000977	0.000545	0.026246	0.000848	0.002771

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.4000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						
Unmitigated	4.4000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000						
Landscaping	4.4000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						
Total	**4.4000e-004**	**4.0000e-005**	**4.8000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**						

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000						
Landscaping	4.4000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						
Total	**4.4000e-004**	**4.0000e-005**	**4.8000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**						

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarry Reclamation Plan Construction - Criteria Pollutants Only

Bay Area AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	47.13	User Defined Unit	47.13	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2026
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage adjusted per site plan.

Construction Phase - Total days set to entire construction period.

Off-road Equipment - HP updated per applicant-provided equipment information.

Off-road Equipment - HP updated per applicant-provided equipment information.

Grading -

Trips and VMT - Trip rates adjusted per project-specific traffic report by W-Trans.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	75.00	1,000.00
tblConstructionPhase	PhaseEndDate	11/4/2025	3/31/2026

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	PhaseStartDate	1/4/2023	6/1/2022
tblGrading	MaterialImported	0.00	970,000.00
tblLandUse	LotAcreage	0.00	47.13
tblOffRoadEquipment	HorsePower	158.00	444.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	158.00	264.00
tblOffRoadEquipment	HorsePower	187.00	183.00
tblOffRoadEquipment	HorsePower	402.00	380.00
tblOffRoadEquipment	HorsePower	8.00	284.00
tblOffRoadEquipment	HorsePower	80.00	33.00
tblOffRoadEquipment	HorsePower	247.00	215.00
tblOffRoadEquipment	HorsePower	247.00	307.00
tblOffRoadEquipment	HorsePower	97.00	315.00
tblOffRoadEquipment	HorsePower	97.00	197.00
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.32
tblOffRoadEquipment	UsageHours	8.00	0.64
tblOffRoadEquipment	UsageHours	8.00	4.80
tblOffRoadEquipment	UsageHours	8.00	0.64
tblOffRoadEquipment	UsageHours	8.00	3.20
tblOffRoadEquipment	UsageHours	8.00	4.80
tblOffRoadEquipment	UsageHours	8.00	6.40
tblOffRoadEquipment	UsageHours	8.00	0.96
tblTripsAndVMT	HaulingTripNumber	121,250.00	161,667.00
tblTripsAndVMT	WorkerTripNumber	28.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	2.3947	43.7351	17.7484	0.1337	9.6140	0.8992	10.5132	4.1854	0.8365	5.0219						
2023	1.8462	35.8718	16.4643	0.1286	9.6142	0.7436	10.3578	4.1855	0.6906	4.8761						
2024	1.7982	35.0244	16.1714	0.1270	9.6144	0.7080	10.3224	4.1856	0.6579	4.8435						
2025	1.6819	33.2438	15.3729	0.1252	9.6146	0.6333	10.2479	4.1857	0.5892	4.7749						
2026	1.6780	33.0504	15.3710	0.1232	9.6148	0.6320	10.2468	4.1857	0.5880	4.7737						
Maximum	**2.3947**	**43.7351**	**17.7484**	**0.1337**	**9.6148**	**0.8992**	**10.5132**	**4.1857**	**0.8365**	**5.0219**						

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	2.3947	43.7351	17.7484	0.1337	5.9265	0.8992	6.8258	2.3217	0.8365	3.1581						
2023	1.8462	35.8718	16.4643	0.1286	5.9268	0.7436	6.6704	2.3217	0.6906	3.0124						
2024	1.7982	35.0244	16.1714	0.1270	5.9270	0.7080	6.6349	2.3218	0.6579	2.9797						
2025	1.6819	33.2438	15.3729	0.1252	5.9272	0.6333	6.5605	2.3219	0.5892	2.9111						
2026	1.6780	33.0504	15.3710	0.1232	5.9273	0.6320	6.5594	2.3220	0.5880	2.9099						
Maximum	**2.3947**	**43.7351**	**17.7484**	**0.1337**	**5.9273**	**0.8992**	**6.8258**	**2.3220**	**0.8365**	**3.1581**						

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**38.35**	**0.00**	**35.67**	**44.53**	**0.00**	**38.36**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.4000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Total	**4.4000e-004**	**4.0000e-005**	**4.8000e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**						

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.4000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Total	**4.4000e-004**	**4.0000e-005**	**4.8000e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**						

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	6/1/2022	3/31/2026	5	1000	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 540

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	0.32	444	0.38
Grading	Excavators	1	0.64	345	0.38
Grading	Excavators	1	4.80	264	0.38
Grading	Graders	1	0.64	183	0.41
Grading	Off-Highway Trucks	1	3.20	380	0.38
Grading	Plate Compactors	1	1.60	284	0.43
Grading	Rollers	1	0.64	33	0.38
Grading	Rubber Tired Dozers	1	3.20	215	0.40
Grading	Rubber Tired Dozers	1	4.80	307	0.40
Grading	Tractors/Loaders/Backhoes	1	6.40	315	0.37

Grading	Tractors/Loaders/Backhoes	1	0.96	197	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	11	10.00	0.00	161,667.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7045	0.0000	6.7045	3.3887	0.0000	3.3887						
Off-Road	1.6210	15.3944	11.5251	0.0304		0.6489	0.6489		0.5970	0.5970						
Total	**1.6210**	**15.3944**	**11.5251**	**0.0304**	**6.7045**	**0.6489**	**7.3534**	**3.3887**	**0.5970**	**3.9857**						

3.2 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7440	28.3190	5.9771	0.1026	2.8274	0.2499	3.0773	0.7750	0.2391	1.0140						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0297	0.0216	0.2462	6.8000e-004	0.0822	4.3000e-004	0.0826	0.0218	3.9000e-004	0.0222						
Total	**0.7738**	**28.3406**	**6.2233**	**0.1033**	**2.9095**	**0.2503**	**3.1599**	**0.7968**	**0.2395**	**1.0362**						

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0170	0.0000	3.0170	1.5249	0.0000	1.5249						
Off-Road	1.6210	15.3944	11.5251	0.0304		0.6489	0.6489		0.5970	0.5970						
Total	**1.6210**	**15.3944**	**11.5251**	**0.0304**	**3.0170**	**0.6489**	**3.6659**	**1.5249**	**0.5970**	**2.1219**						

3.2 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7440	28.3190	5.9771	0.1026	2.8274	0.2499	3.0773	0.7750	0.2391	1.0140						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0297	0.0216	0.2462	6.8000e-004	0.0822	4.3000e-004	0.0826	0.0218	3.9000e-004	0.0222						
Total	**0.7738**	**28.3406**	**6.2233**	**0.1033**	**2.9095**	**0.2503**	**3.1599**	**0.7968**	**0.2395**	**1.0362**						

3.2 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7045	0.0000	6.7045	3.3887	0.0000	3.3887						
Off-Road	1.4935	13.5082	11.0388	0.0304		0.5657	0.5657		0.5205	0.5205						
Total	**1.4935**	**13.5082**	**11.0388**	**0.0304**	**6.7045**	**0.5657**	**7.2702**	**3.3887**	**0.5205**	**3.9091**						

3.2 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3250	22.3444	5.1971	0.0976	2.8276	0.1775	3.0051	0.7751	0.1698	0.9449						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0277	0.0192	0.2283	6.6000e-004	0.0822	4.1000e-004	0.0826	0.0218	3.7000e-004	0.0222						
Total	**0.3527**	**22.3636**	**5.4255**	**0.0982**	**2.9098**	**0.1779**	**3.0876**	**0.7968**	**0.1702**	**0.9670**						

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0170	0.0000	3.0170	1.5249	0.0000	1.5249						
Off-Road	1.4935	13.5082	11.0388	0.0304		0.5657	0.5657		0.5205	0.5205						
Total	**1.4935**	**13.5082**	**11.0388**	**0.0304**	**3.0170**	**0.5657**	**3.5827**	**1.5249**	**0.5205**	**2.0454**						

3.2 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3250	22.3444	5.1971	0.0976	2.8276	0.1775	3.0051	0.7751	0.1698	0.9449						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0277	0.0192	0.2283	6.6000e-004	0.0822	4.1000e-004	0.0826	0.0218	3.7000e-004	0.0222						
Total	**0.3527**	**22.3636**	**5.4255**	**0.0982**	**2.9098**	**0.1779**	**3.0876**	**0.7968**	**0.1702**	**0.9670**						

3.2 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7045	0.0000	6.7045	3.3887	0.0000	3.3887						
Off-Road	1.4485	12.6487	10.7327	0.0304		0.5286	0.5286		0.4863	0.4863						
Total	**1.4485**	**12.6487**	**10.7327**	**0.0304**	**6.7045**	**0.5286**	**7.2330**	**3.3887**	**0.4863**	**3.8749**						

3.2 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3237	22.3587	5.2255	0.0960	2.8278	0.1790	3.0069	0.7751	0.1713	0.9464						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0260	0.0171	0.2132	6.4000e-004	0.0822	3.9000e-004	0.0825	0.0218	3.6000e-004	0.0221						
Total	**0.3497**	**22.3757**	**5.4387**	**0.0967**	**2.9100**	**0.1794**	**3.0894**	**0.7969**	**0.1716**	**0.9686**						

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0170	0.0000	3.0170	1.5249	0.0000	1.5249						
Off-Road	1.4485	12.6487	10.7327	0.0304		0.5286	0.5286		0.4863	0.4863						
Total	**1.4485**	**12.6487**	**10.7327**	**0.0304**	**3.0170**	**0.5286**	**3.5456**	**1.5249**	**0.4863**	**2.0112**						

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3237	22.3587	5.2255	0.0960	2.8278	0.1790	3.0069	0.7751	0.1713	0.9464						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0260	0.0171	0.2132	6.4000e-004	0.0822	3.9000e-004	0.0825	0.0218	3.6000e-004	0.0221						
Total	**0.3497**	**22.3757**	**5.4387**	**0.0967**	**2.9100**	**0.1794**	**3.0894**	**0.7969**	**0.1716**	**0.9686**						

3.2 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7045	0.0000	6.7045	3.3887	0.0000	3.3887						
Off-Road	1.3358	11.0093	9.9321	0.0304		0.4543	0.4543		0.4179	0.4179						
Total	**1.3358**	**11.0093**	**9.9321**	**0.0304**	**6.7045**	**0.4543**	**7.1587**	**3.3887**	**0.4179**	**3.8066**						

3.2 Grading - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3215	22.2192	5.2408	0.0941	2.8280	0.1787	3.0067	0.7752	0.1709	0.9461						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0245	0.0154	0.2000	6.2000e-004	0.0822	3.7000e-004	0.0825	0.0218	3.4000e-004	0.0221						
Total	**0.3460**	**22.2346**	**5.4408**	**0.0948**	**2.9102**	**0.1790**	**3.0892**	**0.7970**	**0.1713**	**0.9683**						

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0170	0.0000	3.0170	1.5249	0.0000	1.5249						
Off-Road	1.3358	11.0093	9.9321	0.0304		0.4543	0.4543		0.4179	0.4179						
Total	**1.3358**	**11.0093**	**9.9321**	**0.0304**	**3.0170**	**0.4543**	**3.4713**	**1.5249**	**0.4179**	**1.9428**						

3.2 Grading - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3215	22.2192	5.2408	0.0941	2.8280	0.1787	3.0067	0.7752	0.1709	0.9461						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0245	0.0154	0.2000	6.2000e-004	0.0822	3.7000e-004	0.0825	0.0218	3.4000e-004	0.0221						
Total	**0.3460**	**22.2346**	**5.4408**	**0.0948**	**2.9102**	**0.1790**	**3.0892**	**0.7970**	**0.1713**	**0.9683**						

3.2 Grading - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7045	0.0000	6.7045	3.3887	0.0000	3.3887						
Off-Road	1.3358	11.0093	9.9321	0.0304		0.4543	0.4543		0.4179	0.4179						
Total	**1.3358**	**11.0093**	**9.9321**	**0.0304**	**6.7045**	**0.4543**	**7.1587**	**3.3887**	**0.4179**	**3.8066**						

3.2 Grading - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3189	22.0271	5.2501	0.0922	2.8282	0.1774	3.0056	0.7753	0.1698	0.9450						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0232	0.0140	0.1889	6.0000e-004	0.0822	3.5000e-004	0.0825	0.0218	3.2000e-004	0.0221						
Total	**0.3421**	**22.0411**	**5.4390**	**0.0928**	**2.9103**	**0.1778**	**3.0881**	**0.7971**	**0.1701**	**0.9671**						

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0170	0.0000	3.0170	1.5249	0.0000	1.5249						
Off-Road	1.3358	11.0093	9.9321	0.0304		0.4543	0.4543		0.4179	0.4179						
Total	**1.3358**	**11.0093**	**9.9321**	**0.0304**	**3.0170**	**0.4543**	**3.4713**	**1.5249**	**0.4179**	**1.9428**						

3.2 Grading - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3189	22.0271	5.2501	0.0922	2.8282	0.1774	3.0056	0.7753	0.1698	0.9450						
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Worker	0.0232	0.0140	0.1889	6.0000e-004	0.0822	3.5000e-004	0.0825	0.0218	3.2000e-004	0.0221						
Total	**0.3421**	**22.0411**	**5.4390**	**0.0928**	**2.9103**	**0.1778**	**3.0881**	**0.7971**	**0.1701**	**0.9671**						

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.554285	0.058871	0.188253	0.120585	0.022598	0.005697	0.010798	0.007525	0.000977	0.000545	0.026246	0.000848	0.002771

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.4000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						
Unmitigated	4.4000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000						
Landscaping	4.4000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						
Total	**4.4000e-004**	**4.0000e-005**	**4.8000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**						

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000						
Landscaping	4.4000e-004	4.0000e-005	4.8000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						
Total	**4.4000e-004**	**4.0000e-005**	**4.8000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**						

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarry Reclamation Plan Construction - GHGs Only

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	47.13	User Defined Unit	47.13	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2026
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage adjusted per site plan.

Construction Phase - Total days set to entire construction period.

Off-road Equipment - HP updated per applicant-provided equipment information.

Off-road Equipment - HP updated per applicant-provided equipment information.

Trips and VMT - Trip rates set to zero.

Grading -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	75.00	1,000.00
tblGrading	MaterialImported	0.00	970,000.00

tblLandUse	LotAcreage	0.00	47.13
tblOffRoadEquipment	HorsePower	158.00	444.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	158.00	264.00
tblOffRoadEquipment	HorsePower	187.00	183.00
tblOffRoadEquipment	HorsePower	247.00	215.00
tblOffRoadEquipment	HorsePower	247.00	307.00
tblOffRoadEquipment	HorsePower	97.00	315.00
tblOffRoadEquipment	HorsePower	97.00	197.00
tblOffRoadEquipment	HorsePower	402.00	380.00
tblOffRoadEquipment	HorsePower	8.00	284.00
tblOffRoadEquipment	HorsePower	80.00	33.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.30
tblOffRoadEquipment	UsageHours	8.00	0.60
tblOffRoadEquipment	UsageHours	8.00	4.80
tblOffRoadEquipment	UsageHours	8.00	0.60
tblOffRoadEquipment	UsageHours	8.00	3.20
tblOffRoadEquipment	UsageHours	8.00	4.80
tblOffRoadEquipment	UsageHours	8.00	6.40
tblOffRoadEquipment	UsageHours	8.00	1.00
tblTripsAndVMT	HaulingTripNumber	121,250.00	0.00
tblTripsAndVMT	WorkerTripNumber	28.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022											0.0000	203.3369	203.3369	0.0658	0.0000	204.9810
2023											0.0000	345.6613	345.6613	0.1118	0.0000	348.4561
2024											0.0000	348.4214	348.4214	0.1127	0.0000	351.2386
2025											0.0000	347.2784	347.2784	0.1123	0.0000	350.0863
2026											0.0000	85.1564	85.1564	0.0275	0.0000	85.8449
Maximum											**0.0000**	**348.4214**	**348.4214**	**0.1127**	**0.0000**	**351.2386**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022											0.0000	203.3367	203.3367	0.0658	0.0000	204.9807
2023											0.0000	345.6609	345.6609	0.1118	0.0000	348.4557
2024											0.0000	348.4210	348.4210	0.1127	0.0000	351.2381
2025											0.0000	347.2780	347.2780	0.1123	0.0000	350.0859
2026											0.0000	85.1563	85.1563	0.0275	0.0000	85.8448
Maximum											**0.0000**	**348.4210**	**348.4210**	**0.1127**	**0.0000**	**351.2381**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	8.4000e-004	8.4000e-004	0.0000	0.0000	9.0000e-004
Energy											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**8.4000e-004**	**8.4000e-004**	**0.0000**	**0.0000**	**9.0000e-004**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	8.4000e-004	8.4000e-004	0.0000	0.0000	9.0000e-004
Energy											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**8.4000e-004**	**8.4000e-004**	**0.0000**	**0.0000**	**9.0000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	6/1/2022	3/31/2026	5	1000	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 537.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	0.30	444	0.38
Grading	Excavators	1	0.60	345	0.38
Grading	Excavators	1	4.80	264	0.38
Grading	Graders	1	0.60	183	0.41
Grading	Off-Highway Trucks	1	3.20	380	0.38
Grading	Plate Compactors	1	1.60	284	0.43
Grading	Rollers	1	0.60	33	0.38
Grading	Rubber Tired Dozers	1	3.20	215	0.40
Grading	Rubber Tired Dozers	1	4.80	307	0.40
Grading	Tractors/Loaders/Backhoes	1	6.40	315	0.37
Grading	Tractors/Loaders/Backhoes	1	1.00	197	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	11	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	203.3369	203.3369	0.0658	0.0000	204.9810
Total											**0.0000**	**203.3369**	**203.3369**	**0.0658**	**0.0000**	**204.9810**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	203.3367	203.3367	0.0658	0.0000	204.9807
Total											**0.0000**	**203.3367**	**203.3367**	**0.0658**	**0.0000**	**204.9807**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	345.6613	345.6613	0.1118	0.0000	348.4561
Total											**0.0000**	**345.6613**	**345.6613**	**0.1118**	**0.0000**	**348.4561**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	345.6609	345.6609	0.1118	0.0000	348.4557
Total											**0.0000**	**345.6609**	**345.6609**	**0.1118**	**0.0000**	**348.4557**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	348.4214	348.4214	0.1127	0.0000	351.2386
Total											**0.0000**	**348.4214**	**348.4214**	**0.1127**	**0.0000**	**351.2386**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	348.4210	348.4210	0.1127	0.0000	351.2381
Total											**0.0000**	**348.4210**	**348.4210**	**0.1127**	**0.0000**	**351.2381**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	347.2784	347.2784	0.1123	0.0000	350.0863
Total											**0.0000**	**347.2784**	**347.2784**	**0.1123**	**0.0000**	**350.0863**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	347.2780	347.2780	0.1123	0.0000	350.0859
Total											**0.0000**	**347.2780**	**347.2780**	**0.1123**	**0.0000**	**350.0859**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	85.1564	85.1564	0.0275	0.0000	85.8449
Total											**0.0000**	**85.1564**	**85.1564**	**0.0275**	**0.0000**	**85.8449**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Grading - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	85.1563	85.1563	0.0275	0.0000	85.8448
Total											**0.0000**	**85.1563**	**85.1563**	**0.0275**	**0.0000**	**85.8448**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.554285	0.058871	0.188253	0.120585	0.022598	0.005697	0.010798	0.007525	0.000977	0.000545	0.026246	0.000848	0.002771

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	8.4000e-004	8.4000e-004	0.0000	0.0000	9.0000e-004
Unmitigated											0.0000	8.4000e-004	8.4000e-004	0.0000	0.0000	9.0000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	8.4000e-004	8.4000e-004	0.0000	0.0000	9.0000e-004
Total											**0.0000**	**8.4000e-004**	**8.4000e-004**	**0.0000**	**0.0000**	**9.0000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	8.4000e-004	8.4000e-004	0.0000	0.0000	9.0000e-004
Total											**0.0000**	**8.4000e-004**	**8.4000e-004**	**0.0000**	**0.0000**	**9.0000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarry Reclamation Plan Construction - GHGs Only

Bay Area AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	47.13	User Defined Unit	47.13	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2026
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage adjusted per site plan.

Construction Phase - Total days set to entire construction period.

Off-road Equipment - HP updated per applicant-provided equipment information.

Off-road Equipment - HP updated per applicant-provided equipment information.

Trips and VMT - Trip rates set to zero.

Grading -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	75.00	1,000.00
tblGrading	MaterialImported	0.00	970,000.00

tblLandUse	LotAcreage	0.00	47.13
tblOffRoadEquipment	HorsePower	158.00	444.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	158.00	264.00
tblOffRoadEquipment	HorsePower	187.00	183.00
tblOffRoadEquipment	HorsePower	247.00	215.00
tblOffRoadEquipment	HorsePower	247.00	307.00
tblOffRoadEquipment	HorsePower	97.00	315.00
tblOffRoadEquipment	HorsePower	97.00	197.00
tblOffRoadEquipment	HorsePower	402.00	380.00
tblOffRoadEquipment	HorsePower	8.00	284.00
tblOffRoadEquipment	HorsePower	80.00	33.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.30
tblOffRoadEquipment	UsageHours	8.00	0.60
tblOffRoadEquipment	UsageHours	8.00	4.80
tblOffRoadEquipment	UsageHours	8.00	0.60
tblOffRoadEquipment	UsageHours	8.00	3.20
tblOffRoadEquipment	UsageHours	8.00	4.80
tblOffRoadEquipment	UsageHours	8.00	6.40
tblOffRoadEquipment	UsageHours	8.00	1.00
tblTripsAndVMT	HaulingTripNumber	121,250.00	0.00
tblTripsAndVMT	WorkerTripNumber	28.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022											0.0000	2,929.9420	2,929.9420	0.9476	0.0000	2,953.6321
2023											0.0000	2,930.9719	2,930.9719	0.9479	0.0000	2,954.6703
2024											0.0000	2,931.8231	2,931.8231	0.9482	0.0000	2,955.5284
2025											0.0000	2,933.4016	2,933.4016	0.9487	0.0000	2,957.1197
2026											0.0000	2,933.4016	2,933.4016	0.9487	0.0000	2,957.1197
Maximum											**0.0000**	**2,933.4016**	**2,933.4016**	**0.9487**	**0.0000**	**2,957.1197**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022											0.0000	2,929.9420	2,929.9420	0.9476	0.0000	2,953.6321
2023											0.0000	2,930.9719	2,930.9719	0.9479	0.0000	2,954.6703
2024											0.0000	2,931.8231	2,931.8231	0.9482	0.0000	2,955.5284
2025											0.0000	2,933.4016	2,933.4016	0.9487	0.0000	2,957.1197
2026											0.0000	2,933.4016	2,933.4016	0.9487	0.0000	2,957.1197
Maximum											**0.0000**	**2,933.4016**	**2,933.4016**	**0.9487**	**0.0000**	**2,957.1197**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area												0.0103	0.0103	3.0000e-005		0.0110
Energy												0.0000	0.0000	0.0000	0.0000	0.0000
Mobile												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0103**	**0.0103**	**3.0000e-005**	**0.0000**	**0.0110**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area												0.0103	0.0103	3.0000e-005		0.0110
Energy												0.0000	0.0000	0.0000	0.0000	0.0000
Mobile												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0103**	**0.0103**	**3.0000e-005**	**0.0000**	**0.0110**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	6/1/2022	3/31/2026	5	1000	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 537.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	0.30	444	0.38
Grading	Excavators	1	0.60	345	0.38
Grading	Excavators	1	4.80	264	0.38
Grading	Graders	1	0.60	183	0.41
Grading	Off-Highway Trucks	1	3.20	380	0.38
Grading	Plate Compactors	1	1.60	284	0.43
Grading	Rollers	1	0.60	33	0.38
Grading	Rubber Tired Dozers	1	3.20	215	0.40
Grading	Rubber Tired Dozers	1	4.80	307	0.40
Grading	Tractors/Loaders/Backhoes	1	6.40	315	0.37

Grading	Tractors/Loaders/Backhoes	1	1.00	197	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	11	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road												2,929.9420	2,929.9420	0.9476		2,953.6321
Total												**2,929.9420**	**2,929.9420**	**0.9476**		**2,953.6321**

3.2 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road											0.0000	2,929.942 0	2,929.942 0	0.9476		2,953.632 1
Total											**0.0000**	**2,929.942 0**	**2,929.942 0**	**0.9476**		**2,953.632 1**

3.2 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road												2,930.9719	2,930.9719	0.9479		2,954.6703
Total												**2,930.9719**	**2,930.9719**	**0.9479**		**2,954.6703**

3.2 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road											0.0000	2,930.971 9	2,930.971 9	0.9479		2,954.670 3
Total											**0.0000**	**2,930.971 9**	**2,930.971 9**	**0.9479**		**2,954.670 3**

3.2 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road												2,931.8231	2,931.8231	0.9482		2,955.5284
Total												**2,931.8231**	**2,931.8231**	**0.9482**		**2,955.5284**

3.2 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road											0.0000	2,931.823 1	2,931.823 1	0.9482		2,955.528 4
Total											**0.0000**	**2,931.823 1**	**2,931.823 1**	**0.9482**		**2,955.528 4**

3.2 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road												2,933.401 6	2,933.401 6	0.9487		2,957.119 7
Total												**2,933.401 6**	**2,933.401 6**	**0.9487**		**2,957.119 7**

3.2 Grading - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road											0.0000	2,933.4016	2,933.4016	0.9487		2,957.1197
Total											**0.0000**	**2,933.4016**	**2,933.4016**	**0.9487**		**2,957.1197**

3.2 Grading - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road												2,933.4016	2,933.4016	0.9487		2,957.1197
Total												**2,933.4016**	**2,933.4016**	**0.9487**		**2,957.1197**

3.2 Grading - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road											0.0000	2,933.401 6	2,933.401 6	0.9487		2,957.119 7
Total											**0.0000**	**2,933.401 6**	**2,933.401 6**	**0.9487**		**2,957.119 7**

3.2 Grading - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated												0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated												0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.554285	0.058871	0.188253	0.120585	0.022598	0.005697	0.010798	0.007525	0.000977	0.000545	0.026246	0.000848	0.002771

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated												0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated												0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0												0.0000	0.0000	0.0000	0.0000	0.0000
Total													**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0												0.0000	0.0000	0.0000	0.0000	0.0000
Total													**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated												0.0103	0.0103	3.0000e-005		0.0110
Unmitigated												0.0103	0.0103	3.0000e-005		0.0110

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating													0.0000			0.0000
Consumer Products													0.0000			0.0000
Landscaping												0.0103	0.0103	3.0000e-005		0.0110
Total												**0.0103**	**0.0103**	**3.0000e-005**		**0.0110**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating													0.0000			0.0000
Consumer Products													0.0000			0.0000
Landscaping												0.0103	0.0103	3.0000e-005		0.0110
Total												**0.0103**	**0.0103**	**3.0000e-005**		**0.0110**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarry Reclamation Plan Construction - GHGs Only

Bay Area AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	47.13	User Defined Unit	47.13	0.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 64

Climate Zone 5 **Operational Year** 2026

Utility Company Pacific Gas and Electric Company

CO2 Intensity (lb/MWhr) 203.98 **CH4 Intensity (lb/MWhr)** 0.033 **N2O Intensity (lb/MWhr)** 0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage adjusted per site plan.

Construction Phase - Total days set to entire construction period.

Off-road Equipment - HP updated per applicant-provided equipment information.

Off-road Equipment - HP updated per applicant-provided equipment information.

Trips and VMT - Trip rates set to zero.

Grading -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	75.00	1,000.00
tblGrading	MaterialImported	0.00	970,000.00

tblLandUse	LotAcreage	0.00	47.13
tblOffRoadEquipment	HorsePower	158.00	444.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	158.00	264.00
tblOffRoadEquipment	HorsePower	187.00	183.00
tblOffRoadEquipment	HorsePower	247.00	215.00
tblOffRoadEquipment	HorsePower	247.00	307.00
tblOffRoadEquipment	HorsePower	97.00	315.00
tblOffRoadEquipment	HorsePower	97.00	197.00
tblOffRoadEquipment	HorsePower	402.00	380.00
tblOffRoadEquipment	HorsePower	8.00	284.00
tblOffRoadEquipment	HorsePower	80.00	33.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.30
tblOffRoadEquipment	UsageHours	8.00	0.60
tblOffRoadEquipment	UsageHours	8.00	4.80
tblOffRoadEquipment	UsageHours	8.00	0.60
tblOffRoadEquipment	UsageHours	8.00	3.20
tblOffRoadEquipment	UsageHours	8.00	4.80
tblOffRoadEquipment	UsageHours	8.00	6.40
tblOffRoadEquipment	UsageHours	8.00	1.00
tblTripsAndVMT	HaulingTripNumber	121,250.00	0.00
tblTripsAndVMT	WorkerTripNumber	28.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022											0.0000	2,929.9420	2,929.9420	0.9476	0.0000	2,953.6321
2023											0.0000	2,930.9719	2,930.9719	0.9479	0.0000	2,954.6703
2024											0.0000	2,931.8231	2,931.8231	0.9482	0.0000	2,955.5284
2025											0.0000	2,933.4016	2,933.4016	0.9487	0.0000	2,957.1197
2026											0.0000	2,933.4016	2,933.4016	0.9487	0.0000	2,957.1197
Maximum											**0.0000**	**2,933.4016**	**2,933.4016**	**0.9487**	**0.0000**	**2,957.1197**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022											0.0000	2,929.9420	2,929.9420	0.9476	0.0000	2,953.6321
2023											0.0000	2,930.9719	2,930.9719	0.9479	0.0000	2,954.6703
2024											0.0000	2,931.8231	2,931.8231	0.9482	0.0000	2,955.5284
2025											0.0000	2,933.4016	2,933.4016	0.9487	0.0000	2,957.1197
2026											0.0000	2,933.4016	2,933.4016	0.9487	0.0000	2,957.1197
Maximum											**0.0000**	**2,933.4016**	**2,933.4016**	**0.9487**	**0.0000**	**2,957.1197**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area												0.0103	0.0103	3.0000e-005		0.0110
Energy												0.0000	0.0000	0.0000	0.0000	0.0000
Mobile												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0103**	**0.0103**	**3.0000e-005**	**0.0000**	**0.0110**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area												0.0103	0.0103	3.0000e-005		0.0110
Energy												0.0000	0.0000	0.0000	0.0000	0.0000
Mobile												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0103**	**0.0103**	**3.0000e-005**	**0.0000**	**0.0110**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	6/1/2022	3/31/2026	5	1000	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 537.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	0.30	444	0.38
Grading	Excavators	1	0.60	345	0.38
Grading	Excavators	1	4.80	264	0.38
Grading	Graders	1	0.60	183	0.41
Grading	Off-Highway Trucks	1	3.20	380	0.38
Grading	Plate Compactors	1	1.60	284	0.43
Grading	Rollers	1	0.60	33	0.38
Grading	Rubber Tired Dozers	1	3.20	215	0.40
Grading	Rubber Tired Dozers	1	4.80	307	0.40
Grading	Tractors/Loaders/Backhoes	1	6.40	315	0.37

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading	Tractors/Loaders/Backhoes	1	1.00	197	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	11	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road												2,929.942 0	2,929.942 0	0.9476		2,953.632 1
Total												**2,929.942 0**	**2,929.942 0**	**0.9476**		**2,953.632 1**

3.2 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road											0.0000	2,929.942 0	2,929.942 0	0.9476		2,953.632 1
Total											**0.0000**	**2,929.942 0**	**2,929.942 0**	**0.9476**		**2,953.632 1**

3.2 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road												2,930.9719	2,930.9719	0.9479		2,954.6703
Total												**2,930.9719**	**2,930.9719**	**0.9479**		**2,954.6703**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road											0.0000	2,930.971 9	2,930.971 9	0.9479		2,954.670 3
Total											**0.0000**	**2,930.971 9**	**2,930.971 9**	**0.9479**		**2,954.670 3**

3.2 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road												2,931.8231	2,931.8231	0.9482		2,955.5284
Total												**2,931.8231**	**2,931.8231**	**0.9482**		**2,955.5284**

3.2 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road											0.0000	2,931.8231	2,931.8231	0.9482		2,955.5284
Total											**0.0000**	**2,931.8231**	**2,931.8231**	**0.9482**		**2,955.5284**

3.2 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road												2,933.4016	2,933.4016	0.9487		2,957.1197
Total												**2,933.4016**	**2,933.4016**	**0.9487**		**2,957.1197**

3.2 Grading - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road											0.0000	2,933.4016	2,933.4016	0.9487		2,957.1197
Total											**0.0000**	**2,933.4016**	**2,933.4016**	**0.9487**		**2,957.1197**

3.2 Grading - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road												2,933.4016	2,933.4016	0.9487		2,957.1197
Total												**2,933.4016**	**2,933.4016**	**0.9487**		**2,957.1197**

3.2 Grading - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust													0.0000			0.0000
Off-Road											0.0000	2,933.4016	2,933.4016	0.9487		2,957.1197
Total											**0.0000**	**2,933.4016**	**2,933.4016**	**0.9487**		**2,957.1197**

3.2 Grading - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling												0.0000	0.0000	0.0000	0.0000	0.0000
Vendor												0.0000	0.0000	0.0000	0.0000	0.0000
Worker												0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated												0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated												0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.554285	0.058871	0.188253	0.120585	0.022598	0.005697	0.010798	0.007525	0.000977	0.000545	0.026246	0.000848	0.002771

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated												0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated												0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0												0.0000	0.0000	0.0000	0.0000	0.0000
Total													**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0												0.0000	0.0000	0.0000	0.0000	0.0000
Total													**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated												0.0103	0.0103	3.0000e-005		0.0110
Unmitigated												0.0103	0.0103	3.0000e-005		0.0110

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating													0.0000			0.0000
Consumer Products													0.0000			0.0000
Landscaping												0.0103	0.0103	3.0000e-005		0.0110
Total												**0.0103**	**0.0103**	**3.0000e-005**		**0.0110**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating													0.0000			0.0000
Consumer Products													0.0000			0.0000
Landscaping												0.0103	0.0103	3.0000e-005		0.0110
Total												**0.0103**	**0.0103**	**3.0000e-005**		**0.0110**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX G

Rockaway Quarry Reclamation Project

Greenhouse Gas Emissions Analysis Study

prepared for

Baylands Soil Pacifica, LLC
225 3rd Street
Oakland, California 94607

prepared by

Rincon Consultants, Inc.
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July 2020

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Tables

Appendices

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1 Project Description

1.1 Introduction

This study analyzes the potential greenhouse gas (GHG) impacts of the Rockaway Quarry Reclamation Project (herein referred to as “proposed project” or “project”) in Pacifica, California. Rincon Consultants, Inc. (Rincon) prepared this study for Baylands Soil Pacifica, LLC, for use in support of environmental documentation being prepared for the project pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to analyze the project’s GHG impacts related to the change in vehicle miles traveled (VMT) associated with truck trips hauling soil to the project site.

1.2 Project Summary

Project Location

The project site is approximately 47.1 acres along the Pacific Ocean, south of Mori Point and north of Rockaway Beach, in the City of Pacifica. Caldera Creek runs along the eastern edge from the northeast to the southwest and terminating at Rockaway Beach. The site is adjacent to State Route 1, which runs north-south along the frontage of the project site in the city of Pacifica. State Route 1 is classified as a multi-lane highway in the project site vicinity and becomes a freeway approximately 0.5 mile north of the project site at its connection with Interstate 280 north of Pacifica. Along the project frontage, State Route 1 has two 12-foot travel lanes in each direction with a concrete median barrier. Annual average daily traffic for State Route 1 near the project site is 54,000 vehicles (W-Trans, 2020).

Project Description

The proposed project would involve import of approximately 970,000 cubic yards (cy) of soil to the Rockaway Quarry for reclamation activities. The project would be split into four sub-phases that would occur over four years and would result in an estimated annual import of approximately 242,500 cy of soil to the project site. The project is expected to take 48 months to complete; however, it is possible the project could be completed sooner. The project would require approximately five employees, three of which would be existing employees of Baylands Soil Pacifica and two of which would be new employees, ideally local Pacifica residents.

Inbound trucks would travel from the north to access the project site via southbound State Route 1 through the Old Quarry Road connection, which is an existing dirt access road located about 0.3 mile south of Reina Del Mar Avenue.[1] Vehicular egress from the site would be accommodated at the existing traffic signal at State Route 1/Reina Del Mar Avenue intersection at which trucks would turn left onto State Route 1 and return to the north via Interstate 280.

[1] This access point is currently blocked by large boulders that would be removed as part of the access plan.

2 Methodology

2.1 Trip Generation and Vehicle Miles Traveled

Truck trips traveling to and from the project site to import soil would generate GHG emissions. However, these truck trips are currently hauling soil to other destinations in the Bay Area region; therefore, the net change in GHG emissions associated with the proposed project would result from the net change in VMT due to re-directed truck trips. A traffic analysis and VMT analysis were conducted by W-Trans to estimate this change in VMT (W-Trans 2020).

According to the Traffic Analysis, the project would generate approximately 161 haul truck trips per day and approximately 10 employee trips per day, based on an assumption of an average of 12 cubic yards of soil per truck (W-Trans 2019). The 161 daily haul truck trips would not be net new trips but instead would be same number of existing haul truck trips that are redirected from their current disposal destinations to the new Quarry disposal location where the fill would be used for the Quarry reclamation project. Of the 10 daily employee trips, only four trips would be net new trips because only two of the five employees would be net new employees as compared to existing conditions.

As part of the VMT analysis, W-Trans calculated VMT associated with existing haul truck trips, considering three possible sources of soil from sites in San Francisco, San Mateo, and Santa Clara Counties. Since the quantity of source material available at each site was not known, three sites were assumed to ensure sufficient quantity of material for the project. The most distant source location in each County from the project site was also assumed to be conservative. The location coordinates for the three sources of soil are shown in Table 1. Trucks currently take or deliver soil to six sites across the Bay Area region – Ox Mountain in San Mateo County, Altamont in Alameda County, Pittsburg Keller Canyon in Contra Costa County, Novato Redwood in Marin County, Suisun City Potrero Hills in Solano County, and Hollister John Smith in San Benito County. The existing length of trips to these disposal sites from the three potential soil source sites were estimated, as shown in Table 2.

VMT was calculated based on the number of daily truck trips with the assumption that trips would be split between the three origin points and six destination sites for a total of 8.9 truck trips per day between each origin and destination site (W-Trans 2020). A distribution for the estimated truck trips was assumed as follows: 45% from San Francisco County; 45% from San Mateo County; and 10% from Santa Clara County. Because the exact distribution cannot be known at this time, this distribution was used since it was assumed to be less economically viable to send trucks from the farthest point in Santa Clara County to the project site since there are closer locations. Table 3 summarizes VMT under existing conditions. As shown therein, total daily VMT under existing conditions is approximately 8,721.

Table 1 Locations of Soil Source Sites

Location	Latitude	Longitude
San Francisco	37°48'30.61" N	122°24'35.49" W
San Mateo	37°6'40.65" N	122°17'46.44" W
Santa Clara	37°3'54.70" N	121°12'48.36" W

Source: Google Maps 2020.

Table 2 Haul Truck Trip Distances under Existing Conditions (in miles)

	Destination					
Origin	Ox Mountain (San Mateo County)	Altamont (Alameda County)	Pittsburg Keller Canyon (Contra Costa County)	Novato Redwood (Marin County)	Suisun City Potrero Hills (Solano County)	Hollister John Smith (San Benito County)
San Francisco	27	52	38	32	53	99
San Mateo	10	48	55	51	70	81
Santa Clara	35	43	62	77	84	58

Source: W-Trans 2020

Table 3 Daily Haul Truck VMT under Existing Conditions (in VMT)

	Destination						
Origin	Ox Mountain (San Mateo County)	Altamont (Alameda County)	Pittsburg Keller Canyon (Contra Costa County)	Novato Redwood (Marin County)	Suisun City Potrero Hills Solano County)	Hollister John Smith (San Benito County)	Total
San Francisco	242	465	340	286	474	886	2,692
San Mateo	89	429	492	456	626	725	2,818
Santa Clara	313	385	555	689	751	519	3,211
Total							8,721

Source: W-Trans 2020

The proposed project would re-direct the 161 daily haul trips from their existing destinations to the project site. Table 4 summarizes total VMT for proposed project conditions. As shown in Table 4, total daily VMT under proposed project conditions would be approximately 6,046.

Table 4 Daily Haul Truck VMT under Existing plus Project Conditions (in VMT)

Origin	Destination Pacifica Rockaway (San Mateo County)
San Francisco	1,377
San Mateo	3,043
Santa Clara	1,626
Total	6,046

Source: W-Trans 2020.

To determine the net change in VMT associated with the proposed project, total VMT under proposed project conditions was subtracted from total VMT under existing conditions. As shown in Table 5, the net change in VMT associated with the proposed project was estimated to be 2,675 fewer miles.

Table 5 Change in Daily Haul Truck VMT

Scenario	Existing	With Project	Net Change
Daily VMT	8,721	6,046	(2,675)

( ) denotes a negative number.

Source: W-Trans 2020

VMT from the four net new one-way employee trips was calculated using the default one-way home-work trip distance for San Mateo County of 10.8 miles from the California Emissions Estimator Model (California Air Pollution Control Officers Association 2017, Appendix D). As shown in Table 6, the four net new one-way employee trips would generate approximately 43.2 daily VMT.

Table 6 Change in Daily Employee VMT

Scenario	Home-Work Trip Distance (miles)[1]	Number of Daily One-Way Trips	Total Daily Employee VMT
Daily VMT	10.8	4	43.2

[1] California Air Pollution Control Officers Association 2017, Appendix D

2.2 Greenhouse Gas Emissions

GHG emissions associated with the net change in VMT under the proposed project, as discussed in Section 2.1, *Trip Generation and Vehicle Miles Traveled*, was conducted using emissions factors (EFs) for the San Mateo County region for year 2020 as reported by the California Air Resources Board's EMFAC2017 Web Database v1.0.2 tool for EMFAC2011 vehicle categories. Additional model inputs include aggregated model years, aggregated speeds, and all fuel types. The full output from the EMFAC2017 Web Database can be found in Appendix A.

EFs for Heavy-Heavy Duty Diesel Single Unit Construction Trucks, or T7 single construction trucks, were used as a best conservative estimate to represent the type of haul trucks that would travel to and from the project site. As discussed in Section 2.1, *Trip Generation and Vehicle Miles Traveled*, the proposed project would not change the number of haul truck trips occurring in the Bay Area region. Therefore, there would be no change to the frequency of vehicle start-ups, the length of idle times, or emissions associated with those processes as a result of the proposed project. Accordingly, this analysis does not use the Idle Exhaust Emissions (IDLEX) or Start Exhaust Tailpipe Emissions (STREX) EFs. Implementation of the proposed project would only change the length of haul truck times; therefore, only the Running Exhaust Emissions (RUNEX) EFs were used for the analysis. As shown in Table 7, RUNEX EFs for carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), were taken from the EMFAC2017 output, then converted to standard CO_2 equivalent units (CO_2e) using global warming potential (GWP) values taken from the Intergovernmental Panel on Climate Change's AR5 Synthesis Report (2014) on climate change. The EFs in terms of CO_2e were then summed to create a total EF of 2,001.283 grams per mile.

Table 7 GHG Emission Factor Calculation for Haul Trucks

Greenhouse Gas (GHG)	EMFAC2017 RUNEX EFs (grams/mile)	AR5 GWP Values	RUNEX EFs (grams of CO_2e/mile)
CO_2	1,892.045773	1	1,892.045773
CH_4	0.024480064	28	0.685441792
N_2O	0.297403247	265	108.552185155
Total			**2,001.28**
Source: CARB 2017			

EFs for gasoline-fueled Passenger Cars (LDA) and Light-Duty Trucks (gross vehicle weight rating of less than 6,000 pounds and equivalent test weight less than or equal to 3,750 pounds; LDT1) were used as a best conservative estimate to represent the type of vehicles that employees would use to travel to and from the project site. It was assumed that one net new employee would utilize an LDA vehicle and one net new employee would utilize an LDT1 vehicle. As shown in Table 8 and Table 9, respectively, RUNEX and STREX EFs for CO_2, CH_4, and N_2O were taken from the EMFAC2017 output, then converted to CO_2e using GWP values taken from the Intergovernmental Panel on Climate Change's AR5 Synthesis Report (2014) on climate change. The CARB EMFAC2017 database reports IDLEX EFs for gasoline-fueled LDA and LDT1 vehicles as zero for CO_2, CH_4, and N_2O; therefore, IDLEX EFs were not utilized in this analysis. Table 8 and Table 9 summarize the summed RUNEX and STREX EFs in terms of CO_2e which were then summed to create total EFs for gasoline-fueled LDA and LDT1 vehicles.

Table 8 GHG RUNEX Emission Factor Calculation for Employee Vehicles

Greenhouse Gas (GHG)	EMFAC2017 RUNEX EFs (grams/mile)	AR5 GWP Values	RUNEX EFs (grams of CO_2e/mile)
Passenger Cars (LDA)			
CO_2	268.7931685	1	268.7931685
CH_4	0.002817543	28	0.078891204
N_2O	0.004960621	265	1.314564565
Total			270.1866243
Light-Duty Trucks (LDT1)			
CO_2	305.7867371	1	305.7867371
CH_4	0.004594494	28	0.128645832
N_2O	0.00699985	265	1.85496025
Total			307.7703432

Source: CARB 2017

Table 9 GHG STREX Emission Factor Calculation for Employee Vehicles

Greenhouse Gas (GHG)	EMFAC2017 STREX EFs (grams/trip)	AR5 GWP Values	RUNEX EFs (grams of CO_2e/mile)
Passenger Cars (LDA)			
CO_2	57.53957423	1	57.53957423
CH_4	0.062023132	28	1.736647696
N_2O	0.027926033	265	7.400398745
Total			66.67662067
Light-Duty Trucks (LDT1)			
CO_2	65.41316877	1	65.41316877
CH_4	0.071350475	28	1.997813300
N_2O	0.02898468	265	7.680940200
Total			75.09192227

Source: CARB 2017

3 Impact Analysis

As summarized in Table 10, the EF for haul trucks was multiplied by the change in VMT to determine the net change in GHG emissions that would result from the net change in daily VMT associated with the project. The net change in VMT was then multiplied by an assumed 260 working days to get the total annual change in VMT as a result of the project. The proposed project would reduce GHG emissions by approximately 5.3 metric tons (MT) of CO_2e per day, or 1,388 MT of CO_2e per year, over the four-year operational life of the project as a result of decreased VMT from haul trucks traveling to the project site instead of other landfill destinations around the Bay Area region. Therefore, no GHG emissions impact would occur.

Table 10 GHG Emissions Analysis Summary

Vehicle Type	Emission Factor Type	Emission Factor (grams of CO_2e)[1]	Change in VMT/Trips[2]	Total Daily Change in GHG Emissions (grams of CO_2e)	Total Daily Change in GHG Emissions (MT of CO_2e)	Total Annual Change in GHG Emissions (MT of CO_2e)[3]
Haul Truck	RUNEX	2,001.283400/VMT	(2,675 VMT)	(5,353,433.1)	(5.4)	(1,391.9)
Employee Vehicle - LDA	RUNEX	270.1866243/VMT	21.6 VMT[4]	5,836.0	0.006	1.6
Employee Vehicle – LDA	STREX	66.67662067/trip	2 trips[5]	133.4	0.0001	0.03
Employee Vehicle – LDT1	RUNEX	307.7703432/VMT	21.6 VMT[4]	6,647.8	0.007	1.8
Employee Vehicle – LDT1	STREX	75.09192227/trip	2 trips[5]	150.2	0.0002	0.05
Total					**(5.3)**	**(1,388.4)**

( ) denotes a negative number.

[1] See Table 7, Table 8, and Table 9.

[2] See Table 5 and Table 6.

[3] Assumes a total of 260 working days per year.

[4] Total daily employee VMT was divided equally among LDA and LDT1 trips.

[5] Total daily one-way trips were divided equally among LDA and LDT1 trips.

4 Conclusions and Recommendations

As discussed in Section 3, *Impact Analysis,* the proposed project would result in a net decrease of approximately 5.3 MT of CO_2e per day, or 1,388 MT of CO_2e per year, due to lower VMT associated with the project. Therefore, no GHG emissions impact would occur, and no mitigation measures are recommended.

5 References

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W-Trans. 2019. Traffic Analysis for Rockaway Quarry Reclamation Project. March 2020.

____. 2020. Summary of Daily Vehicle Miles Traveled. March 2020.

Appendix A

EMFAC2017 Web Database for San Mateo County in Year 2020 – Full Output

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: SAN MATEO
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	Calendar Y	Vehicle Ca	Model Yea	Speed	Fuel	Population	VMT	Trips	ROG_RUN	ROG_IDLE	ROG_STRE	ROG_HOT	ROG_RUN	ROG_REST	ROG_DIUR	TOG_RUN	TOG_IDLE	TOG_STRE	TOG_HOT	TOG_RUN	TOG_REST	TOG_DIUR	CO_RUNE	CO_IDLEX	CO_STREX
SAN MATE	2020	All Other E	Aggregate	Aggregate	DSL	573.589	36158.79	4818.147	0.132402	0.073837	0	0	0	0	0	0.15073	0.084058	0	0	0	0	0	0.404779	1.924364	0
SAN MATE	2020	LDA	Aggregate	Aggregate	GAS	276841.3	9054699	1312664	0.011388	0	0.293621	0.109793	0.234101	0.189116	0.193191	0.016613	0	0.321475	0.109793	0.234101	0.189116	0.193191	0.690267	0	2.492937
SAN MATE	2020	LDA	Aggregate	Aggregate	DSL	2919.163	95937.26	13784.19	0.015886	0	0	0	0	0	0	0.018085	0	0	0	0	0	0	0.215336	0	0
SAN MATE	2020	LDA	Aggregate	Aggregate	ELEC	6017.237	204448.2	29962.7	0	0	0	0.004888	0	0.003128	0.012002	0	0	0	0.004888	0	0.003128	0.012002	0	0	0
SAN MATE	2020	LDT1	Aggregate	Aggregate	GAS	36414.57	1189383	172205.4	0.02003	0	0.352337	0.146713	0.55628	0.271392	0.300503	0.029195	0	0.385762	0.146713	0.55628	0.271392	0.300503	0.999381	0	2.545609
SAN MATE	2020	LDT1	Aggregate	Aggregate	DSL	18.31835	324.993	62.25642	0.212668	0	0	0	0	0	0	0.242108	0	0	0	0	0	0	1.169782	0	0
SAN MATE	2020	LDT1	Aggregate	Aggregate	ELEC	163.418	5609.775	815.0612	0	0	0	0.004888	0	0.003128	0.012002	0	0	0	0.004888	0	0.003128	0.012002	0	0	0
SAN MATE	2020	LDT2	Aggregate	Aggregate	GAS	117229.4	3856517	559576	0.013783	0	0.346299	0.100337	0.349706	0.208728	0.198458	0.020101	0	0.379153	0.100337	0.349706	0.208728	0.198458	0.790932	0	3.002796
SAN MATE	2020	LDT2	Aggregate	Aggregate	DSL	798.8218	29635.39	3969.459	0.013563	0	0	0	0	0	0	0.015441	0	0	0	0	0	0	0.112301	0	0
SAN MATE	2020	LDT2	Aggregate	Aggregate	ELEC	1020.333	30338.09	5164.608	0	0	0	0.004888	0	0.003128	0.012002	0	0	0	0.004888	0	0.003128	0.012002	0	0	0
SAN MATE	2020	LHD1	Aggregate	Aggregate	GAS	8222.325	292771.6	122500.4	0.047885	0.452583	0.124826	0.102247	0.732008	0.020248	0.033753	0.06954	0.660312	0.136659	0.102247	0.732008	0.020248	0.033753	0.873757	3.753623	1.791973
SAN MATE	2020	LHD1	Aggregate	Aggregate	DSL	4869.818	193763	61256.19	0.149295	0.10976	0	0	0	0	0	0.169962	0.124954	0	0	0	0	0	0.580274	0.909745	0
SAN MATE	2020	LHD2	Aggregate	Aggregate	GAS	1121.867	39178.62	16714.14	0.041338	0.448377	0.122592	0.105555	0.794839	0.019871	0.033628	0.06032	0.654271	0.134222	0.105555	0.794839	0.019871	0.033628	0.745984	3.752888	1.828598
SAN MATE	2020	LHD2	Aggregate	Aggregate	DSL	1824.93	72595.02	22955.32	0.138524	0.10976	0	0	0	0	0	0.157701	0.124954	0	0	0	0	0	0.530998	0.909745	0
SAN MATE	2020	MCY	Aggregate	Aggregate	GAS	14469.83	137603.7	28939.65	2.265398	0	2.002328	0.632616	2.232562	0.80818	1.298447	2.796515	0	2.178859	0.632616	2.232562	0.80818	1.298447	19.88357	0	9.09582
SAN MATE	2020	MDV	Aggregate	Aggregate	GAS	70808.57	2344496	335322.2	0.018403	0	0.439502	0.115997	0.379609	0.250772	0.234696	0.026047	0	0.481151	0.115997	0.379609	0.250772	0.234696	0.892789	0	3.485452
SAN MATE	2020	MDV	Aggregate	Aggregate	DSL	1790.925	67800.25	8855.969	0.010352	0	0	0	0	0	0	0.011785	0	0	0	0	0	0	0.173306	0	0
SAN MATE	2020	MDV	Aggregate	Aggregate	ELEC	261.4559	8157.375	1343.737	0	0	0	0.004888	0	0.003128	0.012002	0	0	0	0.004888	0	0.003128	0.012002	0	0	0
SAN MATE	2020	MH	Aggregate	Aggregate	GAS	942.6177	9770.367	94.29948	0.060329	0	0.139923	0.071122	1.756542	0.029408	0.071415	0.087377	0	0.153174	0.071122	1.756542	0.029408	0.071415	1.5729	0	3.093126
SAN MATE	2020	MH	Aggregate	Aggregate	DSL	332.993	3605.377	33.2993	0.089654	0	0	0	0	0	0	0.102065	0	0	0	0	0	0	0.303278	0	0
SAN MATE	2020	Motor Coa	Aggregate	Aggregate	DSL	76.80873	9808.668	1121.408	0.241871	6.158209	0	0	0	0	0	0.275351	7.010653	0	0	0	0	0	0.803817	55.80928	0
SAN MATE	2020	OBUS	Aggregate	Aggregate	GAS	297.5351	18269.7	5953.082	0.062695	0.744545	0.151144	0.023396	0.272921	0.015363	0.031122	0.091485	1.086439	0.165483	0.023396	0.272921	0.015363	0.031122	1.410325	5.764242	3.216275
SAN MATE	2020	PTO	Aggregate	Aggregate	DSL	0	3766.488	0	0.404549	0	0	0	0	0	0	0.460549	0	0	0	0	0	0	1.372342	0	0
SAN MATE	2020	SBUS	Aggregate	Aggregate	GAS	58.02989	3151.859	232.1196	0.143134	10.52223	0.41154	0.106872	1.115722	0.013583	0.032796	0.208861	15.35401	0.450584	0.106872	1.115722	0.013583	0.032796	3.199664	81.52271	11.3964
SAN MATE	2020	SBUS	Aggregate	Aggregate	DSL	189.74	5963.782	2189.573	0.123673	0.309581	0	0	0	0	0	0.140792	0.352434	0	0	0	0	0	0.309912	5.045107	0
SAN MATE	2020	T6 Ag	Aggregate	Aggregate	DSL	3.993606	45.05867	17.57186	0.674103	0.796041	0	0	0	0	0	0.767414	0.906232	0	0	0	0	0	1.916891	4.416045	0
SAN MATE	2020	T6 CAIRP h	Aggregate	Aggregate	DSL	19.60543	3851.27	286.2392	0.042668	0.068339	0	0	0	0	0	0.048574	0.077799	0	0	0	0	0	0.173709	1.997514	0
SAN MATE	2020	T6 CAIRP s	Aggregate	Aggregate	DSL	11.77336	630.8089	171.8911	0.065216	0.075613	0	0	0	0	0	0.074243	0.08608	0	0	0	0	0	0.247702	2.058759	0
SAN MATE	2020	T6 instate	Aggregate	Aggregate	DSL	16.52449	1123.469	74.70656	0.487292	0.079408	0	0	0	0	0	0.554745	0.0904	0	0	0	0	0	1.021616	1.885276	0
SAN MATE	2020	T6 instate	Aggregate	Aggregate	DSL	358.9845	18326.1	1622.955	0.469177	0.117252	0	0	0	0	0	0.534123	0.133482	0	0	0	0	0	1.033345	2.148844	0
SAN MATE	2020	T6 instate	Aggregate	Aggregate	DSL	698.9238	102115.5	8065.484	0.127575	0.083353	0	0	0	0	0	0.145235	0.094891	0	0	0	0	0	0.388769	1.959976	0
SAN MATE	2020	T6 instate	Aggregate	Aggregate	DSL	3111.551	157424.4	35906.87	0.236288	0.112807	0	0	0	0	0	0.268996	0.128422	0	0	0	0	0	0.667521	2.155324	0
SAN MATE	2020	T6 OOS he	Aggregate	Aggregate	DSL	11.80407	2355.996	172.3395	0.038411	0.066475	0	0	0	0	0	0.043728	0.075677	0	0	0	0	0	0.164429	2.012936	0
SAN MATE	2020	T6 OOS sm	Aggregate	Aggregate	DSL	6.112347	318.9581	89.24026	0.076601	0.080088	0	0	0	0	0	0.087205	0.091174	0	0	0	0	0	0.284712	2.059768	0
SAN MATE	2020	T6 Public	Aggregate	Aggregate	DSL	382.5937	5923.446	1160.534	0.083269	0.368711	0	0	0	0	0	0.094795	0.41975	0	0	0	0	0	0.221039	6.374624	0
SAN MATE	2020	T6 utility	Aggregate	Aggregate	DSL	81.03918	1352.658	931.9506	0.025983	0.140737	0	0	0	0	0	0.02958	0.160218	0	0	0	0	0	0.118483	4.866541	0
SAN MATE	2020	T6TS	Aggregate	Aggregate	GAS	865.1725	51872.54	17310.37	0.097668	1.009212	0.242307	0.089019	0.537298	0.019132	0.032077	0.142517	1.472639	0.265295	0.089019	0.537298	0.019132	0.032077	2.281333	15.07582	5.446925
SAN MATE	2020	T7 Ag	Aggregate	Aggregate	DSL	2.56206	72.93488	11.27306	0.541347	1.341234	0	0	0	0	0	0.616282	1.526893	0	0	0	0	0	1.932877	10.75107	0
SAN MATE	2020	T7 CAIRP	Aggregate	Aggregate	DSL	71.50311	12946.34	1043.945	0.071931	10.69474	0	0	0	0	0	0.081888	12.17515	0	0	0	0	0	0.330975	134.7187	0
SAN MATE	2020	T7 CAIRP c	Aggregate	Aggregate	DSL	4.387589	806.9978	19.83612	0.163321	1.589538	0	0	0	0	0	0.185928	1.809568	0	0	0	0	0	0.745644	21.2297	0
SAN MATE	2020	T7 NNOOS	Aggregate	Aggregate	DSL	78.26056	15796.72	1142.604	0.074707	13.60687	0	0	0	0	0	0.085048	15.49038	0	0	0	0	0	0.35286	168.7602	0
SAN MATE	2020	T7 NOOS	Aggregate	Aggregate	DSL	28.08738	5083.821	410.0757	0.067794	13.25476	0	0	0	0	0	0.077178	15.08954	0	0	0	0	0	0.320236	167.889	0
SAN MATE	2020	T7 other p	Aggregate	Aggregate	DSL	8.674073	1379.683	65.92296	0.25043	1.642471	0	0	0	0	0	0.285096	1.869828	0	0	0	0	0	0.895977	17.10392	0
SAN MATE	2020	T7 POAK	Aggregate	Aggregate	DSL	64.37669	7194.48	489.2628	0.299641	2.622505	0	0	0	0	0	0.341118	2.985523	0	0	0	0	0	1.010165	27.30954	0
SAN MATE	2020	T7 Public	Aggregate	Aggregate	DSL	284.6933	5774.243	863.5697	0.162719	1.1126	0	0	0	0	0	0.185243	1.266611	0	0	0	0	0	0.520895	8.247698	0
SAN MATE	2020	T7 Single	Aggregate	Aggregate	DSL	273.5571	18968.79	3156.811	0.256986	2.124287	0	0	0	0	0	0.292559	2.418339	0	0	0	0	0	0.813886	26.5777	0
SAN MATE	2020	T7 single c	Aggregate	Aggregate	DSL	28.38594	2002.013	128.3317	0.527049	1.571257	0	0	0	0	0	0.600005	1.788757	0	0	0	0	0	1.297597	19.31049	0
SAN MATE	2020	T7 SWCV	Aggregate	Aggregate	DSL	158.7155	6484.856	618.9903	0.048669	1.294308	0	0	0	0	0	0.055406	1.473471	0	0	0	0	0	0.136684	7.065285	0
SAN MATE	2020	T7 SWCV	Aggregate	Aggregate	NG	117.7822	4795.98	459.3504	0.142498	0.039713	0	0	0	0	0	3.628268	1.279202	0	0	0	0	0	10.79901	18.53852	0
SAN MATE	2020	T7 tractor	Aggregate	Aggregate	DSL	164.3723	22791.28	2087.528	0.161052	1.849865	0	0	0	0	0	0.183346	2.10593	0	0	0	0	0	0.596852	21.2544	0
SAN MATE	2020	T7 tractor	Aggregate	Aggregate	DSL	23.50018	1651.485	106.2434	0.550076	1.584839	0	0	0	0	0	0.626219	1.804218	0	0	0	0	0	1.460365	19.49614	0
SAN MATE	2020	T7 utility	Aggregate	Aggregate	DSL	5.077713	103.0495	58.39369	0.077786	0.590834	0	0	0	0	0	0.088554	0.672619	0	0	0	0	0	0.310247	6.85886	0
SAN MATE	2020	T7IS	Aggregate	Aggregate	GAS	2.326823	418.8387	46.55508	0.336245	0	0.003516	0.036733	0.166251	0.009526	0.01552	0.490648	0	0.00385	0.036733	0.166251	0.009526	0.01552	27.82305	0	6.409145
SAN MATE	2020	UBUS	Aggregate	Aggregate	GAS	38.22348	926.0219	152.8939	0.019975	0	0.511089	0.035198	0.178049	0.00663	0.00927	0.029147	0	0.559578	0.035198	0.178049	0.00663	0.00927	0.33352	0	8.248745
SAN MATE	2020	UBUS	Aggregate	Aggregate	DSL	304.3332	24341.15	1217.333	0.003484	0	0	0	0	0	0	0.248822	0	0	0	0	0	0	0.395739	0	0
SAN MATE	2020	UBUS	Aggregate	Aggregate	NG	39.89913	2692.121	159.5965	0.093459	0	0	0	0	0	0	6.67565	0	0	0	0	0	0	50.89581	0	0

NOx_RUNI	NOx_IDLE)	NOx_STRE	CO2_RUNI	CO2_IDLE)	CO2_STRE	CH4_RUNI	CH4_IDLE)	CH4_STRE	PM10_RUI	PM10_IDL	PM10_STR	PM10_PM	PM10_PM	PM2_5_RU	PM2_5_ID	PM2_5_ST	PM2_5_PN	PM2_5_PN	SOx_RUNE	SOx_IDLE)	SOx_STRE)	N2O_RUN	N2O_IDLE)	N2O_STREX
2.868878	4.403858	1.64669	1132.71	660.7346	0	0.00615	0.00343	0	0.040991	0.010462	0	0.012	0.13034	0.039217	0.010009	0	0.003	0.05586	0.010701	0.006242	0	0.178046	0.103858	0
0.047743	0	0.221993	268.7932	0	57.53957	0.002818	0	0.062023	0.001562	0	0.002138	0.008	0.03675	0.001437	0	0.001966	0.002	0.01575	0.00266	0	0.000569	0.004961	0	0.027926
0.099811	0	0	211.9934	0	0	0.000738	0	0	0.008372	0	0	0.008	0.03675	0.008009	0	0	0.002	0.01575	0.002004	0	0	0.033322	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
0.088874	0	0.254081	305.7867	0	65.41317	0.004594	0	0.07135	0.002052	0	0.00264	0.008	0.03675	0.001886	0	0.002428	0.002	0.01575	0.003026	0	0.000647	0.007	0	0.028985
1.19254	0	0	418.5301	0	0	0.009878	0	0	0.169102	0	0	0.008	0.03675	0.161787	0	0	0.002	0.01575	0.003957	0	0	0.065787	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
0.073093	0	0.306385	332.286	0	72.08736	0.003411	0	0.073929	0.001633	0	0.002083	0.008	0.03675	0.001501	0	0.001915	0.002	0.01575	0.003288	0	0.000713	0.006224	0	0.03423
0.041196	0	0	287.8009	0	0	0.00063	0	0	0.004848	0	0	0.008	0.03675	0.004638	0	0	0.002	0.01575	0.002721	0	0	0.045238	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
0.212847	0.039494	0.529431	1014.119	121.5876	19.16021	0.010004	0.12589	0.024766	0.002296	0	0.000417	0.008	0.07644	0.002111	0	0.000384	0.002	0.03276	0.010036	0.001203	0.00019	0.013257	0.003273	0.042433
1.45059	2.095404	0	547.1232	133.2662	0	0.006934	0.005098	0	0.020181	0.028219	0	0.012	0.07644	0.019308	0.026998	0	0.003	0.03276	0.005172	0.00126	0	0.086	0.020948	0
0.242521	0.039134	0.537741	1158.279	139.9091	21.78929	0.009172	0.124442	0.024403	0.002238	0	0.000379	0.008	0.08918	0.002057	0	0.000349	0.002	0.03822	0.011462	0.001385	0.000216	0.015489	0.003122	0.041691
1.074895	2.073416	0	613.084	212.9464	0	0.006434	0.005098	0	0.018713	0.028299	0	0.012	0.08918	0.017904	0.027075	0	0.003	0.03822	0.005796	0.002013	0	0.096368	0.033472	0
1.161467	0	0.273205	213.4373	0	61.73902	0.335081	0	0.263726	0.002017	0	0.003517	0.004	0.01176	0.001887	0	0.003316	0.001	0.00504	0.002112	0	0.000611	0.066945	0	0.015531
0.08786	0	0.370563	399.7683	0	87.73591	0.00417	0	0.088212	0.001699	0	0.002309	0.008	0.03675	0.001562	0	0.002124	0.002	0.01575	0.003956	0	0.000868	0.007112	0	0.037059
0.040821	0	0	375.6206	0	0	0.000481	0	0	0.00439	0	0	0.008	0.03675	0.0042	0	0	0.002	0.01575	0.003551	0	0	0.059042	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0.008	0.03675	0	0	0	0.002	0.01575	0	0	0	0	0	0
0.349182	0	0.335078	1762.032	0	26.0655	0.013684	0	0.032875	0.001772	0	0.000427	0.012	0.13034	0.00163	0	0.000393	0.003	0.05586	0.017437	0	0.000258	0.022582	0	0.03588
3.452728	0	0	1025.272	0	0	0.004164	0	0	0.066342	0	0	0.016	0.13034	0.063472	0	0	0.004	0.05586	0.009693	0	0	0.161158	0	0
4.831307	92.53562	1.425366	1567.258	11179.34	0	0.011234	0.286033	0	0.118589	0.447308	0	0.012	0.13034	0.113459	0.427957	0	0.003	0.05586	0.014807	0.105617	0	0.246351	1.757237	0
0.417592	0.064946	0.310809	1803.068	381.9594	26.53114	0.013182	0.20553	0.030227	0.001022	0	0.000258	0.012	0.13034	0.000939	0	0.000237	0.003	0.05586	0.017843	0.00378	0.000263	0.021871	0.005906	0.027082
7.418158	0	0	2136.4	0	0	0.01879	0	0	0.104676	0	0	0	0	0.100147	0	0	0	0	0.020184	0	0	0.335812	0	0
0.879088	0.918563	0.536347	862.4271	2563.036	53.074	0.028787	2.414547	0.07064	0.002326	0	0.000919	0.008	0.7448	0.002139	0	0.000845	0.002	0.3192	0.008534	0.025363	0.000525	0.041538	0.084629	0.047171
8.762259	47.68618	0.548288	1175.842	3740.332	0	0.005744	0.014379	0	0.050513	0.067529	0	0.012	0.7448	0.048328	0.064608	0	0.003	0.3192	0.011109	0.035337	0	0.184826	0.587928	0
7.782869	10.40304	0.513007	1091.555	667.5011	0	0.03131	0.036974	0	0.468017	0.252713	0	0.012	0.13034	0.447771	0.24178	0	0.003	0.05586	0.010312	0.006306	0	0.171577	0.104922	0
1.528526	4.351327	1.065994	943.1622	639.8993	0	0.001982	0.003174	0	0.03325	0.009451	0	0.012	0.13034	0.031811	0.009042	0	0.003	0.05586	0.008911	0.006045	0	0.148252	0.100583	0
1.674248	4.58446	1.050932	981.9197	637.2348	0	0.003029	0.003512	0	0.049335	0.012352	0	0.012	0.13034	0.047201	0.011818	0	0.003	0.05586	0.009277	0.00602	0	0.154344	0.100164	0
5.523066	5.476008	1.798049	1274.992	667.7913	0	0.022633	0.003688	0	0.14577	0.01438	0	0.012	0.13034	0.139464	0.013758	0	0.003	0.05586	0.012045	0.006309	0	0.200411	0.104967	0
4.406035	6.80614	1.527916	1264.834	672.6338	0	0.021792	0.005446	0	0.143001	0.031261	0	0.012	0.13034	0.136815	0.029909	0	0.003	0.05586	0.01195	0.006355	0	0.198814	0.105729	0
2.621867	5.478488	1.481684	1025.095	654.1079	0	0.005926	0.003872	0	0.055752	0.016431	0	0.012	0.13034	0.05334	0.01572	0	0.003	0.05586	0.009685	0.00618	0	0.161131	0.102817	0
3.337866	6.441688	1.299992	1084.795	664.1159	0	0.010975	0.00524	0	0.103202	0.02913	0	0.012	0.13034	0.098738	0.02787	0	0.003	0.05586	0.010249	0.006274	0	0.170515	0.10439	0
1.423488	4.179505	1.092239	939.2996	636.7066	0	0.001784	0.003088	0	0.031454	0.008523	0	0.012	0.13034	0.030093	0.008154	0	0.003	0.05586	0.008874	0.006015	0	0.147645	0.100081	0
1.842881	4.859374	1.010729	990.0411	643.4776	0	0.003558	0.00372	0	0.057494	0.014366	0	0.012	0.13034	0.055007	0.013744	0	0.003	0.05586	0.009353	0.006079	0	0.155621	0.101146	0
5.936739	39.3612	1.305546	1203.982	3489.585	0	0.003868	0.017126	0	0.033433	0.074358	0	0.012	0.13034	0.031987	0.071142	0	0.003	0.05586	0.011375	0.032968	0	0.189249	0.548514	0
1.812782	11.9091	1.555397	1070.591	1782.756	0	0.001207	0.006537	0	0.008147	0.005233	0	0.012	0.13034	0.007795	0.005007	0	0.003	0.05586	0.010114	0.016843	0	0.168282	0.280224	0
0.63062	0.088251	0.40179	1777.379	544.4453	40.69765	0.01985	0.261033	0.044135	0.001428	0	0.000518	0.012	0.13034	0.001313	0	0.000476	0.003	0.05586	0.017589	0.005388	0.000403	0.029786	0.007233	0.030307
8.860351	18.74646	3.488293	1641.745	1916.775	0	0.025144	0.062297	0	0.347794	0.130374	0	0.036	0.06174	0.332749	0.124734	0	0.009	0.02646	0.01551	0.018109	0	0.258059	0.30129	0
3.210666	131.8693	1.849	1404.573	26029.31	0	0.003341	0.496743	0	0.050397	0.245091	0	0.036	0.06174	0.048217	0.234489	0	0.009	0.02646	0.01327	0.245912	0	0.220779	4.091445	0
4.943499	21.16931	3.886788	1778.156	4011.583	0	0.007586	0.07383	0	0.045656	0.01724	0	0.036	0.06174	0.04368	0.016495	0	0.009	0.02646	0.016799	0.037899	0	0.279501	0.630565	0
2.746126	152.9373	1.890492	1353.801	30323.97	0	0.00347	0.632004	0	0.055478	0.475049	0	0.036	0.06174	0.053078	0.454498	0	0.009	0.02646	0.01279	0.286486	0	0.212799	4.766506	0
3.164384	164.1538	1.858621	1404.756	32474.95	0	0.003149	0.615649	0	0.049211	0.283994	0	0.036	0.06174	0.047082	0.271708	0	0.009	0.02646	0.013271	0.306807	0	0.220808	5.104611	0
6.023423	28.60111	1.035967	1862.925	4730.344	0	0.011632	0.076289	0	0.034133	0.009601	0	0.036	0.06174	0.032656	0.009186	0	0.009	0.02646	0.0176	0.04469	0	0.292826	0.743544	0
6.596928	45.66691	1.035967	1904.911	7552.987	0	0.013918	0.121809	0	0.038663	0.01533	0	0.036	0.06174	0.03699	0.014667	0	0.009	0.02646	0.017997	0.071357	0	0.299425	1.187224	0
12.80045	39.71003	1.62663	1888.036	3406.216	0	0.007558	0.051677	0	0.072242	0.106538	0	0.036	0.06174	0.069117	0.10193	0	0.009	0.02646	0.017837	0.03218	0	0.296773	0.53541	0
5.471133	31.08569	2.699502	1626.064	5438.821	0	0.011936	0.098668	0	0.094844	0.035942	0	0.036	0.06174	0.090741	0.034387	0	0.009	0.02646	0.015362	0.051383	0	0.255595	0.854907	0
7.535296	23.26478	3.313673	1892.046	3866.101	0	0.02448	0.072981	0	0.141891	0.039488	0	0.036	0.06174	0.135753	0.03778	0	0.009	0.02646	0.017875	0.036525	0	0.297403	0.607697	0
9.503774	44.59421	0.530458	4310.231	4690.439	0	0.002261	0.060117	0	0.010029	0.03999	0	0.036	0.06174	0.009595	0.03826	0	0.009	0.02646	0.040721	0.044313	0	0.677508	0.737272	0
1.518196	22.43725	0	3239.113	4223.048	0	3.45109	1.228678	0	0.005028	0.027396	0	0.036	0.06174	0.004811	0.026211	0	0.009	0.02646	0	0	0	0.660314	0.860896	0
4.572418	27.54781	1.228893	1409.49	4506.479	0	0.00748	0.085921	0	0.095168	0.048779	0	0.036	0.06174	0.091051	0.046669	0	0.009	0.02646	0.013316	0.042575	0	0.221552	0.708356	0
7.533738	23.28173	3.375488	1897.639	4078.094	0	0.02555	0.073612	0	0.128767	0.027509	0	0.036	0.06174	0.123196	0.026319	0	0.009	0.02646	0.017928	0.038528	0	0.298282	0.64102	0
4.704976	13.67239	2.121767	1724.75	1789.359	0	0.003613	0.027443	0	0.018473	0.009509	0	0.036	0.06174	0.017674	0.009098	0	0.009	0.02646	0.016295	0.016905	0	0.271107	0.281262	0
2.876202	0	0.015414	2098.08	0	49.23648	0.073232	0	0.000672	0.000827	0	0.000307	0.02	0.06174	0.00076	0	0.000282	0.005	0.02646	0.020762	0	0.000487	0.126069	0	0.000753
0.271096	0	0.867759	2031.175	0	92.46321	0.005495	0	0.104124	0.001174	0	0.000498	0.011079	0.120859	0.001079	0	0.000458	0.00277	0.051797	0.0201	0	0.000915	0.021423	0	0.066735
3.895005	0	0	1767.982	0	0	0.243806	0	0	0.008493	0	0	0.031575	0.074389	0.008126	0	0	0.007894	0.031881	0.016714	0	0	0.277902	0	0
0.496913	0	0	2042.77	0	0	6.541078	0	0	0.003375	0	0	0.034764	0.065273	0.003229	0	0	0.008691	0.027974	0	0	0	0.416432	0	0

APPENDIX H

Biological Resources Assessment

ROCKAWAY QUARRY PROJECT
PACIFICA, SAN MATEO COUNTY, CALIFORNIA

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Date:
March 2020

WRA Project #:

14006-6

ENVIRONMENTAL CONSULTANTS

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LIST OF ABBREVIATIONS AND ACRONYMS

APN	Assessor's Parcel Number
Cal-IPC	California Invasive Plant Council
CCC	California Coastal Commission
CDP	Coastal Development Permit
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
Corps	U.S. Army Corps of Engineers
CNPS	California Native Plant Society
CRLF	California red-legged frog
CRPR	California Rare Plant Rank
CWA	Clean Water Act
EPA	Environmental Protection Agency
ESA	Federal Endangered Species Act
ESHA	Environmentally Sensitive Habitat Area
FAC	Facultative
FACW	Facultative Wetland
GGNRA	Golden Gate National Recreation Area
HCP	Habitat Conservation Plan
LCP	Local Coastal Plan
LSAA	Lake and Streambed Alteration Agreement
NOAA	National Oceanic and Atmospheric Administration
NRCS	National Resources Conservation Service
OBL	Obligate
OHWM	Ordinary High Water Mark
RWQCB	Regional Water Quality Control Board
SFGS	San Francisco Garter snake
SMARA	California Surface Mining and Reclamation Act
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WBWG	Western Bat Working Group
WRA Inc.	WRA

1.0 INTRODUCTION AND PROJECT DESCRIPTION

On March 18, August 22, and August 26, 2019, WRA, Inc. (WRA) conducted an assessment of biological resources at the site of the proposed Rockaway Quarry Reclamation Project (Project), located in the City of Pacifica, San Mateo County, California (Appendix A, Figure 1). The Project would occur on three parcels of land totaling (Assessor's Parcel Numbers [APNs] 018-150-110, 018-150-120, and 018-150-150; Project Area) near the Pacific Coast. APNs 018-150-110 and 018-150-120 are located west of Calera Creek. APN 018-150-150 is located east of Calera Creek. The Project would occur on all three parcels of land but reclamation activities would be focused on the parcels west of Calera Creek. The Project Area includes an Eastern Section and a Western Section. The Eastern Section of the Project Area is located east of Calera Creek, whereas the Western Section of the Project Area is located west of Calera Creek. The Project Area is bounded by Rockaway Beach to the south, Mori Point Ridge to the north, Highway 1 to the east, and the Pacific Ocean to the west. The Project Area is surrounded by residential or light commercial development and undeveloped land. As the Project Area is not certified by the City of Pacifica's Local Coastal Program (LCP), it exists in an "Area of Deferred Certification", per a 1994 LCP amendment, and is not subject to the LCP's Land Use Plan (City of Pacifica 1994).

The Western Section of the Project Area, where quarry reclamation activities would occur, includes: (1) a hilltop in the north, (2) the east flank (a hillside generally comprised of old quarry debris on the east slope), (3) the quarry face (scarp left by mining in the central portion of the Western Section), (4) the quarry pit (a bowl at the bottom of the old quarry), and (5) a southern bluff (the old edge of Rockaway Quarry adjacent to the ocean in the south). The Eastern Section of the Project Area includes two existing access roads/trails that connect to the Western Section of the Project Area, and two areas where on-site mitigation is proposed (i.e., a bentonite clay-lined pond and seasonal wetlands). Areas east of Calera Creek that are outside of the Project Area include large swaths of undeveloped land, access routes, pedestrian trails, and ornamental plantings. The parcel of land that contains the Eastern Section of the Project Area (i.e., APN 018-150-150) originally contained Calera Creek but was graded when Calera Creek was relocated further west.

The primary objective of the proposed Project is to reclaim Rockaway Quarry, as required by the California Surface Mining and Reclamation Act (SMARA) of 1975. Per the SMARA, "reclamation of mined lands is necessary to prevent or minimize adverse effects on the environment and to protect the public health and safety…and that mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses" (Section 2710). The proposed Project would entail the restoration of the Project Area to its natural landscape, improving site drainage and slope stability, and providing safer and better public access for surrounding communities (Appendix A, Figure 2).

This report describes the results of the site surveys, which assessed the Project Area for the potential to support special-status species and the presence of other sensitive biological resources protected by local, state, and federal laws and regulations. This biological resource assessment provides general information on the potential presence of sensitive species and habitats. The biological resources assessment is not an official protocol-level survey for listed species that may require surveys for Project approval by local, state, or federal agencies. This assessment is based on information available at the time of the study and on-site conditions that were observed on March 18, August 22, and August 26, 2019.

1.1 Project Description

1.1.1 Project Overview

The Project would reclaim the Rockaway (formerly Pacifica) Quarry in the City of Pacifica, San Mateo County, California. "Reclamation" is defined in the Public Resources Code (Section 2733) as "the combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion and other adverse effects from surface mining so that mined lands are left in a usable condition which is readily adaptable to alternate land uses and create no danger to public health and safety." Thus, reclamation activities are viewed as corrective to the physical disturbances resulting from past quarry activity and required under State law. The Project would:

- Satisfy objectives included in the SMARA
- Restore the landscape to its historic state through the creation of natural plant communities via the implementation of a focused native revegetation planting plan
- Provide for safe pedestrian and emergency vehicle access to the Project Area
- Provide safe public access along coastal trails and bluffs by stabilizing and grading existing slopes that present safety hazards
- Establish dedicated trails that allow safe public access through the Project Area between the Rockaway beach/retail center and the Golden Gate National Recreation Area in accordance with the California Coastal Act
- Minimize erosion and sedimentation transport by improving on-site drainage and water quality
- Minimize grading to the maximum extent practicable in a manner that is consistent with the other objectives and maintains an average 2-to-1 slope on the reclaimed Project Area
- Install signage in potentially dangerous areas to prevent accidents
- Discourage illegal trespassing by reclaiming the Project Area in a manner that provides secure and safe public access and use in lieu of the existing homeless encampments, vagrancy and threats to the potential public use which characterize the existing conditions on the Project Area due to the cessation of quarrying activities
- Improve the scenic corridor and aesthetics of the Project Area by restoring it to pre-quarry conditions that provide views of the ocean in a manner supporting a future alternate use in accordance with SMARA and the Pacifica General Plan
- Reclaim the property in a self-sustaining manner such that additional maintenance or other management activities are not required
- Replace an existing culvert structure that is currently clogged with debris to improve natural hydrology

Successful reclamation and restoration of the site can only be completed by grading and filling the quarry. The Project proposes to grade the Western Section of the Project Area and install a multi-use access trail. Concurrent with the grading process, improvements would be made to site drainage in the Western Section of the Project Area, including the installation of: (1) eleven 24-inch drop inlets, (2) three concrete-lined ditches with drainage terraces, (3) two vegetated swales, (4) one sedimentation junction structure, and (5) two tie-ins to existing culverts. Along an access road in the Eastern Section, one permanent 12-inch culvert would be replaced with a reinforced concrete pipe and two temporary 24-inch culverts would be installed for wetland avoidance. After grading is completed, impacted areas would be revegetated to restore and blend native vegetation into the surrounding landscape. Best Management Practices and Avoidance and Minimization Measures would be adopted to minimize the impact footprint of the Project and to ensure biological resources would be protected the greatest extent feasible. Table 1, below, provides cut and fill totals for earthwork activities. For a depiction of Project activities, please refer to the Project plan set (Appendix D).

Table 1. Earthwork Quantities

Section of the Project Area	**Cut (cubic yards)**	**Fill (cubic yards)**	**Net (cubic yards)**
Main quarry face and maintenance road (Western Section)	82,000	28,000	-54,000 (cut)
Quarry pit (Western Section)	3,000	1,027,000	+1,024,000 (fill)
Total	**85,000**	**1,055,000**	**+970,000 (fill)**

1.1.2 Reclamation Grading

The Project's grading plan (included as Appendix D) would address the Project Area's geotechnical issues and create safe slopes, safe access, and other conditions that would conform to the surrounding topography. The slope stability criteria are based on: (1) State requirements as set by the Office of Mine Reclamation, which requires that slopes steeper than 2:1 be stabilized—a standard requirement unless the slope is an exposed rock face with a relatively high integrity (such as the limestone face that would be left intact), (2) minimizing cut and fill to reduce environmental impacts, (3) City standards that require a minimum slope of 3:1 unless a steeper slope is supported by a geotechnical report, and (4) prior field explorations (e.g., soil borings, etc.) and other analyses as reflected in the Project's Geotechnical Report (Geocon Consultants 2015). As such, 2:1 or gentler slopes are considered stable for open space uses and the Project would not exceed this standard, except for the quarry face where the geotechnical analysis indicates that the exposed limestone has considerable structural integrity and is stable in its current form.

The Western Section of the Project Area would be graded for reclamation. Slopes would be cut on the south slope of the hilltop, on the quarry face, and in a small area at the south end of the southern ridge where unstable dumped fill would be removed. Slope cutting would result in safe pedestrian access, better views, and a more natural landscape. The placement of fill in the Western Section would occur on the southern bluff (where existing slopes are steep), on the quarry face, in the quarry pit, and in areas where a trail would be installed. For a detailed depiction of the Project grading plan, refer to Appendix D (Project Plans, Sheet C1.0). Below is a discussion of grading that would occur in each portion of the Western Section of the Project Area.

Hilltop. The hilltop currently contains a mix of fills and old cuts with mounds and hillocks of material reaching 270 feet in elevation (all elevations are NGVD) with low points at 230 feet. The hilltop's lower edge is in the geologic shear zone that rests atop the quarry face. In the hilltop area, the Project would: (1) create a more natural, rounded appearance similar to its pre-mining condition, (2) install a multi-purpose trail for safe access in the west between the hilltop and the ocean bluff (the flat hilltop here currently has a very steep grade for the trail just downslope), and (3) steepen the slope in the south and southeast for the transition to the 2:1 slope above the preserved limestone face. To accomplish these objectives, the upper section of the hilltop would be graded to a rounded hillock that would drain in a southerly direction. Thus, the Project would grade the unstable materials above the shear zone on the south and southwest to a 2:1 slope. On the hilltop, only dumped fill would be removed.

East flank. The east flank is an unevenly sloped area that includes both old quarry fills and a buried landslide. The Geotechnical Report determined that the slope and buried landslide are stable and do not require treatment if this area is not disturbed (Geocon Consultants 2015). Accordingly, except for the multi-use trail, the Project would not disturb this area. The Project proposes to build a multi-use trail that would curve across the southern side of the east flank to the top of the hilltop, essentially duplicating an existing access way. The trail would be 12 feet wide and would require the installation of concrete swales for drainage. The proposed trail would replace the existing, heavily eroded trails that currently cross this relatively steep slope. The trail would be topped with decomposed granite. The trail would avoid the native-dominated vegetation associations.

Quarry face. The quarry face is a steep rock face with a geologic shear zone that separates the quarry face from the hilltop. The quarry face is a geologically stable feature that does not require re-grading (Geocon Consultants 2015). No work would occur on the quarry face and it would be preserved in accordance with reclamation plan objectives.

Quarry pit. The quarry pit consists of an uneven mix of pits, fills and slopes. The Project proposes to grade and fill the quarry pit to natural pre-mining gentle slopes. Additionally, a multi-use trail that would provide access to the lookout, located on the western end of the Project Area, would be installed. The quarry pit contains undocumented fill that includes non-soil elements, which would not be compacted. There is no current evidence of differential settlement in this area. Moreover, since newly graded slopes would be gentle, undue loading of the soils, which might trigger settlement, is not a concern. This area appears to be stable despite the history and condition of fill.

Southern bluff. The southern bluff is a steep-sided remnant of the old hillside transformed by quarry mining and topped by old quarry fills. Loose soil and uneven surfaces on the top of the southern end of the bluff would be regraded to form a stable, gently sloping surface that would also allow access to ocean views. The existing elevation of the bluff would mostly be preserved at 90 to 110 feet. The interior slope of the southern bluff would be regraded with fill to a stable 2:1 slope and a gentle 5:1 slope in the northwestern-most area. No cut or fill is proposed on the ocean side of the bluff. The Project would thus preserve the "knob" (i.e., the high ground at the easternmost end) and the lower elevation dramatic rock formation.

Eastern Section. Grading in the Eastern Section of the Project Area would not be required for reclamation. Existing road alignments would be used for ingress and egress access routes. However, central portions of the Eastern Section of the Project Area would require grading for the construction of proposed on-site mitigation features, including a bentonite clay-lined pond that would mitigate for impacts to the existing man-made seasonal wetland pond and a seasonal wetland that would mitigate for impacts to existing seasonal wetlands (discussed below).

1.1.3 Drainage

After the Project has been completed, stormwater flows would be conveyed to Calera Creek through a series of concrete ditches, vegetated swales, and pipes (Appendix D, Sheet C2.0). Before the runoff is discharged into the creek, it would be collected in a sediment junction structure with a hood to allow any sediment collected to settle. All flows would tie into existing culverts. The Project Area and the entire western parcel are outside of the 100-year flood zone.

The Project would protect in place and tie into existing culverts along Calera Creek, including a box culvert that connects to three 72-inch high-density polyethylene culverts where the Project Area crosses Calera Creek and a 24-inch corrugated metal pipe culvert that connects the man-made seasonal wetland pond in the Western Section of the Project Area to Calera Creek. The Project would install eleven 24-inch heavy-duty nyoplast inline drains, a sedimentation junction structure with a hood, two temporary 24-inch culverts to grade, three drainage terraces with 2 to 3 foot wide concrete ditches, two vegetated swales, and an earthen berm.

Western Section

Hilltop. The upper section of the hilltop would be graded to a rounded hillock that drains in a southerly direction. Two drainage terraces with concrete ditches would be built along the graded slope on the southern face of the hilltop to collect runoff (Appendix D, page C3.1 for ditch details). Both the upper 6-foot wide drainage terrace and a lower 12-foot wide drainage terrace would be bordered by a 2 to 3 foot wide v-shaped concrete ditch, that would be built along the graded slope on the southern face of the hilltop (Appendix D, page C1.0). The two terraces would run parallel to each other with the lower terrace approximately 30 feet below the upper terrace. An earthen berm would be installed at the top of the slope. Concrete ditches on the perimeter of the terraces would capture runoff from the hillside below the hilltop. The ditches would convey flows into a sub-surface storm drain system that would follow the multi-use trail into a 10-foot-deep sedimentation junction structure with a 24-inch-wide opening (covered by a manhole grate), located where the trail would cross Calera Creek.

East flank. The east flank would be unaltered except for the multi-use trail (Appendix D, page C3.0 for trail details). A concrete ditch (referenced above) and a 4-foot-wide vegetated swale would be built along the new trail. The ditch would have inflows to the storm drain system at various intervals. The storm drain would convey flows down the multi-use trail and into the sedimentation junction structure (referenced above).

Quarry face and pit. The quarry face and pit would be filled in with a slope that would mimic pre-mining natural conditions. Here, water would sheet flow down the hillside to the concrete ditch located along the proposed multi-use trail. Additionally, a graded terrace with a concrete ditch would be constructed to prevent direct runoff into Calera Creek. Both the runoff from the hillside and the runoff collected in the terrace would be conveyed to the aforementioned sedimentation junction structure.

Southern bluff. The southern bluff would be preserved on its ocean (western) side. Most of the southern bluff's interior slope, which contains loose soil and uneven surfaces, would be softly graded towards the proposed trail, which would provide safe access to ocean views. Runoff would drain via sheet flow to a newly constructed 4-foot-wide vegetated swale that would be located along the base of the bluff. From here, flows would tie into an existing 24-inch corrugated metal pipe (protected in place) that is located in the southwestern portion of the Western Section of the Project Area and then to Calera Creek.

Eastern Section

The existing access roads/trails that would be used as ingress and egress routes in the Eastern Section would be maintained. Near State Route 1 and along the ingress route in the Eastern Section of the Project Area, a 12-inch culvert that is not currently functional would be replaced by a 12-inch reinforced concrete pipe culvert. This culvert replacement would improve the functionality of the existing drainage ditch that flows below the ingress route. Seasonal wetlands would be constructed in the central portion of the Eastern Section for mitigation (discussed below). Rainwater would sheet flow down existing slopes outside of the Project Area in the eastern parcel and would pond in the mitigation wetlands.

1.1.4 Revegetation, Monitoring, and Management Plan

Areas within the limits of Project grading activities would be revegetated using three distinct plant palettes based on site conditions. The hilltop and east flank would support a mixture of native scrub, forbs, and grasses. The quarry pit of the Project Area contains shallow soils and flat topography that would support a meadow community of native grasses and forbs. The southern bluff receives significant coastal exposure and can support native grasses and a variety of native forbs. Table 2, below, provides acreages for each seed palette type that would be incorporated into the Revegetation Plan. Figure 10 of Appendix A depicts the Revegetation Plan.

The recommendations in the Revegetation Plan are intended to comply with the requirements of the SMARA, Public Resources Code Section 2710 et seq., and SMARA's reclamation standards at Code of Regulations, Title 14, section 3705 et seq. (Reclamation Standards).

The ultimate goal for revegetation in the Project Area is to restore and blend native vegetation into the surrounding landscape. This refers to the reclamation of disturbed lands to a self-sustaining community of native species as described in the Reclamation Standards. Post-regrading revegetation would be sufficient to stabilize the surface against the effects of long-term erosion and is designed to meet the post-extractive and unmanaged land use goals of the Revegetation Plan. As a result, revegetation would visually integrate with the surrounding open space areas and provide for permanent soil protection.

All proposed revegetation would be accomplished through hydroseeding, which would take place between October 15 and November 15, or during a period that is approved by the Project Proponent and biologist, with an appropriate tackifier, such as wood fiber mulch. Seed mixtures are varied according to successes and failures of regional hydroseeding efforts, slope, and soil types. Tasks described in this Revegetation Plan would provide native vegetative cover for final contours, thus controlling erosion and stabilizing slopes in the Revegetation Plan Area. Revegetation efforts would utilize plant materials capable of self-regeneration without continued dependence on irrigation, soil amendments, or fertilizer in accordance with the Reclamation Standards. The following revegetation types would be incorporated into the Revegetation Plan.

Table 2. Seeding Palettes for the Revegetation Plan

Palette	Areas	Acres
Scrub and Grassland	Hilltop, East Flank	7.25
Meadow	Quarry Pit	11.33
Grassland	Southern Bluff	2.46
	Total	**21.04**

Hilltop and East Flank Areas

The hilltop and east flank areas will support a mixture of native scrub, forbs, and grasses. Table 3 includes a list of species and pounds per acre to be included in the hydroseed mixture.

Table 3. Hydroseeding Specifications for Hilltop and East Flank Areas

Common Name	Scientific Name	Hydroseed Application Rate (pounds per acre)
Blue wild rye	*Elymus glaucus*	5.0
California aster	*Symphyotrichum chilense*	0.5
California brome	*Bromus carinatus*	2.0
California poppy	*Eschscholzia californica*	0.5
California sage	*Artemisia californica*	0.5
Coffeeberry	*Frangula californica*	0.5
Common yarrow	*Achillea millefolium*	1.0
Coyote brush	*Baccharis pilularis*	1.0
Creeping wild rye	*Elymus triticoides*	5.0
Farewell to Spring	*Clarkia rubicunda*	0.5
Lizard tail	*Eriophyllum staechadifolium*	0.5
Purple needlegrass	*Stipa pulchra*	2.0
Small fescue	*Festuca microstachya*	5.0
Valley sky lupine	*Lupinus nanus*	0.5

Quarry Pit

These areas contain shallow soils and flat topography that would support a meadow community of native grasses and forbs. Table 4 lists species and application rates for these areas.

Table 4. Hydroseeding Specifications for the Meadow Community in the Quarry Pit

Common Name	Scientific Name	Hydroseed Application Rate (pounds per acre)
California oat	*Danthonia californica*	1.0
Common yarrow	*Achillea millefolium*	1.0
Hairgrass	*Deschampsia elongata*	1.0
Meadow barley	*Hordeum brachyantherum*	2.0
Red fescue	*Festuca rubra*	2.0
Small fescue	*Festuca microstachys*	5.0

Southern Bluff

The southern bluff area receives significant coastal exposure and can support native grasses and a variety of native forbs. Treatment specifications are detailed in Table 5.

Table 5. Hydroseeding specifications for the Southern Bluff area

Common Name	Scientific Name	Hydroseed Application Rate (pounds per acre)
California brome	*Bromus carinatus*	2.0
California poppy	*Eschscholzia californica*	0.5
Coastal strawberry	*Fragaria chiloensis*	0.5
Gold fields	*Lasthenia californica*	0.5
Purple needlegrass	*Stipa pulchra*	2.0
Seaside daisy	*Erigeron glaucus*	0.5
Small fescue	*Festuca microstachys*	5.0
Tidy tips	*Lavia platyglossa*	0.5
Valley sky lupine	*Lupinus nanus*	0.5
Varied color lupine	*Lupinus variicolor*	0.5

Weed Management

Several species of non-native invasive plants have been documented in the Project Area. Weed management will be implemented during reclamation to suppress the spread by such species. Among non-native plants known to occur within the Project Area, the following species are particularly invasive, per the California Invasive Plant Council (Cal-IPC; 2019), and should be targeted:

- Cape ivy (*Delairea odorata*; Highly invasive)

- French broom (*Genista monspessulana*; Highly invasive)
- English ivy (*Hedera helix*; Highly invasive)
- Pampas grass (*Cortaderia selloana*; Highly invasive)
- Himalayan blackberry (*Rubus armeniacus*; Highly invasive)
- Freeway iceplant (*Carpobrotus edulis*; Highly invasive)
- New Zealand spinach (*Tetragonia tetragonioides*; Highly invasive)
- Sea fig (*Carpobrotus chilensis*; Moderately invasive)
- Bull thistle (*Cirsium vulgare*; Moderately invasive)
- Fuller's teasel (*Dipsacus fullonum*; Moderately invasive)
- Italian rye grass (*Festuca perennis*; Moderately invasive)
- Short-podded mustard (*Hirschfeldia incana*; Moderately invasive)
- Ngaio tree (*Myoporum laetum*; Moderately invasive)
- Harding grass (*Phalaris aquatica*; Moderately invasive)
- Poison hemlock (*Conium maculatum*; Moderately invasive)
- Mediterranean barley (*Hordeum marinum*; Moderately invasive)
- Italian thistle (*Carduus pycnocephalus*; Moderately invasive)
- Rose clover (*Trifolium hirtum*; Moderately invasive)
- Silverleaf cotoneaster (*Cotoneaster pannosus*; Moderately invasive)
- Wild Oat (*Avena fatua*; Moderately invasive)
- Ripgut brome (*Bromus diandrus*; Moderately invasive)

In addition to the species listed above, any non-graminoid weed listed as a "highly invasive" species by the Cal-IPC (2019) (or equivalent reputable organization/agency) would be targeted for removal and/or management if it is observed in or near Revegetation Plan Area. Also, any non- native species prevalent enough to negatively influence the results of monitoring and performance standards may be targeted for removal or management.

Detailed instructions for removing particular non-native species can be found in *The Weed Workers' Handbook—A Guide to Techniques for Removing Bay Area Invasive Plants* (Cal-IPC 2004). Weed management may include a combination of mechanical removal and chemical treatment. General recommendations for weed management are outlined below.

Herbicide Application. Herbicide application is an effective means of controlling many invasive species as long as it is consistent with the local and regulatory approvals for the Project. Where herbicide treatment of weeds is appropriate, herbicide must be applied by a licensed pesticide applicator. Where herbicide treatment of weeds in aquatic settings (riparian habitat, wetlands, and seeps) is authorized and appropriate, the licensed applicator must use a product approved by the U.S. Environmental Protection Agency (EPA) for use in aquatic settings.

Non-native Shrubs. Woody shrubs and their roots should be removed using hand or power tools. If woody shrubs cannot be mechanically removed, their trunks should be cut and immediately treated with herbicide, with the roots left in place. This is particularly important for controlling French broom and non-native blackberry, which will resprout from cut stems if not treated with herbicide.

Herbaceous Plants. Herbaceous non-native species can be removed using almost any combination of methods that is suitable for a given site; however, they should be removed or treated prior to flowering and seed development. English ivy and other vines can be treated with herbicide and/or scraped out of the soil with hand tools or small earth-moving equipment. Pampas grass should be dug out of the soil using hand tools or small earth moving equipment to completely remove the rootball. Any pampas grass plants with plumes containing seeds should have their seed heads cut and bagged to prevent seeds from spreading around the site. Annual species, such as mustards and thistles, can be mechanically removed or treated with herbicide.

Non-native Tree Removal. Mature invasive trees do not occur in the Revegetation Plan Area; however, small seedlings are likely to appear from nearby seed sources. All local tree protection ordinances must be consulted and any necessary permits acquired prior to removing or trimming trees. The City of Pacifica does not protect trees under 50 inches in circumference at 2 feet above the natural grade. The County of San Mateo protects trees with a circumference of 38 inches or more 4.5 feet above the ground. Wherever possible, vegetation removal or trimming should be avoided during bird nesting season (February 15 to July 31). Tree removal during the nesting season would be permitted only if a pre-construction nest survey is conducted by a qualified biologist or restoration ecologist immediately prior to work to confirm the absence of nesting birds. A discussion of trees that would be removed from the Project Area is provided in the sections below.

Monitoring and Performance Standards

Monitoring. A qualified biologist, restoration ecologist, or landscape architect would monitor general site conditions following completion to ensure that performance standards have been met. Improvements would be maintained and repairs made for a period of at least five (5) years following completion. General site inspections would be made at least twice per year, before the rainy season (approximately September) and after the rainy season (approximately March) for at least five (5) years. These assessments would document the general site conditions and identify immediate maintenance needs, such as weed control and erosion repair.

To ensure adherence to the guidelines of this Revegetation Plan, all vegetation monitoring activities would be monitored by a qualified biologist, restoration ecologist, or landscape architect. Monitoring would be performed to document revegetation success. One growing season after hydroseeding, the Revegetation Plan Area would be monitored at least twice per year during the following five year period. The frequency of general site inspections and/or quantitative monitoring may be adjusted as needed to most accurately and efficiently identify maintenance or performance issues. Typically, site visits are conducted at the end of the growing season (September) to document success and cover of shrubs, but some herbaceous vegetation is preferentially monitored earlier in the year when it is identifiable (June). A spring visit is important to monitor weeds so a treatment program can be established before seeds are set in the summer.

Revegetation sites would be identified on a map and monitored to assure that standards are adequately achieved within a minimum of 80 percent success rate, as required by Reclamation Standards.

Sampling plots would be selected randomly throughout the areas seeded with grasses, herbs, and shrubs to determine native species richness and percent cover of each species. As with the planting areas, sampling would occur in nested plots, with shrubs assessed within a 5-meter radius and herbs within a 1-meter radius from the plot center. The nested approach means that once a plot center is randomly selected, shrubs are assessed within a 5-meter radius and herbs within a 1-meter radius from the plot center. Monitors would identify and count all shrubs in their respective plots. Cover of all native versus non-native shrubs and native versus non-native herbs within each layer would be estimated within each respective plot, and all species will be identified to the extent possible.

Performance Standards. The performance standards would be measured through comparisons of species richness, shrub density, plant cover, species composition, and the presence of noxious weeds. These terms are defined and detailed in Table 6.

Table 6. Performance Criteria Parameters

Parameter	Description	Desired Trajectory
Species Richness	The number of different plant species growing in an area.	Species richness is expected to be low at the outset due to varying germination rates of species within the hydroseed mix. After approximately two years, richness will likely increase as seeds have been exposed to sufficient environmental factors to trigger germination. Richness will likely taper off during Years three to five while the most appropriate species for the specific area/microclimate persist and reproduce. The result is a patchwork of large numbers of few species based on what the given area can support. This should be observed in reference sites as well since there are generally only a few dominant plants present in stable plant communities.
Plant Cover	A quantitative measure or ocular estimate of foliar and basal plant cover, expressed as absolute cover. Robust, self-sustaining vegetation is associated with adequate soil nutrients and low density soil.	Total plant cover is expected to increase over the first three to four years following revegetation, as grasses and forbs become established. As the structure of vegetation communities transitions from grasses and forbs to shrubs over time, total cover may decrease slightly because grasses will be shaded out and young shrubs are not likely to provide as high a percent cover. As these transitions occur, monitoring methods and/or performance criteria can be adapted to realistically identify success or failure. For example, after vegetation communities transition away from grassland, the measured parameter could be switched from plant cover to plant density (number of stems per area). Plant density also would be expected to increase over the first few years of shrub or tree establishment when individual plants are small and numerous, then density would decrease as some are shaded out. The plant community is not likely to reach a state of dynamic equilibrium (i.e. stabilize) for at least 10-15 years. However, this five-year monitoring period is intended to help ascertain the longer-term trajectory of vegetation at this site.
Species	A relative measure of the	Target species are expected to increase over

Composition	type and abundance of different plant species, measured as percent abundance of target species relative to a reference site. Typically used to determine if target species are present to assess the trajectory of vegetation at a site.	the duration of monitoring. Species composition is expected to become more diverse up to between five and ten growing seasons, at which time it is expected to be relatively stable.
Presence of Noxious Weeds	Plant census to determine the presence and/or dominance of noxious weeds, expressed as absolute cover.	Weed presence is expected to be relatively high in the first three seasons and control is critical in those years so that long-term colonization by weeds is minimized.

Acceptable threshold values for each of these parameters for each type of hydroseeding mix are presented in Tables 7 and 8. Threshold values were created with input from professionals who have experience with the proposed species in this eco-region. These tables describe the minimum targets for plant survival, species composition, and plant cover. These performance standards were tailored to each seeded community based on growth patterns for the plants in the seed mix. Performance standards represent anticipated conditions five (5) years after installation. SMARA requirements state that performance standards must be met for two (2) consecutive years without significant human intervention prior to release of financial assurances. Revegetation in the Revegetation Plan Area is intended to create approximately 30 to 85 percent coverage within five (5) years of installation, depending on the revegetation community.

Several of the performance criteria require reference sites for comparison. Potential reference sites are abundant on the Property and should be placed close to planting areas in locations that support the desired plant community.

Since reference sites represent intact native communities, it is understood that revegetation areas may not attain their same level of maturity within five (5) years. Therefore, the success criteria are expressed as a percentage compared to what was observed in a reference site and are not anticipated to reach the same level observed in reference sites during the monitoring period. Instead, the goal of the performance criteria is to demonstrate improvement success over time, such that they may eventually reach reference site levels at maturity.

Species richness (i.e., the number of species present in the overstory and understory) in the Revegetation Plan Area is expected to increase each year for approximately three (3) to five (5) growing seasons, after which time it is expected to decrease slightly before becoming relatively stable.

By the fifth growing season following planting, the total number of planted and naturally recruited native trees and shrubs in the Revegetation Plan Area would be equal to at least 65 percent of the reference site. All planted and recruited trees and shrubs counted must be alive and in good health. This performance standard is more than adequate to ensure successful establishment with 50 to 100 percent canopy cover at maturity, which may not be achieved for more than 10 years.

Species composition (i.e., the number of species present) in the Revegetation Plan Area would be documented for two purposes: (1) recording which target native species are best suited to site conditions, and (2) tracking competition between native and non-native species. Since species richness does not contribute to erosion control, this performance standard would not be evaluated for all revegetation types.

Plant cover assessments, targeting an 80 to 90 percent success rate, would be conducted by measuring absolute cover using point transect, quadrats along transects, plots, or aerial photograph analysis. While various monitoring methods are acceptable, the methodology should be consistent or comparable from year-to-year.

In addition to vegetation monitoring to assess the success of revegetation efforts, the density of weeds (i.e., non-native invasive plants), measured as absolute cover, would be assessed as part of vegetation sampling. Weed presence is expected to be relatively high in the first three (3) growing seasons following final reclamation, thus weed management is critical in those years to minimize long-term weed colonization.

For the purposes of Revegetation Plan Area maintenance and monitoring, non-native non-graminoid plants listed in the Cal-IPC Inventory (2019) as “Highly” invasive would be considered invasive weeds subject to control and performance standards. If invasive weeds are found to exceed 10 percent cover within a minimum mapping unit of 0.25 acre over all sampled quadrats, weed abatement activities would commence.

Though work would occur throughout the Revegetation Plan Area, the majority of weed control would be focused in meadow areas where pampas grass seed contamination would be abundant and seeded vegetation would be less vigorous than scrub species planted on steeper slopes. As the native seeded shrubs begin to grow and mature, they would shade out and outcompete the majority of non-native species. Therefore, as native plants thrive on the slopes, invasive species would diminish in cover. Tables 7 and 8 below provide 5-year performance standards for revegetation types that will be employed in the Revegetation Plan Area.

Table 7. Proposed Performance Standards for Grass and Forb Seeded Communities (Southern Bluff and Quarry Pit)

Performance Criteria	Monitoring Method	Year 1	Year 2	Year 3	Year 4	Year 5	Response
Species Richness	Transect/plots or relevé with species ID	25%	50%	65%	70%	75%	Reseed natives and/or remove non-target species
Plant Cover (absolute cover, 80-90 percent success rate)	Transect/plots or aerial photo analysis	5%	10%	20%*	40%	60%	Reseed and/or identify and repair influencing variable

Noxious Weed Cover (absolute cover of Cal- IPC “High” rated noxious weeds)	Transect/plots or ocular assessment and mapping of entire revegetated area	<30%	<30%	<30%	<25%	<20%	Additional managing of non-target species

Table 8. Proposed Performance Standards for the Scrub, Grass, and Forb Seeded Community (Hilltop and East Flank)

Performance Criteria	Monitoring Method	Year 1	Year 2	Year 3	Year 4	Year 5	Response
Species Richness	Transect/plots or relevé with species ID	25%	50%	65%	70%	75%	Reseed natives and/or remove non-target species
Shrub Density (number of shrubs observed relative to a reference site)	Plant census in transect/plot	3%	8%	15%	20%	50%	Substitute failing species with target species that are thriving
Species Composition (percent abundance of target species relative to reference site)	Transect/plots or relevé with species ID	10%	20%	40%	60%	75%	Reseed natives and/or remove non-target species
Plant Cover (absolute cover, 80-90 percent success rate)	Transect/plots or aerial photo analysis	5%	10%	20%	40%	50%	Reseed natives and/or identify and repair influencing variable
Noxious Weed Cover (absolute cover of Cal- IPC “High” rated noxious weeds)	Transect/plots or ocular assessment and mapping of entire revegetated area	<30%	<30%	<20%	<20%	<20%	Additional managing of non- target species

Maintenance. Maintenance of revegetation areas across the Revegetation Plan Area would occur as necessary based on post-revegetation monitoring and the evaluation of meeting performance standards.

Maintenance of the Revegetation Plan Area would consist of reseeding unsuccessful revegetation areas to the extent necessary to achieve the performance goals, to limit the extent of noxious weeds, and to repair of erosion damage. If any significant rills or gullies are identified in the Revegetation Plan Area, remedial actions would include reseeding of the area with an approved erosion control seed mix, and if necessary, slope stabilization measures would be undertaken.

If revegetation efforts are not successful within five (5) years following initial seeding, the under-performing areas would be re-evaluated to determine the measures necessary to improve performance. If necessary, these areas would be reseeded and/or replanted with methods modified as needed. This may include the use of container stock and irrigation, or simply additional seeding during the wet season. Prior to reseeding, the operator would evaluate previous revegetation practices to identify methods to benefit the overall revegetation effort. If, after a site is reseeded, revegetation efforts still do not yield satisfactory results, additional reseeding or other intervention methods may be required.

Weed control is necessary to reduce the occurrence of undesirable non-native plant species that may invade the Revegetation Plan Area where disturbance has removed the native plant cover and where active and natural revegetation is occurring. Weeds compete with native plant species for available moisture and nutrients, and consequently interfere with revegetation efforts.

As discussed above, species listed by Cal-IPC (2019) as highly invasive would be considered problematic and would be targeted during maintenance of this revegetation effort if they exceed the designated threshold of 10 percent cover within a minimum mapping unit of 0.25 acre. The percent cover of weeds, abatement measures recommended and undertaken, and other observations on weed control would be included in vegetation monitoring reports. Weed abatement responsibilities may cease once performance standards have been met for each phase of revegetation efforts, unless invasive species in completed the Revegetation Plan Area are deemed a threat to nearby efforts still in progress.

The quarry slopes are anticipated to receive limited general maintenance due to steep slopes in the area. Annual monitoring to ensure that erosion control is performing adequately is recommended. If any major erosion is evident, reapplication of hydroseed is recommended. Weed abatement can be achieved best by early detection and removal to reduce the potential for additional seed set. Removal of weeds should be done by hand or mechanically. If seed heads are present on plants, the material should be bagged and disposed of off-site. Use of herbicide application is also permissible if it is not feasible to conduct weed management by hand.

Adaptive Management. Every restoration project requires flexibility in managing its success. Adaptive management is an approach that allows for changes to be made along the way and centers on a six-step process of: (1) Assessing, (2) Designing, (3) Implementing, (4) Monitoring, (5) Evaluating, and (6) Adjusting (Nyberg 1999). The strategies described above may prove to be less efficient than other strategies developed at a later date. Therefore, if a different planting strategy is implemented in the Revegetation Plan Area, for which the above performance standards and monitoring guidelines cannot be followed, a revision to this Plan would be submitted as a substitute for this document or portions thereof.

Vegetated Swale Revegetation

The Project would include the establishment of two vegetated swales in the Western Section of the Project Area for drainage. One vegetated swale would be installed along the boundary of the quarry pit and southern bluff. A second vegetated swale would be installed along the curved portion of the proposed pedestrian foot trail (i.e., along the northern portion of the hilltop and east flank). The proposed vegetated swale seed mix for the Project includes native grass and forb species, which are tolerant of varied moisture and soil conditions, and are commonly used in swale applications. The plant species would develop a dense root structure and vegetative cover to provide maximum pollutant filtration and discourage erosion. They would be installed via hydroseeding. In addition, these species would provide habitat and food sources for pollinators and aesthetic benefits.

Table 9. Vegetated Swale Seed Mix

Common Name	Scientific Name	Hydroseed Application Rate (pounds per acre)
Common yarrow	*Achillea millefolium*	0.3
Tufted hair grass	*Deschampsia cespitosa*	2.0
Creeping wild rye	*Elymus triticoides*	8.0
Small fescue	*Festuca microstachys*	6.0
Red fescue	*Festuca rubra*	8.0
Meadow barley	*Hordeum brachyantherum*	8.0
Blue-eyed grass	*Sisyrinchium bellum*	4.0

1.1.5 Aquatic Habitat Creation

California Red-legged Frog and San Francisco Garter Snake Pond Installation

To offset permanent impacts (i.e., grading and filling) to the seasonal wetland pond in the Western Section of the Project Area, a 4-foot-deep bentonite clay-lined pond would be constructed in an upland portion of the Eastern Section of the Project Area that is currently composed of non-native annual grassland and coyote brush scrub (Appendix A, Figure 2). The bentonite clay-lined pond would be approximately the same size as the existing man-made seasonal wetland pond (quarry pond) and would provide high-quality breeding habitat for California red-legged frog (CRLF; *Rana draytonii*; federally threatened) and habitat for San Francisco garter snake (SFGS; *Thamnophis sirtalis tetrataenia*). To determine the feasibility of the proposed mitigation pond, WRA conducted a water budget model and location analysis of the site.

The purpose of the water budget model was to help understand the annual hydrology of the proposed pond. The goal was to determine if the proposed pond would support CRLF aquatic breeding habitat by providing the preferred hydroperiod of standing water from December to August. Using the principles and equations of the TR-55 hydrology model developed by the U.S. Department of Agriculture (USDA), WRA developed a model that generated a daily estimate of water depth in the pond for a study period, extending from 2009 to 2018. It is assumed that construction of the pond bottom would incorporate a clay bentonite additive to maximize the ability of the pond to hold standing water for an extended period. For the water budget model, WRA used a known infiltration rate for a bentonite-lined pond. Historic weather data were taken from a Pacifica National Oceanic and Atmospheric Administration (NOAA) weather station.

The results revealed that for an approximately 4-foot-deep bentonite clay-lined pond, a hydroperiod of standing water could be expected from December to September during a normal rain year. During severe drought years, the hydroperiod was reduced (February to May), but remained in the range of January to August during moderate drought years. During several years, the model predicted standing water year-round. This type of fluctuation is typical for the Pacifica climate, but demonstrates that a bentonite clay-lined pond of this size and depth would be feasible to provide CRLF aquatic breeding habitat.

The eastern parcel of the property was assessed for suitability pertaining to the construction of a bentonite clay-lined pond. Because bentonite would be used to amend the soils, the location was not dependent on existing site soils (i.e., hydric soils were not required). Instead, the location was determined based on slope (minimal earthwork), existing biological community type, and accessibility. Following the determination of the preferred pond location (Appendix A, Figure 2), a preliminary grading analysis was conducted. Based on grading, the use of bentonite, and the composition of existing biological communities (i.e., uplands [non-native annual grassland and coyote brush scrub]), it was determined that a mitigation pond could be feasibly constructed in the proposed location. Existing foot trails would be used for construction access to minimize the temporary impact footprint associated with pond construction. The limits of work would extend around the perimeter of the pond, but such impacts would be temporary and would impact non-jurisdictional upland habitat. Acreages associated with created aquatic habitats are provided in Table 10, below.

This mitigation proposal was approved by the USFWS during a March 15, 2019 site visit conducted in the Project Area by the USFWS and WRA.

Seasonal Wetland Installation

To offset impacts to additional seasonal wetlands that would be graded and filled as part of quarry reclamation activities, an additional seasonal wetland would be constructed in an upland portion of the Eastern Section of the Project Area that is currently composed of non-native annual grassland and coyote brush scrub (Appendix A, Figure 2). To determine the feasibility of the proposed mitigation wetlands, WRA conducted a water budget model and location analysis (which included infiltration testing for groundwater depth).

A water budget model was created to assess the inundation of potential wetland areas (that currently exist as uplands) over time. This analysis elucidated the site's ability to support potential wetland creation in the existing upland community. Inundation (and associated soil saturation) was the first factor considered when evaluating the subject site's potential to support seasonal wetlands, as inundation drives plant community establishment.

Using the principles and equations of the TR-55 hydrology model developed by the USDA, WRA developed a model that generated a daily estimate of water depth in the proposed seasonal wetlands from 2009 to 2018. Often in these types of systems with small watersheds, soil infiltration rate drives the inundation period. To determine an accurate soil infiltration rate, WRA conducted an in-situ soil infiltration test at a potential wetland creation location in the eastern parcel of the property. Single-walled metal rings were filled with water and a water level data logger was installed. The water level data logger was a modified version of the American Society for Testing and Materials standard test logger that evaluates infiltration rates in soils using the double ring infiltrometer test. In the past, WRA has relied on this test to produce accurate results required to develop a predictive wetland water budget model. Following the completion of these tests, WRA used the infiltration rate along with historic weather data taken from a Pacifica NOAA weather station to develop the water budget model.

The results revealed that inundation could be expected for a period of two to three months during a normal rain year. Seasonal wetlands typically require a minimum of 14 days of consecutive inundation to successfully establish and qualify as mitigation wetlands by federal and state regulatory agencies. Therefore, the test site demonstrated excellent hydrology and would adequately support seasonal wetlands.

WRA developed a preliminary plan to determine the estimated size of seasonal wetlands that could be constructed in the eastern parcel of the property. The first factor considered was infiltration rate. The mitigation was designed to be situated where wetland hydrology was predicted in the water budget model. Slope was also considered. For flat bottom seasonal wetland basins built into existing slopes, WRA evaluated three factors: (1) the amount of earthwork required, (2) the potential to construct finished bottom grades with known soil characteristics, and (3) the wetland's natural aesthetic. By limiting the cut depth to 30 inches, the wetland basin could be designed to satisfy the subject parameters by grading within the known soil characteristics measured via the infiltration test. At the test location, the wetland could be graded subtly into the slope to create a natural aesthetic. With this in mind, a preliminary plan for a single, contiguous wetland basin was designed. Acreages associated with aquatic habitats proposed for creation in existing uplands are provided in Table 10, below.

Table 10. Aquatic Habitats Proposed for Creation in Uplands to Offset Project Impacts

Aquatic Habitat Type	Size (acres)
California red-legged frog and San Francisco garter snake pond	0.15
Seasonal wetland	0.60
Total	**0.75**

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological resources assessment including applicable laws and regulations that relate to the field investigations.

2.1 Special-status Species

Special-status species include plant and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA). These acts afford protection to both listed species and species proposed for listing. The federal Bald and Golden Eagle Protection Act also provides broad protections to both eagle species that in some regards are similar to those provided by ESA. In addition, California Department of Fish and Wildlife (CDFW) Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue, are considered special-status species. Although CDFW Species of Special Concern generally have no special legal status, they are given special consideration under the California Environmental Quality Act (CEQA). Bat species are also evaluated for conservation status by the Western Bat Working Group (WBWG), a non-governmental entity. Bats named as a “High Priority” or “Medium Priority” species for conservation by the WBWG are typically considered special-status and also considered under CEQA. In addition to regulations for special-status species, most native birds in the United States (including non-status species) are protected by the California Fish and Game Code (CFGC; Sections 3503, 3503.5, and 3513), and guidance for protection is provided by the Migratory Bird Treaty Act of 1918. Under the CFGC, destroying active nests, eggs, or young is illegal.

Plant species listed on the California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (Inventory) with California Rare Plant Ranks (Ranks) of 1 and 2 are also considered special-status plant species and must be considered under CEQA. Rank 3 and Rank 4 species are afforded little or no protection under CEQA, but are included in this analysis for completeness. A description of the CNPS Ranks is provided below in Table 11.

Table 11. Description of CNPS Ranks and Threat Codes

California Rare Plant Ranks (formerly known as CNPS Lists)	
Rank 1A	Presumed extirpated in California and either rare or extinct elsewhere
Rank 1B	Rare, threatened, or endangered in California and elsewhere
Rank 2A	Presumed extirpated in California, but more common elsewhere
Rank 2B	Rare, threatened, or endangered in California, but more common elsewhere
Rank 3	Plants about which more information is needed - a review list
Rank 4	Plants of limited distribution - a watch list
Threat Ranks	
0.1	Seriously threatened in California
0.2	Moderately threatened in California
0.3	Not very threatened in California

Critical Habitat

Critical habitat is a term defined in the ESA as a specific and designated geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The ESA requires federal agencies to consult with the USFWS to conserve listed species on their lands and to ensure that any activities or projects they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. In consultation for those species with critical habitat, federal agencies must also ensure that their activities or projects do not adversely modify critical habitat to the point that it will no longer aid in the species’ recovery. In many cases, this level of protection is similar to that already provided to species by the ESA jeopardy standard. However, areas that are currently unoccupied by the species but which are needed for the species’ recovery are protected by the prohibition against adverse modification of critical habitat.

2.2 Sensitive Biological Communities

Sensitive biological communities include habitats that fulfill special functions or have special values, such as wetlands, streams, or riparian habitat. These habitats are protected under federal regulations, such as the Clean Water Act (CWA); state regulations, such as the Porter-Cologne

Water Quality Control Act, the CDFW Streambed Alteration Program, the California Coastal Act, and CEQA; or local ordinances or policies, such as city or county tree ordinances, Special Habitat Management Areas, and General Plan elements.

Waters of the United States

The U.S. Army Corps of Engineers (Corps) regulates "Waters of the United States" under Section 404 of the CWA. Waters of the U.S. are defined in the Code of Federal Regulations (CFR) as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), are identified by the presence of: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated at a sufficient depth and for a sufficient duration to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as "other waters" (i.e., non-wetland waters) and are often characterized by an ordinary high water mark (OHWM). Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into Waters of the U.S generally requires an individual or nationwide permit from the Corps under Section 404 of the CWA.

Waters of the State

The term "Waters of the State" is defined by the Porter-Cologne Water Quality Control Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope and has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the Corps under Section 404 of the CWA. Waters of the State are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact Waters of the State, are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to Waters of the State, the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

CDFW Jurisdictional Streams, Lakes, and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by the CDFW under Sections 1600-1616 of the CFGC. Alterations to or work within or adjacent to streambeds or lakes generally require a Section 1602 Lake and Streambed Alteration Agreement (LSAA). The term "stream", which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life [including] watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (14 CCR 1.72). In addition, the term "stream" can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). "Riparian" is defined as "on, or pertaining to, the banks of a stream." Riparian vegetation is defined as "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself" (CDFG 1994). Removal of riparian vegetation also requires a Section 1602 LSAA from the CDFW.

California Coastal Commission Environmentally Sensitive Habitat Areas

On land, the California Coastal Zone varies in width from several hundred feet in highly urbanized areas up to 5 miles in certain rural areas, and offshore the coastal zone includes a 3-mile-wide band of ocean. Within the California Coastal Zone, an "environmentally sensitive area" is defined by the California Coastal Act as: "Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (Section 30107.5). The California Coastal Commission (CCC) regulates the diking, filling, or dredging of wetlands, which qualify as an Environmentally Sensitive Habitat Area (ESHA), within the California Coastal Zone. Section 30121 of the California Coastal Act defines "wetlands" as "lands within the Coastal Zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens." The CCC considers this definition as requiring the observation of one diagnostic feature of a wetland, such as wetland hydrology, dominance by wetland vegetation (i.e., hydrophytes), or presence of hydric soils, as a basis for asserting jurisdiction under the California Coastal Act. In addition to the above definition, the *Statewide Interpretive Guidelines for Identifying and Mapping Wetlands and Other Wet Environmentally Sensitive Habitat Areas* (CCC 1981) provide technical criteria for use in identifying and delineating wetlands and other environmentally sensitive habitat areas within the Coastal Zone. The technical criteria presented in the guidelines are based on the California Coastal Act definition and indicate that wetland hydrology is the most important parameter for determining a wetland. If a project proposes to develop or grade areas within the California Coastal Zone, a Coastal Development Permit (CDP) is typically required from the CCC.

Other Sensitive Biological Communities

Other sensitive biological communities not discussed above include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities (alliances) as "threatened" or "very threatened" and keeps records of their occurrences in its California Natural Diversity Database (CNDDB; CDFW 2019). CNDDB vegetation alliances are ranked 1 through 5 based on NatureServe's (2010) methodology, with those alliances ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. Impacts to sensitive natural communities identified in local or regional plans, policies, or regulations or those identified by the CDFW or USFWS must be considered and evaluated under CEQA (CCR Title 14, Div. 6, Chap. 3, Appendix G). Specific habitats may also be identified as sensitive in city or county general plans or ordinances.

2.3 Protected Trees

City of Pacifica Tree Ordinance

Chapter 12 of the Pacifica Municipal Code (Preservation of Heritage Trees) stipulates regulations designed to preserve and protect heritage trees on private or City-owned property. The ordinance defines a heritage tree as being any tree within the City of Pacifica, exclusive of eucalyptus, which has a trunk with a minimum circumference of 50 inches, a diameter of 16 inches, when measured at 2 feet above the natural grade. In addition, the City Council may designate any tree or grove of trees of special historical, environmental, or aesthetic value as a heritage tree.

Because of their value to the City of Pacifica, heritage trees may not be removed, destroyed, or damaged beyond repair without a Heritage Tree Permit. Substantial trimming which threatens the healthy growth of the tree and new construction within the dripline of a heritage tree shall not be allowed without the issuance of a permit. Development projects affecting heritage trees which require approval from the Planning Commission must be accompanied by a tree protection plan, which is processed via planning permits.

Removal of vegetation or any tree which is not a heritage tree does not require a City tree removal permit. However, a permit shall be required for the removal or harvesting of major vegetation other than for agricultural purposes, kelp harvesting, and timber operations which are in accordance with a timber harvesting plan and if located within one or more of the resource areas defined by the City, in association with other permits required by the City for the project.

City of Pacifica Logging Operations

Logging operations within the City of Pacifica are defined as any removal, destruction or harvesting of 20 or more trees in one year from any parcel or contiguous parcel under the same ownership. In reference to logging regulations, a tree is defined as any tree 6 inches in diameter as measured 12 inches from the ground. City of Pacifica Ordinance No. 636-C.S. prohibits logging operations unless one of the following conditions is met:

(a) Said operations are in conjunction with a City permit(s) requiring planning commission and/or City Council approval, at which time said operations shall be evaluated and approved or denied at a duly noticed public hearing by the Commission and /or Council, concurrently with other permit(s).

(b) Said operations are necessary immediately for the safety of life or property, as determined by the Director of Public Works or his/her designee.

(c) Said operations occur on City-owned property and are necessary immediately to maintain public health and safety.

3.0 METHODS

On March 18, August 22, and August 26, 2019, the Project Area was traversed on foot to determine: (1) if existing conditions provide suitable habitat for any special-status plant or wildlife species, (2) plant communities present within the Project Area, and (3) if sensitive habitats are present. All observed plant species are listed in Appendix B.

3.1 Special-status Species

3.1.1 Literature Review

Potential occurrence of special-status species in the Project Area was evaluated by first determining which special-status species occur in the vicinity of the Project Area through a literature and database search. Database searches for known occurrences of special-status species focused on the Montara Mountain and five surrounding 7.5-minute U.S. Geological Survey (USGS) quadrangles, including San Francisco South, Hunters Point, San Mateo, Half

Moon Bay, and Woodside. The following sources were reviewed to determine which special-status plant and wildlife species have been documented to occur in the vicinity of the Project Area:

- CNDDB records (CDFW 2019)
- USFWS Information for Planning and Conservation Species Lists (USFWS 2019)
- CNPS Inventory records (CNPS 2019)
- CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990)
- CDFG publication *California Bird Species of Special Concern* (Shuford and Gardali 2008)
- CDFW and University of California Press publication *California Amphibian and Reptile Species of Special Concern* (Thomson et al. 2016)
- *A Field Guide to Western Reptiles and Amphibians* (Stebbins 2003)
- Habitat Assessment for Special-status Invertebrates at the Pacifica Quarry in Pacifica (Entomological Consulting Services 2006)
- Biological Assessment for Federally Listed Species (Zentner and Zentner 2017a)

3.1.2 Site Assessment

A site visit was conducted in the Project Area to search for suitable habitats for special-status species. Habitat conditions observed in the Project Area were used to evaluate the potential for presence of special-status species based on these searches and the professional expertise of the investigating biologist. The potential for each special-status species to occur in the Project Area was then evaluated according to the following criteria:

- <u>No Potential</u>. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (e.g., foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- <u>Unlikely</u>. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- <u>Moderate Potential</u>. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- <u>High Potential</u>. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- <u>Present</u>. The species is observed on the site or has been recorded (i.e., CNDDB other reports) on the site recently.

The site assessment was intended to identify the presence or absence of suitable habitat for each special-status species known to occur in the vicinity to determine its potential to occur in the Project Area. The site visit did not constitute a protocol-level survey and was not intended to determine the actual presence or absence of a species; however, if a special-status species was observed during the site visit, its presence was recorded and is discussed in the Results section of this document.

Appendix C presents the evaluation of the potential for occurrence of each special-status plant and wildlife species known to occur in the vicinity of the Project Area with their habitat requirements, potential for occurrence, and rationale for the classification based on criteria listed above. Recommendations for further surveys for species present or with a moderate or high potential to occur in the Project Area are provided in Section 5.0 below.

3.2 Biological Communities

Prior to the site visit, the Soil Survey of San Mateo County, California (USDA 1961) was examined to determine if any unique soil types that could support sensitive plant communities and/or aquatic features were present in the Project Area. Biological communities present in the Project Area were classified based on existing plant community descriptions described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) or *Manual of California Vegetation* (Sawyer et.al. 2009). However, in some cases it is necessary to identify variants of community types or to describe non-vegetated areas that are not described in the literature. Biological communities were classified as sensitive or non-sensitive as defined by CEQA and other applicable laws and regulations.

3.2.1 Non-sensitive Biological Communities

Non-sensitive biological communities are not afforded special protection under state, federal, and local laws, regulations, and ordinances. Impacts to such communities would not be significant under CEQA. These communities may, however, provide suitable habitat for some special-status plant or wildlife species.

3.2.2 Sensitive Biological Communities

Sensitive biological communities are given special protection under CEQA and other applicable federal, state, and local laws, regulations and ordinances. Applicable laws and ordinances are discussed above in Section 2.0. Methods used to identify sensitive biological communities are discussed below.

<u>Wetlands, Non-wetland Waters, and Riparian Vegetation</u>

The Project Area was surveyed to determine if any wetlands, non-wetland waters, or riparian vegetation potentially subject to jurisdiction under the CWA, the Porter-Cologne Water Quality Control Act, the CFCG, and the California Coastal Act. The assessment was based primarily on the presence of wetland plant indicators, but also included any observed indicators of wetland hydrology or wetland soils. Any potential wetland areas were identified as areas dominated by plant species with a wetland indicator status[1] of OBL, FACW, or FAC as provided on the Corps National Wetlands Plant List (Lichvar et al. 2016). Evidence of wetland hydrology can include direct (primary) indicators, such as visible inundation or saturation, algal mats, and oxidized root channels, or indirect (secondary) indicators, such as a water table within 2 feet of the soil surface during the dry season. Some indicators of wetland soils include dark colored soils, soils with a sulfidic odor, and soils that contain redoximorphic features as defined by the Corps Manual (Environmental Laboratory 1987) and Field Indicators of Hydric Soils in the U.S. (Natural Resources Conservation Service [NRCS] 2010).

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[1] OBL = Obligate, always found in wetlands (> 99% frequency of occurrence); FACW = Facultative wetland, usually found in wetlands (67-99% frequency of occurrence); FAC = Facultative, equal occurrence in wetland or non-wetlands (34-66% frequency of occurrence).

Prior to the survey, the following resources were reviewed: an Approved Jurisdictional Determination of the Western Parcel of Rockaway Quarry (Corps 2018), a wetland delineation of the Western Parcel that was used to inform the Approved Jurisdictional Determination (Zentner and Zentner 2017c), and a Wetland Mitigation Program previously drafted by Zentner and Zentner (2017d). The preliminary non-wetland waters assessment was based primarily on the presence of unvegetated, ponded areas or flowing water, areas vegetated with hydrophytic plant species, or evidence indicating their presence, such as an OHWM or a defined drainage course. If the preliminary waters assessment identifies potential wetlands, collection of additional data will be necessary to prepare a formal delineation report suitable for submission to the Corps and a formal delineation report suitable for submission to the CCC, should impacts to wetland habitats be anticipated for Project implementation.

Other Sensitive Biological Communities

The Project Area was evaluated for the presence of other sensitive biological communities, including riparian areas and sensitive plant communities recognized by the CDFW. If present in the Project Area, these sensitive biological communities were mapped and are described below.

3.3 Heritage Trees

On August 26, 2019, the Project Area was traversed on foot to verify the presence, species, and diameter-at-breast height (DBH) of all trees previously surveyed within the Project Area as documented in the "Rockaway Quarry Heritage Tree Survey" prepared by Zentner and Zentner in June of 2016 (Zentner and Zentner 2017b). A WRA ISA-Certified Arborist surveyed the Project Area and verified previously collected tree data for each surveyed tree, including species and DBH.

Each tree was located and identified by its aluminum tree tag with a unique identification number. DBH was verified for surveyed trees in the Project Area by measuring the trunk diameter at 24 inches above grade. The diameter for multi-trunked trees was calculated by measuring the largest trunk at 24 inches above grade. Circumferences were extrapolated by multiplying a tree's diameter by 3.14. In cases where an irregular buttress or bulge occurred at 2 feet above grade, measurements were taken above or below the irregular feature to best represent the size of the tree.

4.0 RESULTS

The Project Area borders the Pacific Ocean in the Montara Mountain USGS 7.5-minute quadrangle. Rockaway Quarry was a side hill, open pit mine from which limestone, greenstone, shale, and chert were harvested, crushed, screened, and sold for construction purposes. Rockaway Quarry has been the site of a variety of uses and development proposals ever since.

The Western Section of the Project Area has seen active use since at least the mid-1700s when Spanish soldiers quarried lime for the Presidio in San Francisco. Under the ownership of the E. B. and A. L. Stone Company, it supplied limestone for the rebuilding of San Francisco after the 1906 earthquake. From 1907 to 1920, the Ocean Shore Railroad ran through the site on its way to San Francisco. Extensive blasting was used in support of the mining in the 1920s and 1930s until the blasting was halted by court order. While the quarry was actively mined from 1900 on, the Eastern Section was used for buildings and settling ponds, quarry roads, conveyor belts, a truck scale, and washing area. These structures were demolished and this area was filled by 1993.

By the 1970s, mining declined as the demand for limestone decreased. The last commercial operator, Quarry Products, Inc., closed the quarry in 1987. Subsequently, the quarry pit was partially filled with earth taken from Vallemar Road during the Highway 1 expansion (Holman and Associates 2002).

Once quarry operations were suspended, the Project Area was used for a variety of enterprises, including an annual rodeo. However, in 1996, the City received permits to construct a wastewater treatment and recycling facility on the northern edge of the Project Area. These permits also allowed the City to relocate Calera Creek, which had been a man-made ditch running through the Eastern Section of the Project Area. Calera Creek now conveys flows and forms the boundary between the Western and Eastern Sections of the Project Area. As part of these permits, the City also agreed to grade the Eastern Section of the Project Area and to fill "the old channelized creek and 7+ acres of previously damaged and scattered wetlands on-site "(CCC CDP 1-95-40).

4.1 Soils

Soils within the Project Area have been altered due to the placement of excavated soils during the realignment and restoration of Calera Creek and other historical activities at the site. The Project Area contains three soil types (California Soil Resource Laboratory [CSRL] 2019). The majority of soils in the Project Area consist of pits and dumps. Soil types in the Project Area are discussed below and are depicted on Figure 3 of Appendix A.

Rock outcrop-Orthents. The Rock outcrop-Orthents complex consists of bare rock and undeveloped entisols created by physical and chemical erosion processes on steeply-sloped surfaces. Soils in this complex occur along the western edge of the Western Section of the Project Area. These soils have little to no ability to hold water or support plant life and have no hydric soil rating.

Candlestick-Kron-Burbiburi. The Candlestick-Kron-Burbiburi complex consists of well-drained soils on the northern edge of the Western Section and the southeastern portions of the Eastern Section of the Project Area. These soils formed from hard fractured residuum weathered from sandstone. Permeability and runoff are high in these soils. Soils in this complex have no hydric soil rating.

Pits and Dumps. The Pits and Dumps series consists of poorly drained soils on the lower floodplains of local area creeks. These soils formed in alluvium from sedimentary rock. Permeability is slow and water runoff is very slow in these soils, which are subject to occasional ponding. Pits and Dumps soils throughout the Project Area contain large amounts of gravel and cobble, as well as inclusions of multiple soil types mixed throughout the soil profile. Topsoil development is not apparent in these soils, which generally lack discernable structure. Soils in this series have no hydric soil rating.

4.2 Hydrology and Topography

Western Section. The Western Section of the Project Area is dominated by steep slopes with elevations ranging from 0 to 270 feet NGVD (all elevations are recorded in NGVD). Within the Western Section, the hilltop contains a mix of fills and old cuts with mounds and hillocks. The apex of the hilltop is relatively flat with two mounds protruding approximately 20 feet upwards.

The hilltop's lower edge is in the geologic shear zone (a structural discontinuity between two different geologic formations) that rests atop the quarry face. The east flank is a steep, unevenly sloped area comprised predominately of exposed and unstable rock, and gains approximately 220 feet in elevation. The grade of the slope varies throughout with several small, relatively flat plateaus. The quarry face contains a steep rock face below the geologic shear zone that separates the face from the hilltop. The slope of the quarry face has approximately 170 feet in elevation gain. The lower two thirds of the face is steep and sparsely vegetated below the existing access road. Above the existing access road, the slope is slightly less steep. The quarry pit is predominately a flat, uneven mix of pits, fills, and slopes. An approximately 7,800-square-foot by 10-foot deep depression is located near the eastern edge, which currently contains ponded runoff from higher on-site elevations. North of the depression is an elevated, predominately rock surface. The southern bluff is steeply sloped and abuts the Pacific Ocean to the south.

Precipitation is the main natural hydrological source for the Western Section. A steep ridge along the southern bluff, hilltop, and quarry face separates the direction of runoff. Stormwater runoff west of the ridge drains west towards the Pacific Ocean, whereas runoff east of the ridge drains south and southeast towards Calera Creek. Wetlands in the Western Section are located in the quarry pit and the east flank within relatively small depressions that collect rainwater and runoff. Two isolated wetlands occurring at the boundary of the quarry face and east flank may also be fed by small, sub-surface perennial seeps, as the soils are inundated year-round. Calera Creek flows between the Western and Eastern Section of the Project Area. This relocated channel flows southwest and empties to the Pacific Ocean just west of the Project Area.

Eastern Section. The Eastern Section of the Project Area is relatively flat, ranging in elevation from 20 to 65 feet, and contains several natural features, such as seasonal wetlands and an ephemeral stream. Natural hydrological sources for the Eastern Section include precipitation and surface run-off from adjacent lands, which drain southwest towards Calera Creek and the Pacific Ocean. Several culverts convey flows from a relocated tributary on the east side of California State Route 1. These culverts direct water into the ditch that runs along the eastern and southern edges of the Eastern Section of the Study Area. One of these culverts is non-functional and is clogged with debris, thus flows in this area disperse onto the roadway and onto undeveloped land, forming seasonal wetlands.

Additionally, Calera Creek is conveyed through the strip of land that connects the Eastern Section to the Western Section of the Project Area via three 72-inch barrel culverts.

4.3 Special-status Species

4.3.1 Plants

Based on a review of the resources and databases discussed in Section 3.1.1, 87 special-status plant species have been documented in the vicinity of the Project Area (Appendix A, Figure 6). Appendix C summarizes the potential occurrence for each special-status plant species located in the vicinity of the Project Area.

No special-status plant species were observed in the Project Area during the site visits. However, three special-status plant species have a moderate potential to occur in the Project Area. The remaining species documented to occur in the vicinity of the Project Area are unlikely or have no potential to occur due to the following reasons:

- Absence of specific soil types (e.g., serpentine soils)

- Absence of suitable habitat (e.g., chaparral, grassland, coastal salt marsh)
- Dominance of invasive, non-native species
- Outside the geographic range of species (e.g., Project Area is below known elevation range)
- Outside the known distribution of species (e.g., Project Area is too far north)

Special-status Plant Species with Moderate Potential Occur in the Project Area

Pappose tarplant (*Centromadia parryi* ssp. *parryi*) Rank 1B.2. Moderate Potential. Pappose tarplant is an annual herb in the sunflower family (Asteraceae) that blooms from May to November. It typically occurs in vernally mesic, often alkaline areas in coastal prairie, meadow, seep, coastal salt marsh, and valley and foothill grassland habitat at elevations ranging from 5 to 1,380 feet (CNPS 2019). This species is a facultative wetland (FACW) plant (Lichvar 2012), and is a vernal pool generalist (Keeler-Wolf et al. 1998). Observed associated species include bristly ox-tongue, wild radish (*Raphanus sativus*), foxtail fescue (*Festuca myuros*), willow leaf dock (*Rumex salicifolius*), toad rush, Italian rye grass, Mediterranean barley, salt grass (*Distichlis spicata*), alkali heath (*Frankenia salina*), perennial pepperweed (*Lepidium latifolium*), yellow star thistle (*Centaurea solstitialis*), alkali mallow (*Malvella leprosa*), and alkali weed (*Cressa truxillensis*) (CDFW 2019). Pappose tarplant has been observed in 17 USGS 7.5-minute quadrangles in Butte, Colusa, Glenn, Lake, Napa, San Mateo, Solano, and Sonoma counties (CNPS 2019). There is a CNDDB occurrence record (Occurrence #1; 10 to 15 individuals observed) from August of 2006 approximately 0.5 mile south of the Project Area. This occurrence is presumed extant but is ranked as "poor". This occurrence was also observed by EIP in 2006 (Appendix A, Figure 8). Pappose tarplant has a moderate potential to occur in grasslands or wetlands in the Project Area due to the presence of potentially suitable habitat, close proximity to observation records, and the presence of associated species in the Project Area.

San Francisco Bay spineflower (*Chorizanthe cuspidata* var. *cuspidata*) Rank 1B.2. Moderate Potential. San Francisco Bay spineflower is an annual forb in the buckwheat family (Polygonaceae) that blooms from April to August. It typically grows in sandy substrates on terraces and slopes in coastal bluff scrub, coastal dune, coastal prairie, and coastal scrub habitat at elevations ranging from 10 to 700 feet (CNPS 2019). Observed associated species include coyote brush, deer vetch (*Acmispon glaber*), bush lupine (*Lupinus arboreus*), California phacelia (*Phacelia californica*), seaside buckwheat, bracken fern (*Pteridium aquilinum*), coastal silverpuffs (*Microseris bigelovii*), and California poppy (*Eschscholzia californica*) (CDFW 2019). There is one CNDDB occurrence (Occurrence #2) in the greater vicinity of the Project Area that was last observed in May of 1925 approximately 2 miles north of the Project Area (CDFW 2019). This occurrence was not observed during a 2006 rare plant survey in Sharp Park (CDFW 2019). San Francisco Bay spineflower has a moderate potential to occur in the coyote brush scrub community due to the presence of potentially suitable habitat and the presence of associated species.

Rose leptosiphon (*Leptosiphon rosaceus*) Rank 1B.1. Moderate Potential. Rose leptosiphon is an annual herb in the phlox family (Polemoniaceae) that blooms from April to July. It typically occurs in coastal bluff scrub habitat at elevations ranging from 0 to 330 feet (CNPS 2019). Rose leptosiphon is known to occur in the counties of Marin, San Francisco, Sonoma, and San Mateo (CNPS 2019). There is one CNDDB occurrence (Occurrence #3) in the greater vicinity of the Project Area that was last observed in May of 2009. This occurrence is presumed extant and was observed on Mori Point (CDFW 2019). Rose leptosiphon was also observed approximately 300 feet north of the Project Area in 2010 by Golden Gate National Recreation Area (GGNRA) staff (Appendix A, Figure 8). Rose leptosiphon has a moderate potential to occur in the coyote brush scrub community of the Project Area due to the presence of potentially suitable habitat, relatively close proximity to a CNDDB occurrence and a GGNRA occurrence, and the presence of associated species.

4.3.2 Wildlife

Based on a review of the resources and databases listed in Section 3.1.1, 49 special-status wildlife species have been documented in the vicinity of the Project Area. The locations of special-status wildlife species in the CNDDB within 2 miles of the Project Area are depicted in Figure 7 in Appendix A. Appendix C summarizes the potential for each of these species to occur within the Project Area. Of the 49 special-status species, 43 are considered unlikely, or have no potential, to occur in the Project Area for one or more of the following reasons:

- The Project Area is outside of the known or historical range of the species
- The Project Area lacks suitable aquatic habitat (e.g., rivers, streams, vernal pools)
- The Project Area lacks suitable foraging habitat (e.g., marshes)
- The Project Area lacks suitable nesting structures
- The Project Area lacks suitable soil for den development
- No mine shafts, caves, or abandoned buildings are present
- There is a lack of connectivity with suitable occupied habitat

While the aforementioned factors contribute to the absence of many special-status wildlife species, the Project Area was determined to have adequate conditions and locality to warrant a moderate or high potential for three special-status species to occur. In addition, three species were determined to be present in the Project Area. Native nesting birds protected by the CFGC may also occur in the Project Area. These species are discussed below.

Wildlife Species Present or with Moderate or High Potential to Occur in the Project Area

California red-legged frog (CRLF; *Rana draytonii*). Federally Threatened Species. CDFW Species of Special Concern. Present. CRLF is dependent on suitable aquatic, estivation, and upland habitat. During periods of wet weather, starting with the first rainfall in late fall, CRLF disperse from their estivation sites to seek suitable breeding habitat. Aquatic and breeding habitat is characterized by dense, shrubby, riparian vegetation and deep, still or slow-moving water. Breeding occurs between late November and late April. CRLFs estivate (period of inactivity) during the dry months in small mammal burrows, moist leaf litter, incised stream channels, and large cracks in the bottom of dried ponds.

This species has been documented in the Project Area in the CNDDB (occurrence number 504, CDFW 2019). The occurrence notes that one adult, seven juveniles, and “several tadpoles” were located during the course of multiple surveys at the site (CDFW 2019, McGinnis 1989). A study by the National Park Service at Mori Point also tracked CRLF, which moved from ponds at Mori Point across the ridge and into Calera Creek. Additionally, CRLF was observed in the Project Area by EIP in 2006 during focused surveys (Zentner and Zentner 2017a). Surveys for other special-status species, including SFGS, noted the presence of CRLF in 2002, and 2006 (Swaim Biological 2007). Of note, the surveys in 2006 found over 60 individuals within and adjacent to the Project Area. The locations of these observations are mostly outside of the Project Area along Calera Creek. Evidence of breeding (e.g., egg masses, and larvae) was observed within Calera Creek during surveys in 2006 (Zentner and Zentner 2017a). CRLF is considered present in the

Project Area because the species has been documented numerous times within and adjacent to it.

The approximately 10-foot-deep man-made seasonal wetland pond in the Western Section of the Project Area collects stormwater runoff and is bordered by low-lying herbaceous vegetation and arroyo willow. The quarry pit can hold water in above average rainfall years as was noted during surveys in 2016, 2017, and 2019. Several CRLF were also observed in the man-made seasonal wetland pond within the quarry pit, and in wetlands adjacent to Highway 1 (Figure 8 of Appendix A, Zentner and Zentner 2017a). Due to the size and depth of the man-made seasonal wetland pond, and the presence of tadpoles observed during the March 2019 site visit, the seasonal wetland pond is considered to be breeding habitat for CRLF. No other breeding habitat is currently present within the Project Area.

San Francisco garter snake (SFGS; *Thamnophis sirtalis tetrataenia*). Federally Endangered Species. State Endangered Species. CDFW Fully Protected Species. Present. Historically, SFGS occurred in scattered wetland areas on the San Francisco Peninsula from approximately the San Francisco County line south along the eastern and western bases of the Santa Cruz Mountains, at least to the Upper Crystal Springs Reservoir, and along the coast south to Año Nuevo Point, San Mateo County, and Waddell Creek, Santa Cruz County.

The preferred habitat of SFGS is a densely vegetated pond near an open hillside where individuals can sun themselves, feed, and find cover in rodent burrows; however, considerably less ideal habitats can be successfully occupied (USFWS 2006). Temporary ponds and other seasonal freshwater bodies are also used. Emergent and bankside vegetation, such as cattails (*Typha* spp.), bulrushes (*Scirpus* spp.) and spike rushes (*Juncus* spp.and *Eleocharis* spp.), are preferred and used for cover. The area between stream and pond habitats, and grasslands or bank sides, is used for basking, while nearby dense vegetation or water often provides escape cover. SFGS also use floating algal or rush mats, if available.

There are two key components to SFGS habitat: (1) ponds that support CRLF, American bullfrog (*Lithobates catesbeiana*), or Pacific treefrog (*Pseudacris sierra*), and (2) surrounding upland that supports Botta's pocket gopher *(Thomomys bottae)* and the California meadow vole (*Microtus californicus*) (USFWS 2006). Ranid frogs are an obligate component of the SFGS's diet (USFWS 2006).

SFGS travel much shorter distances than other gartersnake species, many of which travel over several kilometers between winter and summer sites. Studies at Año Nuevo State Reserve determined that the mean distance of female hibernacula to the Visitor Center Pond was 459 feet, with a maximum distance of 637 feet. Distances of greater than 637 feet have been reported, including an unconfirmed distance of approximately 1,000 feet. However, more recent studies at the Año Nuevo State Reserve have confirmed that SFGS are regularly observed within 300 and 650 feet of foraging (i.e., pond) habitats and upland sites. Dispersal is rarely greater than this distance, although it is not impossible if SFGS are in pursuit of prey. During or shortly after heavy rain events, SFGS may make long-distance movements of up to 1.25 miles along drainages within dense riparian cover; however, SFGS have not been documented to travel over open terrain (USFWS 2006, McGinnis 2001).

This species is known to occur at Mori Point, a park associated with the Golden Gate National Parks Conservancy (GGNPC), which abuts the north side of the Project Area (GGNPC 2019, Kim et al. 2018). Assessments of the Project Area have been conducted to help determine the presence or absence of SFGS at the site. A protocol-level SFGS survey was last conducted in

2006 (Swaim Biological 2007), during which 38 traplines were placed throughout the local area. No SFGS were detected (Swaim Biological 2007). However, the report noted that the absence of SFGS observed during the survey did not rule out their presence, as the population may have been too small to detect.

Habitat within Calera Creek and within the man-made seasonal wetland pond are suitable for SFGS. During the aforementioned survey, numerous CRLF, a preferred prey species for SFGS, were observed in the vicinity. Additionally, the man-made seasonal wetland pond dries out annually, creating a shallow area where SFGS can forage on CRLF and Pacific tree frogs. Therefore, habitat and the preferred prey of SFGS are present within the Project Area. As such, it is assumed that SFGS are present due to documented historic occurrences, connectivity to known occupied habitats, the presence of suitable habitat, and the presence of prey species.

White-tailed kite (*Elanus leucurus*). CDFW Fully Protected Species. Present. White-tailed kites occur in low-elevation grasslands, agricultural areas, wetlands, oak woodlands, and savannah habitats. Riparian zones adjacent to open areas are also used. Vegetative structure and prey availability seem to be more important than specific associations with plant species or vegetative communities. Lightly grazed or ungrazed fields generally support large prey populations and are often preferred to other habitats. Kites primarily feed on small mammals, although birds, reptiles, amphibians, and insects are also taken. Nest trees range from single isolated trees to trees within large contiguous forests. Preferred nest trees are extremely variable, ranging from small shrubs (less than 10 feet tall) to large trees (greater than 150 feet tall) (Dunk 1995). White-tailed kite was observed during the August 22, 2019 site visit conducted by WRA. Suitable nesting and foraging habitat for this species is present within the Project Area. Monterey cypresses provide suitable nesting substrate, and the scrub and grassland communities provide suitable foraging habitat for this species.

American peregrine falcon (*Falco peregrinus anatum*). Federally Delisted Species. State Delisted Species. CDFW Fully Protected Species. Moderate Potential. This large falcon occurs as a generally uncommon resident, as well as a winter visitor and migrant throughout much of California. Occupied habitat (both breeding and non-breeding) is highly variable, but this species is typically associated with open areas and/or bodies of water. Nesting typically occurs on the ledges of steep cliffs, or on man-made structures with ledges above sheer faces, such as bridges and the tops of buildings (White et. al 2002). Peregrine falcons prey on a wide variety of animals, mostly birds. On the Pacific Coast, water birds are more commonly preyed on (e.g., waterfowl, shorebirds and seabirds) (White et. al 2002). This species forages over wide areas, even during the breeding season. The bluff and Pacific Ocean west of the Project Area may support nesting and foraging by this species.

San Francisco (saltmarsh) common yellowthroat (*Geothlypis trichas sinuosa*). CDFW Species of Special Concern. Moderate Potential. This subspecies of the common yellowthroat is found in freshwater marshes, coastal swales, riparian thickets, brackish marshes, and saltwater marshes. Its breeding range extends from Tomales Bay in the north, to Carquinez Strait in the east, and to Santa Cruz County in the south. This species requires thick, continuous cover, such as tall grasses, tule patches, or riparian vegetation down to the water surface for foraging and prefers willows for nesting (Shuford and Gardali 2008). The Project Area is adjacent to Calera Creek riparian habitat which may support nesting and foraging by this species.

(Brewster's) Yellow warbler (*Setophaga petechia brewsteri*). CDFW Species of Special Concern. Moderate Potential. The yellow warbler is a neotropical migrant bird that is widespread in North America, but has declined throughout much of its California breeding range.

The Brewster's (*brewsteri*) subspecies is a summer resident and represents the vast majority of yellow warblers that breed in California. West of the Central Valley, typical yellow warbler breeding habitat consists of dense riparian vegetation along watercourses, including wet meadows, with willow growth especially being favored (Shuford and Gardali 2008). Insects comprise the majority of this species' diet. The Project Area is situated adjacent to Calera Creek riparian habitat, which may support nesting and foraging by this species.

<u>Federally Threatened and Endangered Species Documented in the Vicinity of the Project Area with Unlikely or No Potential to Occur</u>

Mission blue butterfly (*Plebejus icarioides missionensis*). Federally Endangered Species. Unlikely Potential. The Mission blue butterfly persists in small populations in San Francisco, San Mateo, and Marin counties. The majority of the remaining Mission blue butterflies are found on San Bruno Mountain in San Mateo County. This species inhabits coastal chaparral and coastal grasslands in the fog belt of the coastal range. While USFWS documentation suggests that the species chiefly occurs between 690 and 1,180 feet in elevation, recent CNDDB occurrences suggest that this elevation range may be wider. Two CNDDB occurrences of Mission blue butterfly are documented within 1 mile of the Project Area (CDFW 2019). A well-studied population has been observed on Milagra Ridge, approximately 0.5 mile south of the Project Area.

Three species of perennial lupine serve as larval food plants: silver lupine (*Lupinus albifrons*), summer lupine (*L. formosus*), and manycolored lupine (*L. variicolor*). Adults feed on nectar of hairy false goldenaster (*Heterotheca villosa*), blue dicks (*Dichelostemma capitatum*), and seaside buckwheat (*Eriogonum latifolium*) (Black and Vaughan 2005b). This species is known to occur in nearby habitats including Milagra Ridge and the San Francisco Peninsula Watershed lands (USFWS 2010). However, these occupied habitats and any other areas known to be used by the species are all outside of the Project Area. Additionally, Entomological Consulting Services conducted a habitat assessment and surveys for the species in 2006. Neither the species nor host plants were observed. In addition, host plant species were not observed during surveys conducted by WRA in August of 2019.

San Bruno elfin butterfly (*Callophrys mossii bayensis*). Federally Endangered Species. Unlikely Potential. The San Bruno elfin butterfly inhabits coastal mountains near San Francisco Bay in the fog belt of steep north facing slopes that receive little direct sunlight. It lives near prolific growths of the larval food plant, broadleaf stonecrop (*Sedum spathulifolium*), which is a low-growing succulent associated with rocky outcrops (often in the shade) that occur on steep, mainly north-facing slopes in coastal scrub from 200 to 5,000 feet in elevation. The San Bruno elfin butterfly is restricted to a few small populations, the largest of which occurs on San Bruno Mountain. Its habitat has been diminished by quarrying, off-road recreation, and urban development (Black and Vaughan 2005a).

This species is known to occur in nearby habitats, including along Milagra Ridge and on San Francisco Peninsula Watershed lands (USFWS 2010). However, these occupied habitats and any other areas known to be used by the species are all outside of the Project Area. Additionally the Project Area does not contain suitable north-facing slopes to support the host plant. Additionally, Entomological Consulting Services conducted a habitat assessment and surveys for the species in 2006. Neither the species nor host plants were observed. In addition, host plant species were not observed during surveys conducted by WRA in August of 2019.

Callippe silverspot butterfly *(Speyeria callippe callippe*). Federally Endangered Species. Unlikely Potential. The Callippe silverspot butterfly was historically found around the eastern, southern, and western sides of the San Francisco Bay, but is now limited to just seven sites. The Callippe silverspot butterfly is found in native grassland and adjacent habitats. Females lay their eggs on the dry remains of the larval food plant, Johnny-jump-up (*Viola pedunculata*). Threats to this species include introduced plant species, grazing by cattle, mining, and heavy recreational use (Black and Vaughan 2005d).

The Project Area is situated outside of the known range of this species. The nearest known population is located on San Bruno Mountain more than 5 miles from the Project Area. Additionally, Entomological Consulting Services conducted a habitat assessment and surveys for the species in 2006. Neither the species nor host plants were observed. In addition, host plant species were not observed during surveys conducted by WRA in August of 2019.

Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*). Federally Endangered Species. No Potential. Populations of this species were formerly found in coastal dune or prairie habitat from San Mateo County north to the mouth of the Russian River in Sonoma County. Populations of this species south of the Golden Gate Bridge have likely been extirpated by urban development. Four populations are known to inhabit coastal terrace prairie, coastal bluff scrub, and associated non-native grassland habitats in western Marin and southwestern Sonoma counties, including the Point Reyes National Seashore. Adult butterflies are typically found in areas that are sheltered from the wind, below 810 feet elevation and within 3 miles of the coast. The potential for this species to occur is dependent on the presence of the silverspot butterfly's larval hostplant, which is typically the hookedspur violet (*Viola adunca*) (Black and Vaughan 2005e).

The Project Area does not contain suitable habitat and is outside of the current known range. It is considered extirpated from San Mateo County (USFWS 2019). Additionally, Entomological Consulting Services conducted a habitat assessment and surveys for the species in 2006. Neither the species nor host plants were observed. In addition, host plant species were not observed during surveys conducted by WRA in August of 2019.

Bay checkerpsot butterfly (*Euphydryas editha bayensis*). Federally Threatened Species. No Potential. Historically, the Bay checkerspot butterfly was widely distributed to the east, west, and south of the San Francisco Bay, but is now limited to six core areas: one on the San Francisco Peninsula, one in San Mateo County, and four in Santa Clara County. Habitat for this species is located on shallow, serpentine-derived or similar soils. These soils support the primary larval host plant for this species, dwarf plantain. In many years, the primary host plant dries up before the larvae have sufficiently developed, in which case the larvae will transfer to a secondary host plant, purple owl's clover (*Castilleja exserta* ssp. *exserta*), which remains available later in the season (Black and Vaughan 2005c).

The Project Area does not contain serpentine soils, nor were any of this species' host plants detected during the site visit. Additionally, populations along the San Francisco Peninsula have been largely extirpated from their known habitats. Thus, Bay checkerspot butterfly has no potential to occur within the Project Area.

Western snowy plover (*Charadrius nivosus (alexandrines) nivosus*). Federally Threatened Species. CDFW Species of Special Concern. USFWS Bird of Conservation Concern. No Potential. The Pacific Coast breeding population of the western snowy plover currently extends from Washington to Baja, California, Mexico (USFWS 2007). Western snowy plovers breed primarily above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. Less common nesting habitats include bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars (USFWS 2007). Nests typically occur in flat, open areas with sandy or saline substrates where vegetation and driftwood are usually sparse or absent. Nests consist of a shallow scrapes or depressions, sometimes lined with beach debris (e.g., small pebbles, shell fragments, plant debris, and mud chips) (USFWS 2007). Nesting season extends from early March through late September. Snowy plovers winter mainly in coastal areas from southern Washington to Central America. In winter, snowy plovers are found on many of the beaches used for nesting, as well as on beaches where they do not nest, in man-made salt ponds, and on estuarine sand and mud flats (USFWS 2007). The Project Area is located along the coast but does not contain beach, shore, or salt pond habitat to support nesting by the species. Thus, this species has no potential to occur in the Project Area.

4.3.3 Critical Habitat

The Project Area is not located within any units of designated critical habitat (USFWS 2019).

4.4 Biological Communities

The Project Area contains grasslands, woodlands, scrub, barren slopes, hardscape land cover, and aquatic communities (Appendix A, Figure 4; Table 12). The wetlands in the Project Area are seasonal wetlands, including emergent wetlands, scrub-shrub wetlands, and a man-made seasonal wetland pond. All seasonal wetlands in the Western Section of the Project Area are degraded and were formed due to human activity. The man-made seasonal wetland pond in the Western Section of the Project Area is man-made. The man-made seasonal wetland pond in the Western Section of the Project Area was formerly a sediment basin that was constructed between 1987 and 1993 (Nationwide Environmental Title Research [NETR] 2019). The grassland communities include non-native annual grassland and man-made purple needlegrass grassland. Woodland in the Project Area is ornamental. Scrub in the Project Area is best characterized as coyote brush scrub.

Some wetlands may qualify as jurisdictional Waters of the U.S. and State (subject to jurisdiction under the CWA, the Porter-Cologne Water Quality Control Act, and the California Coastal Act), whereas other wetlands would only be subject to jurisdiction under the California Coastal Act (and not the CWA or Porter-Cologne Water Quality Act). Portions of Calera Creek that are culverted below the strip of land that connects the Eastern to the Western Section of the Project Area would also be subject to jurisdiction under the CWA, the Porter-Cologne Water Quality Control Act, and the California Coastal Act. An ephemeral drainage ditch in the Eastern Section of the Project Area that previously conveyed flows below a developed road may also be subject to CWA, Porter-Cologne Water Quality Control Act, and the California Coastal Act jurisdiction; however, a blocked culvert prevents this channel from conveying flows across the Project Area. Thus, this feature was not mapped in the Project Area. All biological communities in the Project Area are depicted on Figure 4 of Appendix A.

Table 12. Biological Communities in the Project Area

Biological Community Type	Biological Community or Association	Sensitivity Type	Acreage
Sensitive Communities			
Wetlands	3-parameter seasonal wetlands	CWA, Porter-Cologne Water Quality Control Act, and California Coastal Act jurisdiction	0.25
Wetlands	1-parameter seasonal wetlands	California Coastal Act jurisdiction	0.19
		Subtotal	**0.44**
Non-Sensitive Communities			
Woodland	Ornamental woodland	N/A	0.85
Grassland	Non-native annual grassland	N/A	15.80
Scrub	Coyote brush scrub	N/A	4.45
Barren	Barren slopes	N/A	4.78
Developed (e.g., hardscape, roads, trails)	Developed	N/A	1.11
Grassland	Man-made purple needlegrass grassland	N/A	0.27
		Subtotal	**27.26**
		Total	**27.70**

4.4.1 Non-sensitive Biological Communities

Ornamental Woodland. Ornamental woodlands are located along the southern border of the quarry pit in the Western Section of the Project Area, as well as along the access road in the Eastern Section of the Project Area. Ornamental woodlands are dominated by evenly-spaced non-native trees, including Monterey cypress (*Hesperocyparis macrocarpa*) and Sydney gold wattle (*Acacia longifolia*).

Non-native Annual Grassland. Non-native annual grassland in the Project Area occurs in large swaths in the Western Section of the Project Area. It also occurs in areas proposed for mitigation wetland construction. This community is dominated by perennial rye grass, ripgut brome, and soft brome (*Bromus hordeaceus*). Other non-native species present in this community include jubata grass (*Cortaderia jubata*), Italian thistle, Harding's grass, Mediterranean barley, and Fuller's teasel. Dense patches of jubata grass occur in the central portion of the eastern parcel, outside of the Project Area.

Coyote Brush Scrub (CDFW Rank G5/S5). Coyote brush scrub is located on the hilltop and east flank in the Western Section of the Project Area and where mitigation wetland construction would occur in the Eastern Section of the Project Area. At higher elevations in the Western Section of the Project Area, coyote brush (*Baccharis pilularis*) is co-dominant with California sage brush (*Artemisia californica*). At lower elevations in the Eastern Section of the Project Area, coyote brush is heavily dominant, though non-native species are present, including bristly ox-tongue (*Helminthotheca echioides*), short-podded mustard, scarlet pimpernel *(Anagallis arvensis*), bull thistle, and Italian thistle.

Barren Slopes. Two dirt mounds on the hilltop and on the quarry face in the Western Section of the Project Area contain steep, unstable slopes largely devoid of vegetation. Barren slopes on the hilltop consist of dumped, unvegetated fill soil. Barren slopes on the quarry face are covered with loose rock scree and sparse patches of jubata grass.

Developed. Developed land cover in the Project Area includes the two access roads in the Eastern Section of the Project Area. The access road that borders Calera Creek connects the parking lot near the water treatment facility to the Western Section of the Project Area (and continues to a parking lot adjacent to Mattand Road south of the Project Area). A second access road connects Route 1 to the Western Section of the Study Area. This road extends through ornamental woodland in the south and crosses the scrub-shrub wetland, discussed above. This road contains gravels and bare, compacted soil, and is largely devoid of vegetation due to heavy foot traffic.

Man-made Purple Needlegrass Grassland. Purple needlegrass grassland was mapped in a portion of the quarry pit in the Western Section of the Project Area near an existing trail. Purple needlegrass (*Stipa pulchra* [*Nassella pulchra*]) is restricted to areas of shallow soils and flat topography in the Project Area. Associated species intermixed with this community include bristly ox-tongue, sweet fennel (*Foeniculum vulgare*), vetch (*Vicia* sp.), and a suite of non-native annual grasses. This area was heavily disturbed by quarrying activities in the past, as topography is unnatural. This community is derived from hydroseeding that was conducted in 2000 as part of the City's efforts after grading. A local ecologist (Ron Maykel, personal communication) stated that purple needlegrass was included in the hydroseeding mix for this area. Since this community is not naturally occurring in the Project Area and is the result of past reseeding efforts, it is not considered a CCC ESHA.

4.4.2 Sensitive Biological Communities

Seasonal Wetlands

<u>Emergent Wetlands (PEM1/2E)</u>

Features in the emergent wetlands category were mapped in the southern portion of the Western Section and along the northern and southern access roads/trails in the Eastern Section. In the Western Section, emergent wetlands occur in shallow depressions in hummocky terrain in a matrix of depressions and uplands. In total, the Western Section contains 13 emergent wetlands. The topography of this area is a result of past ground disturbance, as these features formed on graded and compacted soils. These wetlands were likely formed as a result of human disturbance and continue to be subject to regular disturbance by pedestrians and pets. These wetlands are situated in the quarry pit that was permitted to be filled through CDP amendment 1-95-040-A1 issued in 1997.

In total, the Eastern Section of the Project Area contains four degraded emergent wetlands. In the northern portion of the Eastern Section, a single emergent wetland was mapped along an existing access trail that was largely devoid of vegetation, highly disturbed, and heavily trafficked; this wetland appears to be an isolated depression caused by differential settlement or compaction as a result of traffic on the trail. In the southern portion of the Eastern Section, portions of emergent wetlands occur within and adjacent to the access road in shallow depressions. Two wetlands are located where Calera Creek formerly flowed as a drainage ditch prior to its relocation but do not extend beyond their current confines for any appreciable distance. One wetland is located where a former road extended between the access road that connects to Highway 1 and the parking lot directly south of the wastewater treatment plant but, again, does not extend appreciably beyond the shown boundaries. Vegetation within the emergent wetlands was typically dominated by Italian ryegrass, Mediterranean barley, and annual beard grass (*Polypogon monspeliensis*).

Emergent wetlands in the Western Section of the Project Area were verified by the Corps via an approved jurisdictional determination on January 19, 2018. These wetlands also qualify as Waters of the State. Emergent wetlands adjacent to the Eastern Section of the Project Area may potentially be regulated by the Corps and RWQCB under the CWA and the Porter-Cologne Water Quality Control Act. Additionally, 1-parameter seasonal wetlands, delineated by WRA in August of 2019, would be subject to California Coastal Act jurisdiction (regulated by the CCC).

<u>Scrub-Shrub Wetlands (PSS1E)</u>

In the southern portion of the Eastern Section, one scrub-shrub wetland is present adjacent to the existing access road. This is a portion of an isolated arroyo willow stand that continues slightly outside of the Project Area to the east. Vegetation within scrub-shrub wetlands was characterized by a dense arroyo willow canopy, with a sparse to absent understory. One additional small, isolated scrub-shrub wetland is located in the northeastern portion of the Western Section of the Study Area.

Scrub-shrub wetlands in the Project Area are considered sensitive as they would potentially be subject to regulation under the CWA and the Porter-Cologne Water Quality Control Act.

<u>Man-made Seasonal Wetland Pond (Quarry Pond; No Cowardin Class)</u>

A 10-foot-deep man-made seasonal wetland pond (i.e., the quarry pond) was mapped in the southern portion of the Western Section of the Project Area (in the quarry pit). This feature is a historic, man-made depression that ponds seasonally. This feature appears to receive only direct precipitation and surface runoff. The man-made seasonal wetland pond is surrounded by ruderal rocky habitat with a few scattered bushes growing adjacent to the water's edge. It does not have a defined inlet or outlet; it has a surface cut that drains south to Calera Creek (approximately 100 feet from the pond). This feature was dry at the time of the site visit. The man-made seasonal wetland pond (i.e., quarry pond) was formerly a sediment basin that was constructed between 1987 and 1993 (Nationwide Environmental Title Research [NETR] 2019; Google Earth 2019). The man-made seasonal wetland pond was likely created by Caltrans in 1991 for a project that placed 40 feet of engineered fill into the quarry pit, where a keyway and a sediment basin were installed. During this period, quarry activities had halted and the quarry pit was filled, and was subject to various uses. Although it is not clear exactly why this basin was constructed, given that approximately 40 percent of the quarry floor and interior edge of the quarry's southern bluff drain into this feature, it likely provides beneficial water quality functions by allowing any erosional sediment to drop out prior to entering receiving waters (Calera Creek). A non-contiguous fringe of arroyo willow is present along the edges of the man-made seasonal wetland pond but this feature is otherwise vegetated with a moderate cover of annual herbs, consisting almost entirely of swamp grass (*Crypsis schoenoides*).

This man-made seasonal wetland pond is considered sensitive as it would potentially qualify as Waters of the U.S. and Waters of the State. This man-made seasonal wetland pond is known to contain CRLF and provides habitat for SFGS, both state and federally endangered and a California fully protected species.

4.5 Heritage Trees

A total of 38 trees were verified to be present within the Project Area. Sixteen (16) of the 38 trees verified to be present within the Project Area are considered to be heritage trees. Twenty six (26) of the 38 trees qualify as "trees" as defined by the City of Pacifica's Municipal Code for Logging Operations (i.e., trees that were larger than 6 inches in diameter measured at 12 inches above the ground). The locations of surveyed trees are shown on Figure 5 of Appendix A. Trees present within the Project Area include native Monterey pine (*Pinus radiata*) and native Monterey cypress.

5.0 PROJECT IMPACTS AND MITIGATION MEASURES

The State CEQA Guidelines provide direction for assessing the impacts of projects on biological resources and determining which impacts will be significant. CEQA defines a "significant effect on the environment" as "a substantial adverse change in the physical conditions which exist in the area affected by the proposed project." Under State CEQA Guidelines Section 15065, a project's impacts on biological resources are deemed significant if the project would:

A. substantially reduce the habitat of a fish or wildlife species
B. cause a fish or wildlife population to drop below self-sustaining levels
C. threaten to eliminate a plant or animal community
D. reduce the number or restrict the range of a rare or endangered plant or animal

Additionally, Appendix G of State CEQA Guidelines provides a checklist of other potential impacts to consider when analyzing the significance of project effects. The impacts listed in Appendix G may or may not be significant, depending on the level of the impact. For biological resources, these impacts include whether the project would:

a) 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 CDFW or USFWS
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
d) 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
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

f) Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan, or other approved local, regional, or state HCP

This report uses these thresholds in the analysis of impacts and determination of the significance of those impacts. The assessment of impacts under CEQA is based on the change caused by the Project relative to the CEQA baseline, which in this case are the existing conditions in the Project Area. In applying CEQA Appendix G, the terms “substantial” and “substantially” are used as the basis for significance determinations in many of the thresholds but are not defined qualitatively or quantitatively in CEQA or in technical literature. In some cases, the determination of a substantial adverse effect (i.e., significant impact) may be relatively straightforward. For instance, “take” or other direct adverse impacts to special-status species listed under the CESA or the ESA, or their habitat, without implementation of appropriate mitigation is considered a significant impact. In other cases, the determination of a substantial adverse effect (i.e., significant impact) requires application of best professional judgment based on knowledge of site conditions, as well as the ecology and physiology of biological resources present in a given area and the type of effect that would be caused by a project. Determinations of whether or not Project activities will result in a substantial adverse effect to biological resources are discussed in the following sections.

Potential impacts on existing biological resources were evaluated by comparing the quantity and quality of habitats present in the Project Area under baseline conditions to the anticipated conditions after implementation of proposed Project activities and are depicted on Figure 9 in Appendix A. Direct and indirect impacts on special-status species and sensitive natural communities were assessed based on the potential for the species, their habitat, or the natural community in question to be disturbed or enhanced by construction or operation of the proposed Project. Table 13, below, depicts temporary and permanent impacts that would result from Project activities.

Table 13. Project Impacts within Each Biological Community

Biotic Habitat	Permanent (acres)	Temporary (acres)
Ornamental Woodland	0.84	0.01
Non-native Annual Grassland	12.57	0.79
Man-made Purple Needlegrass Grassland	0.27	0.00
Coyote Brush Scrub	3.32	0.17
Barren Slopes	4.40	0.00
Seasonal Wetland	0.23	0.02
CCC Seasonal Wetland	0.16	0.03
Developed	0.01	1.10
Total	**21.80**	**2.12**

5.1 Impact BIO-1: Special-Status Species

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 CDFW or USFWS.

The following impact analysis describes the Project's adverse effects on special-status species. The analysis is organized by the listing status (federal, state, and/or California Rare Plant Rank [CRPR]) of special-status species. Appendix C lists the potentially occurring special-status plant species, along with their listing status and basis for the determination of their absence from the Project Area.

Potential Impact BIO-1a: Federally and State-Listed Special-Status Plants and CRPR 1 or 2 Plants

Three special-status plant species, including pappose tarplant, San Francisco Bay spineflower, and rose leptosiphon, have a moderate potential to occur in the Project Area based on availability of suitable habitat, the presence of associated plant species, and the proximity to documented occurrences. The timing of the BRA site visits were not sufficient to identify these species based on their documented bloom periods.

Pappose tarplant, San Francisco Bay spineflower, and rose leptosiphon are all CNPS Rank 1B species, meaning that they are considered rare, threatened, or endangered throughout their range in California, and impacts to them must be considered under CEQA. If present in the Project Area, impacts to the aforementioned special-status plant species could be significant under CEQA.

Level of Significance: Potentially Significant

Mitigation Measure BIO-1: Federally and State-Listed Special-Status Plants and CRPR 1 or 2 Plants

Three special-status plant species have the potential to occur in the Project Area. To avoid impacts to special-status plants, protocol-level, focused plant surveys will be conducted during the documented bloom periods of the subject species. Two site visits, including one early-season (May) and one late-season (August) will be sufficient to cover the blooming periods of the three species with moderate potential to occur. Survey timing may fluctuate based on blooming periods of appropriate reference site locations. Surveys will be conducted prior to the commencement of Project activities.

If special-status plant species are not observed during focused plant surveys, no impact to special-status plant species would occur, and no mitigation would be required. However, if special-status plants are identified in the Project Area during the focused plant surveys, mitigation will be required. Mitigation will include avoidance of special-status plants, or if avoidance is infeasible, seed collection and re-establishment at a minimum of a 1-to-1 ratio (number of newly established plants relative to the number of plants impacted) in a preserved, suitable habitat. Re-established populations will be monitored annually in accordance with an approved HMMP for a minimum of five years. Reports describing performance results will be prepared and submitted for years 1, 3, and 5 during the monitoring period.

Level of Significance After Mitigation: Less Than Significant

Potential Impact BIO-1b: California Red-legged Frog and San Francisco Garter Snake

CRLF and SFGS are considered present in the Project Area. CRLF and SFGS may be present in aquatic habitat, including in the man-made seasonal wetland pond in the Western Section of the Project Area, or may seek refuge in on-site upland habitat. These species may be harassed, harmed, or killed during Project activities, including installation of the trail, reclamation work, and drainage improvement work. CRLF and SFGS may also be impacted by loss of aquatic habitat in the Western Section of the Project Area.

The Project has initiated Section 7 Consultation with the USFWS for the potential take of CRLF. A Biological Opinion will be drafted by the USFWS and will be incorporated into the Section 404 nationwide permit that will be issued by the Corps. All compliance measures in the Biological Opinion will be adhered to. The Project will mitigate for the loss of aquatic habitat by creating a USFWS-approved clay-lined pond and a seasonal wetland in the Eastern Section of the Project Area (Appendix A, Figure 9). Details pertaining to the design of these features are provided in Section 1.1.5, above. The Project may lead to a temporary loss in upland habitat in the Western Section of the Project Area during reclamation work. However, this area will be revegetated according to the Revegetation Plan, discussed in Section 1.1.4, above. Reclamation and revegetation may increase the acreage of suitable upland habitat, as barren slopes and other sparsely vegetated areas within the Western Section will be graded and revegetated. Impacts to CRLF and SFGS would be considered significant under CEQA.

Level of Significance: Potentially Significant

The following measures will be implemented to avoid impacts to CRLF and SFGS:

<u>Mitigation Measure BIO-2: Workers Environmental Awareness Training</u>

Employees on the Project will attend a Worker Environmental Awareness Training Program (WEAP) prior to beginning work at the site. The WEAP will consist of a brief presentation by a USFWS-approved biologist, which may be given either in-person or via an automated PowerPoint presentation. The program will include a description of visual identification of any special-status species and required habitat, an explanation of the status of these species and their protection, consequences of non-compliance, and a description of the Project-specific measures being taken to reduce effects to these species. Documentation of the training (i.e., a sign-in sheet) will be retained at the site and will be submitted with applicable reports.

<u>Mitigation Measure BIO-3: Preconstruction Surveys and Construction Monitoring</u>

Within 48 hours prior to any construction activities, a qualified biologist will conduct surveys for CRLF and SFGS in and adjacent to the Project Area. A qualified biologist will be on-site during ground-disturbing activities, including fence installation and the operation of heavy equipment (e.g., during grading). The qualified biologists will be given authority to stop any work that may result in take of listed species. If at any time a CRLF is observed within the Project Area and relocation is necessary, the animal will be transported to a suitable relocation site within Calera Creek, outside of the Project Area, and released. A take permit will be obtained from USFWS for CRLF. If a SFGS is observed within the Project Area, work will be halted until the animal leaves the Project Area of its own volition.

Mitigation Measure BIO-4: Exclusion Fence

Exclusionary fencing will be placed around the Project Area to prevent CRLF and SFGS from entering the Project Area. Fencing will consist of silt fence or suitable substitute (e.g., ERTEC 48-inch high-visibility orange fencing), which will be buried at least 6-inches below the surface (or sealed in a like manner) to prevent incursion under the fence, and will stand at least 36 inches above ground. The fence will also be made of an opaque material. Exit funnels will be installed to allow any animals that may be occupying the Project Area to escape. Exclusion fencing will be inspected and maintained throughout the Project. Fencing will be removed only when all construction equipment is removed from the site. The exclusion fence will be checked for breaches on a daily basis by the qualified biologist. However, if a qualified biologist is not required to be on-site for biological monitoring or other tasks, an on-site representative may be appointed to check the fence on a daily basis and conduct repairs. If an on-site representative is conducting inspections and repairs, a qualified biologist will verify the fence status on a weekly basis to assure repairs are occurring as needed. A comprehensive fencing plan will be submitted for appropriate agency approval.

Mitigation Measure BIO-5: Covering Trenches

To prevent inadvertent entrapment of wildlife, any excavated, steep-walled holes or trenches more than 12 inches deep will either be covered at the close of each working day, or have one or more escape ramps constructed of earth fill or wooden plants installed. Before any such holes or trenches are filled, they will be inspected for wildlife by a qualified biologist.

Mitigation Measure BIO-6: Work Windows

The Project will not operate heavy equipment on-site from 30 minutes after sunset to 30 minutes before sunrise, thereby avoiding disturbances during the most active times for the subject species. The Project will occur year-round.

Mitigation Measure BIO-7: Delineating Boundaries

The boundary of the Project Area will be clearly delineated with highly-visible stakes, fencing, or flagging.

Mitigation Measure BIO-8: Disposal of Trash

To eliminate attractants of predators, any food-related trash will be disposed of in closed containers and removed from the site regularly.

Mitigation Measure BIO-9: No Mono-filament Netting

Mono-filament netting or similar material will not be used on any erosion control devices specified in the SWPPP.

Mitigation Measure BIO-10: Vehicular Traffic

All vehicle traffic will be restricted to established or temporary access roads and reclamation areas. A site-wide 20 mile-per-hour speed limit will be observed.

Mitigation Measures BIO-11: Section 7 Consultation with the USFWS

A Biological Opinion from the USFWS will be acquired through Section 7 Consultation through the Corps to allow for the potential take of CRLF. All compliance measures included in the Biological Opinion, which will be included in the Section 404 nationwide permit, will be adhered to.

Level of Significance After Mitigation: Less Than Significant

Potential Impact BIO-1c: Special-status and Non-status Native Nesting Birds

The Project has the potential to impact special-status and non-special-status native nesting birds protected by the CFGC, including white-tailed kite, peregrine falcon, San Francisco common yellowthroat, and yellow warbler. Project activities, such as vegetation removal and ground disturbance, have the potential to impact these species by causing direct mortality of eggs or young, or by causing auditory, vibratory, and/or visual disturbance of a sufficient level to cause abandonment of an active nest. If Project activities occur during the nesting season, which generally extends from February 1 through August 31, nests of both special-status and non-special-status native birds could be impacted by construction and other ground-disturbing activities. The Project will revegetate reclamation areas (discussed in Section 1.1.4), so no permanent loss of habitat is anticipated for nesting birds. Impacts to nesting birds would be considered significant under CEQA.

Level of Significance: Potentially Significant

Mitigation Measure BIO-12: Special-status and Non-status Native Nesting Birds

Project activities, such as vegetation removal, grading, or initial ground-disturbance, will be conducted between September 1 and January 31 (outside of the February 1 to August 31 nesting season) to the greatest extent feasible.

If Project activities must be conducted during the nesting season, a pre-construction nesting bird survey will be conducted by a qualified biologist no more than 14 days prior to vegetation removal or initial ground disturbance. The survey will include the Project Area and surrounding 250 feet to identify the location and status of any nests that could potentially be affected either directly or indirectly by Project activities.

If active nests of native nesting bird species are located during the nesting bird survey, a work exclusion zone will be established around each nest by the qualified biologist. Established exclusion zones will remain in place until all young in the nest have fledged or the nest otherwise becomes inactive (e.g., due to predation). Appropriate exclusion zone sizes will be determined by a qualified biologist and will vary based on species, nest location, existing visual buffers, noise levels, and other factors. An exclusion zone radius may be as small as 50 feet for common, disturbance-adapted species, or as large as 250 feet or more for raptors. Exclusion zone size will be reduced from established levels by a qualified biologist if nest monitoring findings indicate that Project activities do not adversely impact the nest, and if a reduced exclusion zone would not adversely affect the nest.

Level of Significance After Mitigation: Less Than Significant

5.2 Impact BIO-2: Sensitive Communities

The CDFW defines sensitive natural communities and vegetation alliances using NatureServe's standard heritage program methodology (CDFG 2007), as described above in Section 2.2. Project impacts to CDFW sensitive natural communities, vegetation alliances/associations, or any such community identified in local or regional plans, policies, and regulations, were considered and evaluated. Furthermore, aquatic, wetland, and riparian habitats are also protected under applicable federal, state, or local regulations, and are generally subject to regulation, protection, or consideration by the Corps, RWQCB, CDFW, and/or the USFWS. The Project will not impact the any sensitive communities, as well work will be conducted outside of Calera Creek and its riparian corridor. Impacts to seasonal wetlands are addressed in Section 5.3., below.

Level of Significance: Less Than Significant

5.3 Impact BIO-3: Jurisdictional Waters

Wetlands are considered sensitive environmental resources protected at federal, state, and local levels. They provide unique habitat functions and values for wildlife, and provide habitat for plant species adapted to wetland hydrology. Throughout California, the quality and quantity of wetlands has dramatically declined owing to the construction of dams, dikes, and levees, as well as because of water diversions, the filling of wetlands for development, and the overall degradation of water quality by inputs of runoff from agricultural, urban, and infrastructure development and other sources.

Potential Impact BIO-3a: Seasonal Wetlands

The Project proposes to permanently impact 0.23 acre of 3-parameter seasonal wetlands subject to CWA, Porter-Cologne Water Quality Control Act, and California Coastal Act jurisdiction (including the man-made seasonal pond) and 0.16 acre of 1-parameter seasonal wetlands subject to California Coastal Act jurisdiction within the Project Area. A formal Corps wetland delineation of the Western Section of the Project Area was conducted by Zentner and Zentner in 2016 (Zentner and Zentner 2017c). The Corps granted an Approved Jurisdictional Determination on January 19, 2018, verifying the extent and location of wetlands that are subject to Corps (and RWQCB) regulatory authority in the Western Section of the Project Area. A formal wetland delineation of the Eastern Section of the Project Area was conducted by WRA in 2015 (WRA 2015). Additionally, a 1-parameter CCC wetland delineation was conducted by WRA in August of 2019 (WRA 2019a). Wetlands that would be permanently impacted by Project activities would be filled, graded, and planted with a native seed mix. Impacts to jurisdictional seasonal wetlands are be considered significant under CEQA and require a Section 404 nationwide permit from the Corps, a Section 401 Water Quality Certification from the RWQCB, and a CDP from the CCC.

Level of Significance: Potentially Significant

<u>Mitigation Measure BIO-13: Issuance of Aquatic Resource Permits</u>

The Project will obtain the following aquatic resource permits to proceed with proposed impacts to seasonal wetlands: (1) a Section 404 nationwide permit from the Corps, (2) a Section 401 water quality certification from the RWQCB, and (3) a CDP from the CCC. All compliance measures included in these permits will be adhered to.

Mitigation Measure BIO-14: Seasonal Wetland Creation

The Project proposes a 2-to-1 on-site wetland replacement for impacts to Waters of the U.S./State, which includes the construction of a 0.60-acre contiguous seasonal wetland in the Eastern Section of the Project Area. The Project also proposes the construction of a 0.15-acre seasonal wetland pond in the Eastern Section of the Project Area. Details pertaining to each mitigation wetland are provided in Section 1.1.5, above. A wetland maintenance and monitoring program will be adopted to ensure that newly created wetlands maintain long-term functionality. The wetland maintenance and monitoring program will stipulate that Project will result in no net loss of waters.

Level of Significance After Mitigation: Less Than Significant

5.4 Impact BIO-4: Wildlife Movement

For many species, the landscape is a mosaic of suitable and unsuitable habitat types. Environmental corridors are segments of land that provide a link between these different habitats while also providing cover. Development that fragments natural habitats (i.e., breaks them into smaller, disjunct pieces) can have a twofold impact on wildlife: (1) as habitat patches become smaller they are unable to support as many individuals (patch size), and (2) the area between habitat patches may be unsuitable for wildlife species to traverse (connectivity). The Project does not propose to develop the Project Area and it will continue to function for local movement of terrestrial species.

Level of Significance: Less Than Significant

5.5 Impact BIO-5: Conflicts with Local Policies

Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Potential Impact BIO-5a: Heritage Trees

A total of 16 heritage trees, 26 "trees" (which qualify as logging operation trees; 10 of which are not heritage trees), and 12 non-ordinance sized trees (and non-logging operation trees) have been identified as potentially being impacted by the proposed Project. All 38 trees (including 16 heritage trees [15 Monterey Cypress and one Monterey pine]) would be removed (i.e., permanently impacted) as a result of the Project.

Level of Significance: Potentially Significant

Mitigation Measure BIO-15: Local Policies

A tree removal permit will be obtained from the City of Pacifica to allow for the removal of 16 heritage trees. Heritage trees removed will be replaced in like kind and size or equivalent substitution as approved by the City's Planning Commission as part of the permitting process. Additionally, more than 20 "trees" (greater than 6 inches in diameter as measured 12 inches from the ground) would be removed from the Project Area, thus the Project may qualify as a logging operation by the City of Pacifica and may require compliance with conditions discussed in Section 2.3 of this report. A tree protection plan that outlines avoidance and minimization measures to protect heritage trees proposed for retention directly outside the Project Area was approved by the City of Pacifica (WRA 2019b).

Level of Significance After Mitigation: Less Than Significant

5.6 Impact BIO-6: Conflicts with an Adopted Habitat Conservation Plan

Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. The Project would not conflict with the provisions of an adopted HCP, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. The Project Area is not within a geographic area covered by an adopted HCP or a natural community conservation plan. The Project Area is not certified by the City of Pacifica's LCP because it exists in an "Area of Deferred Certification", per a 1994 LCP amendment, and is not subject to the City of Pacifica's LCP Land Use Plan (City of Pacifica 1994).

Level of Significance: No Impact

5.7 Impact BIO-7: Cumulative Impacts

Cumulative impacts on the biological resources that could be affected by the Project may result from a number of past, current, and reasonably foreseeable future projects that occur in the area. Although such projects could result in impacts on these sensitive habitats and species, it is expected that most current and future projects that impact these species and their habitats would be required to mitigate these impacts through the CEQA, Section 1602, or Section 404/401 permitting process, as well as through the ESA Section 7 consultation process. As a result, most projects in the region will mitigate their impacts on these resources, minimizing cumulative impacts on these species.

Through implementation of the avoidance and minimization measures incorporated into the Project, it will not result in a cumulatively considerable contribution to any significant cumulative impacts to biological resources.

Level of Significance: No Impact

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APPENDIX A

FIGURES

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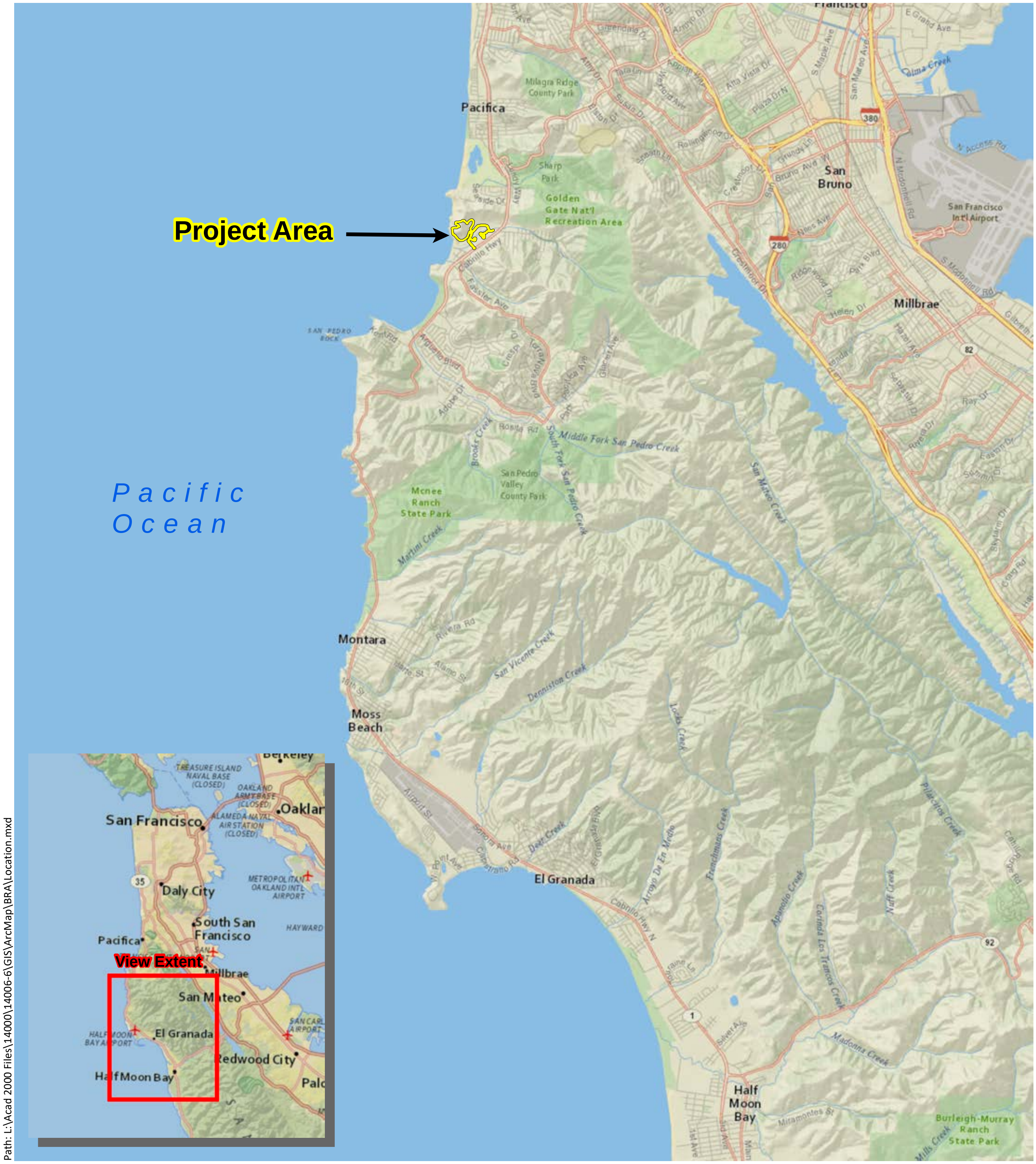

Sources: National Geographic, WRA | Prepared By: mrochelle, 10/23/2019

Figure 1. Project Area Regional Location Map

Biological Resource Assessment
Rockaway Quarry Reclamation Project
Pacifica, San Mateo County, California

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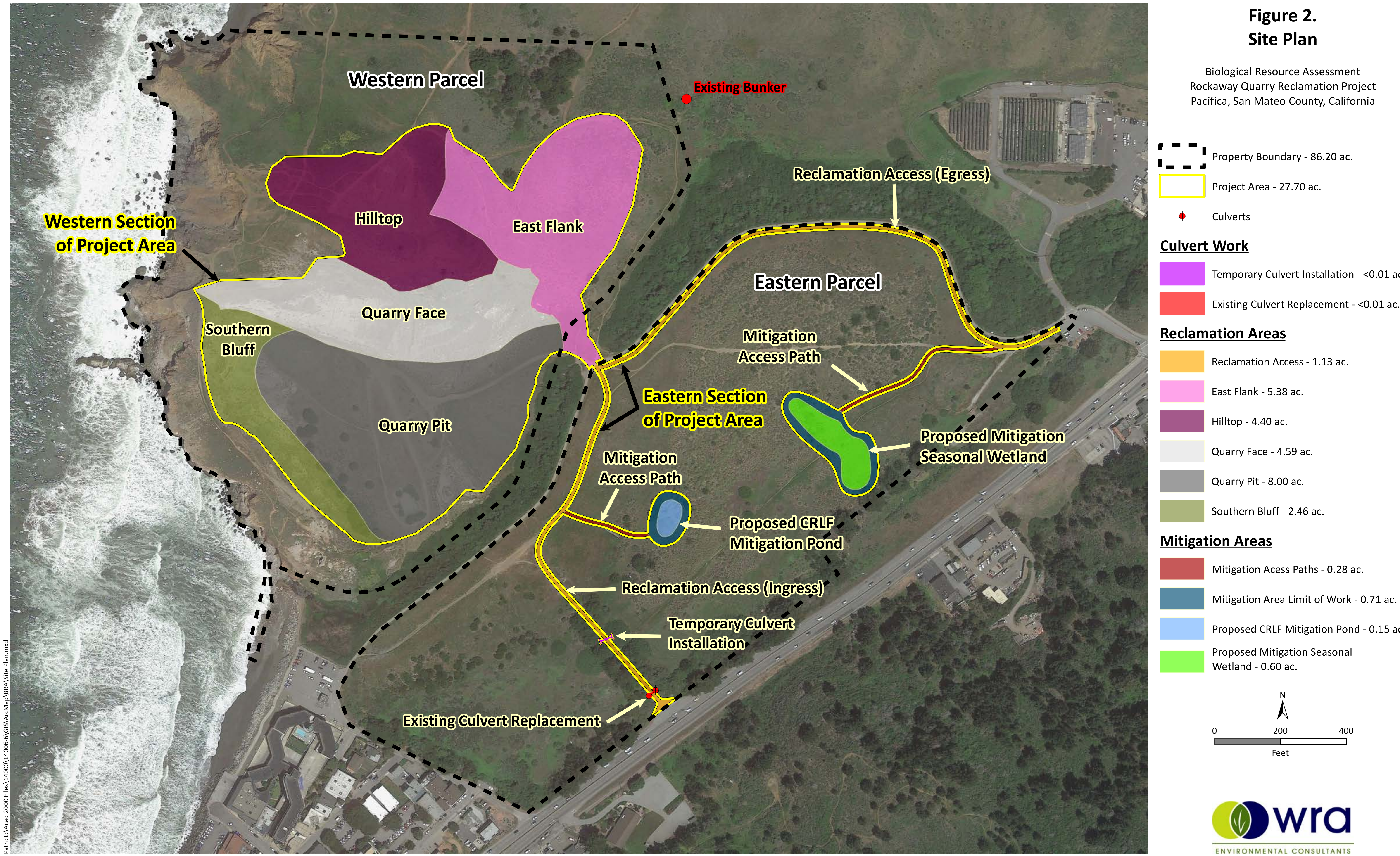
Figure 2.
Site Plan

Biological Resource Assessment
Rockaway Quarry Reclamation Project
Pacifica, San Mateo County, California



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Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 2/24/2020

Figure 3.
Soils Map

Biological Resource Assessment
Rockaway Quarry Reclamation Project
Pacifica, San Mateo County, California

Property Boundary - 86.20 ac.
Project Area - 27.70 ac.
Reclamation Areas
Culverts

Soil Type

Beaches
Candlestick-Kron-Buriburi complex, 30 to 75 percent slopes
Orthents, cut and fill-Urban land complex, 0 to 5 percent slopes
Pits and Dumps
Rock outcrop-Orthents complex, 30 to 75 percent slopes

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Feet

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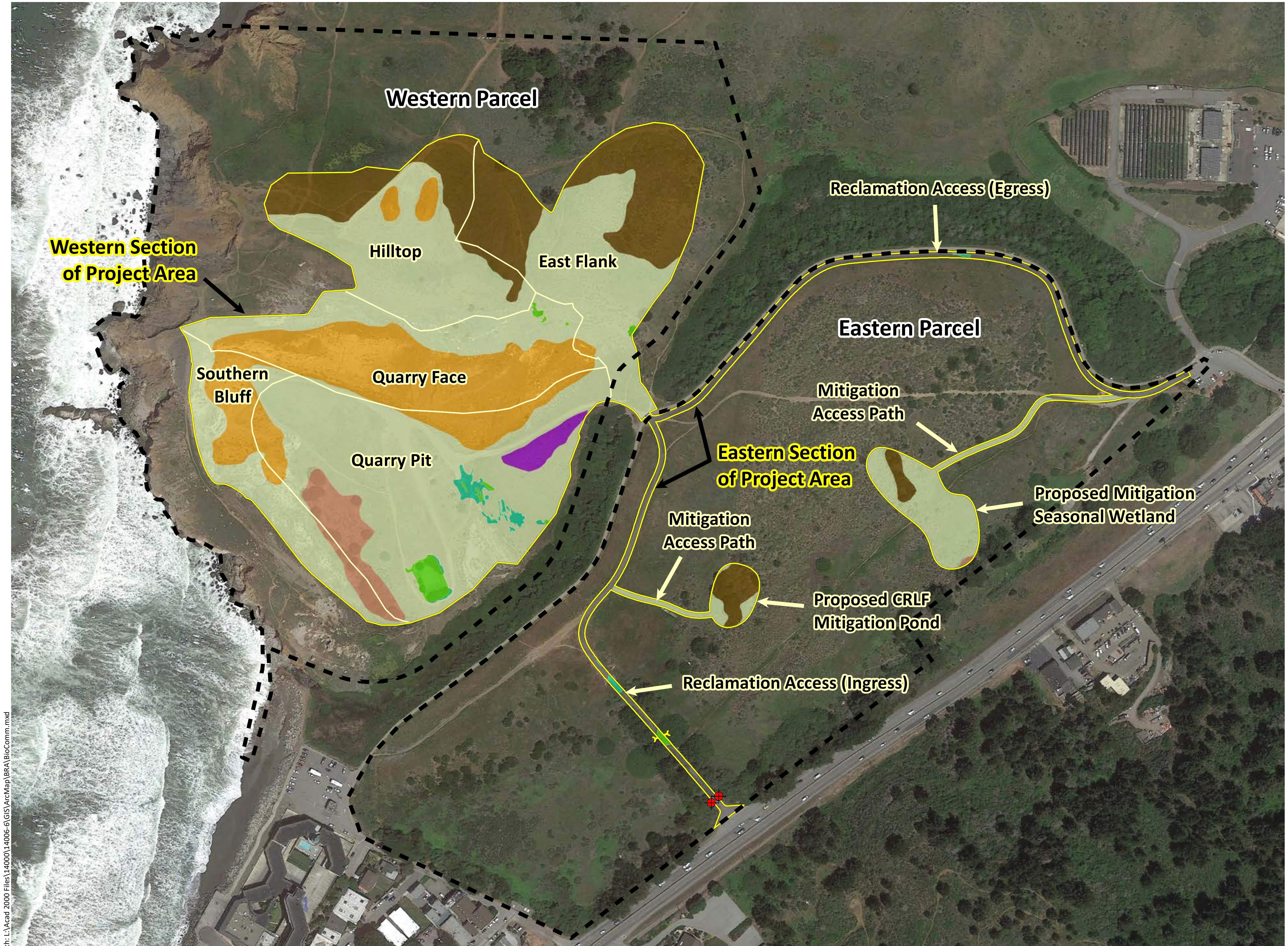
Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 2/24/2020

Figure 4.
Vegetation Communities Map

Biological Resource Assessment
Rockaway Quarry Reclamation Project
Pacifica, San Mateo County, California



- Property Boundary - 86.20 ac.
- Project Area - 27.70 ac.
- Reclamation Areas
- Culverts

Non-Sensitive Communities

- Barren Slopes - 4.78 ac.
- Coyote Brush Scrub - 4.45 ac.
- Developed - 1.11 ac.
- Man-made Purple Needlegrass Grassland - 0.27 ac.
- Non-native Annual Grassland - 15.80 ac.
- Ornamental Woodland - 0.85 ac.

Potential Waters of the U.S./State/CCC Jurisdictional 3-parameter Wetlands

- Seasonal Wetland (3-parameter) - 0.25 ac.

Additional Potentially CCC Jurisdictional 1-parameter Wetlands

- Seasonal Wetland (1-parameter) - 0.19 ac.

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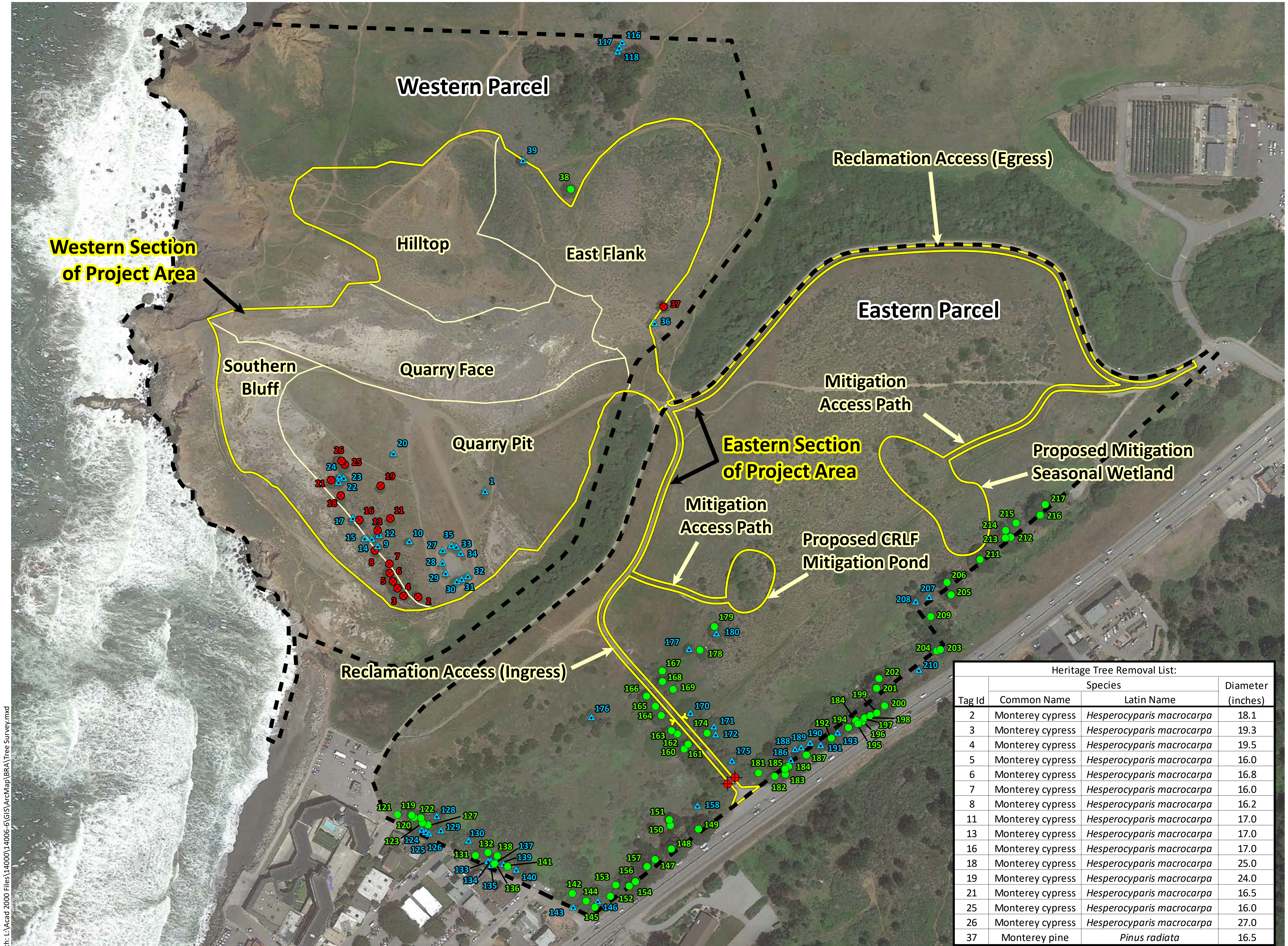
Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 2/25/2020

Figure 5.
Heritage Tree Survey

Biological Resource Assessment
Rockaway Quarry Reclamation Project
Pacifica, San Mateo County, California



Heritage Tree Removal List:

Tag Id	Species: Common Name	Species: Latin Name	Diameter (inches)
2	Monterey cypress	*Hesperocyparis macrocarpa*	18.1
3	Monterey cypress	*Hesperocyparis macrocarpa*	19.3
4	Monterey cypress	*Hesperocyparis macrocarpa*	19.5
5	Monterey cypress	*Hesperocyparis macrocarpa*	16.0
6	Monterey cypress	*Hesperocyparis macrocarpa*	16.8
7	Monterey cypress	*Hesperocyparis macrocarpa*	16.0
8	Monterey cypress	*Hesperocyparis macrocarpa*	16.2
11	Monterey cypress	*Hesperocyparis macrocarpa*	17.0
13	Monterey cypress	*Hesperocyparis macrocarpa*	17.0
16	Monterey cypress	*Hesperocyparis macrocarpa*	17.0
18	Monterey cypress	*Hesperocyparis macrocarpa*	25.0
19	Monterey cypress	*Hesperocyparis macrocarpa*	24.0
21	Monterey cypress	*Hesperocyparis macrocarpa*	16.5
25	Monterey cypress	*Hesperocyparis macrocarpa*	16.0
26	Monterey cypress	*Hesperocyparis macrocarpa*	27.0
37	Monterey pine	*Pinus radiata*	16.5

Property Boundary - 86.20 ac.
Project Area - 27.70 ac.
Reclamation Areas
Culverts
Non-Heritage Tree
Heritage Tree to Remain
Heritage Tree to be Removed from Reclamation

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Feet

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Path: L:\Acad 2000 Files\14000\14006-6\GIS\ArcMap\BRA\Tree Survey.mxd

Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 2/24/2020

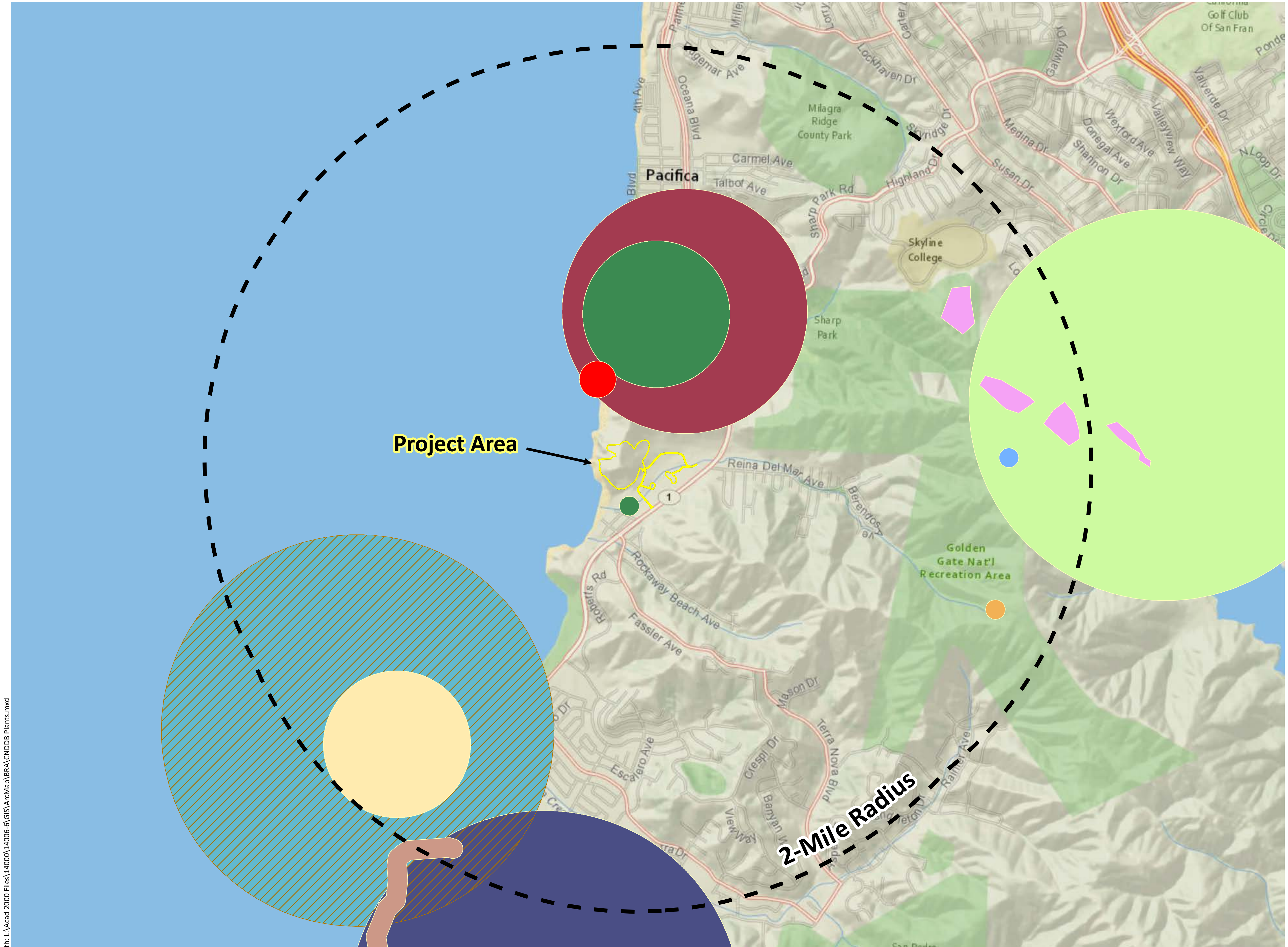

Figure 6. CNDDB Plant Occurrences within 2-Mile Radius

Biological Resource Assessment
Rockaway Quarry Reclamation Project
Pacifica, San Mateo County, California

- Project Area
- arcuate bush-mallow
- Choris' popcornflower
- coastal triquetrella
- Franciscan onion
- Franciscan thistle
- Kellogg's horkelia
- pappose tarplant
- perennial goldfields
- San Francisco Bay spineflower
- San Francisco collinsia
- Scouler's catchfly
- rose leptosiphon

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Miles

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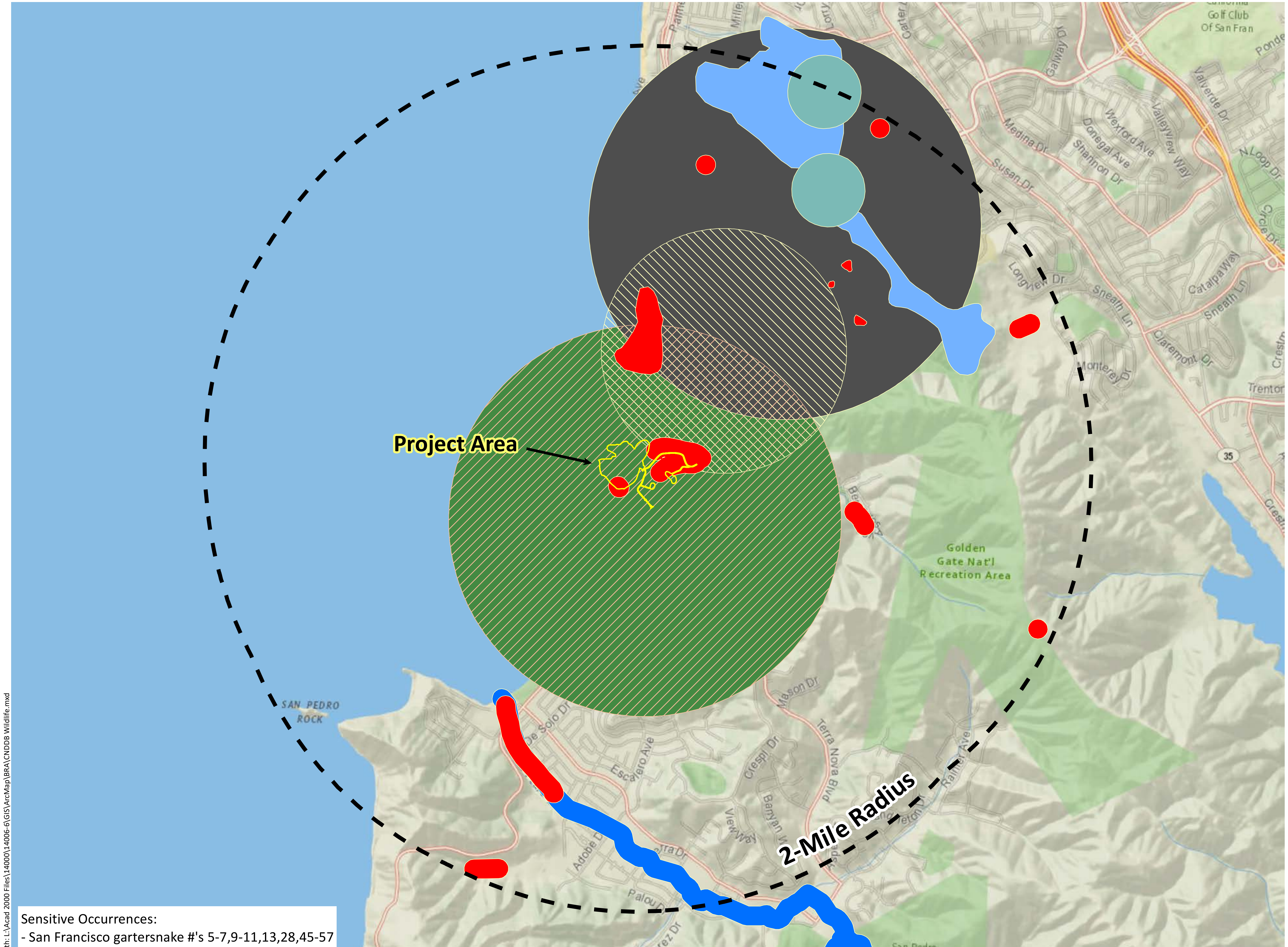
Sources: National Geographic Basemap, CNDDB Dec. 2018, WRA | Prepared By: mrochelle, 10/23/2019

Figure 7.
CNDDB Wildlife Occurrences within 2-Mile Radius

Biological Resource Assessment
Rockaway Quarry Reclamation Project
Pacifica, San Mateo County, California



- Project Area
- San Bruno elfin butterfly
- big free-tailed bat
- California red-legged frog
- hoary bat
- Mission blue butterfly
- Myrtle's silverspot butterfly
- saltmarsh common yellowthroat
- steelhead - central California coast DPS

N

0 0.5 1
Miles

Path: L:\Acad 2000 Files\14000\14006-6\GIS\ArcMap\BRA\CNDDB Wildlife.mxd

Sources: National Geographic Basemap, CNDDB Dec. 2018, WRA | Prepared By: mrochelle, 10/23/2019

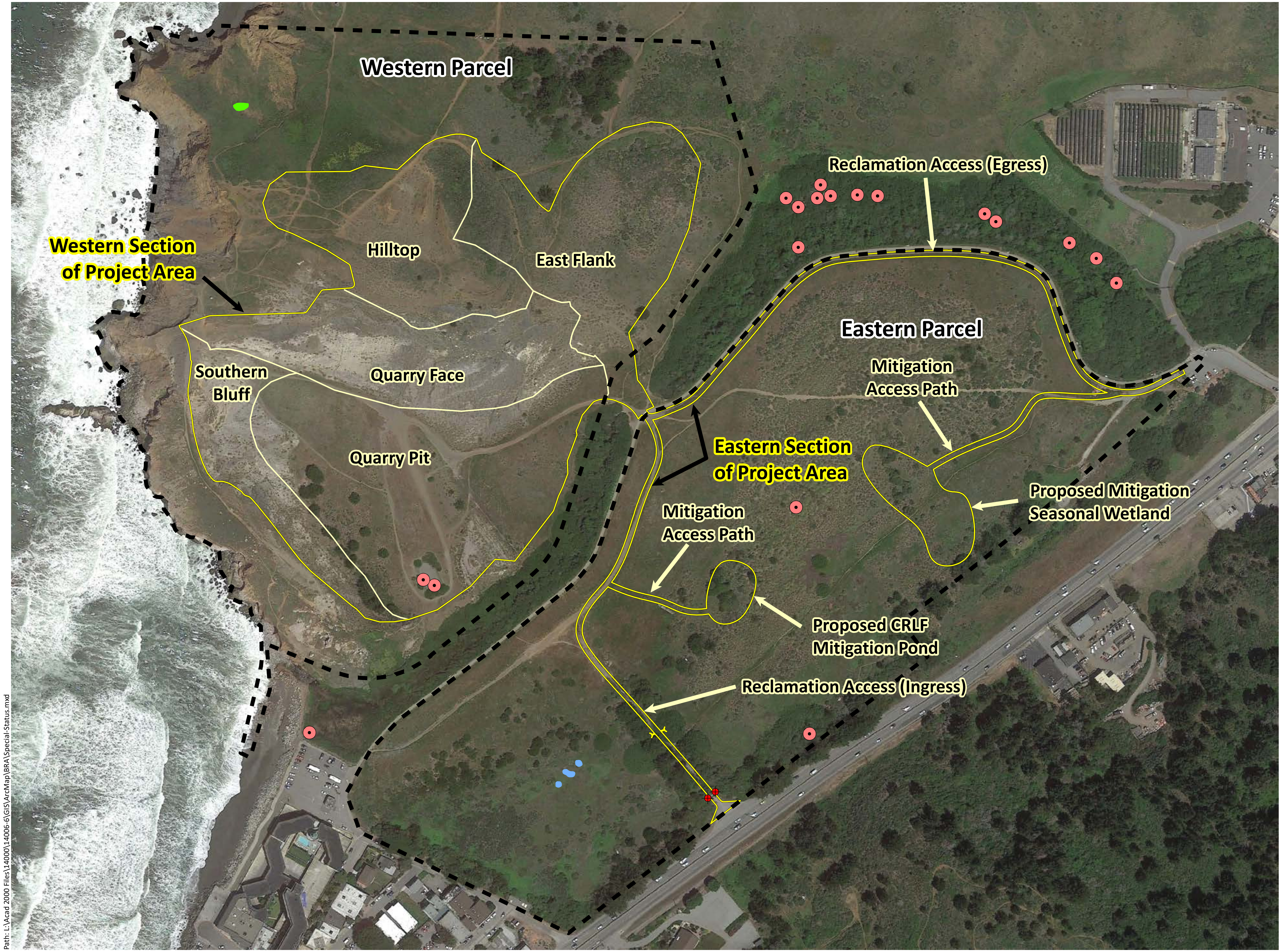


Figure 8.
Special-Status Species

Biological Resource Assessment
Rockaway Quarry Reclamation Project
Pacifica, San Mateo County, California

Property Boundary - 86.20 ac.

Project Area - 27.70 ac.

Reclamation Areas

Culverts

Special-Status Wildlife Species Occurrences

California Red-Legged Frog (EIP/PBSJ 2006, SWAIM 2006, HT Harvey 2002)

* San Francisco Garter Snake (McGinnis 1989)

Special-Status Plant Species Occurrences

Pappose Tarplant (2006 EIP)

Rose Leptosiphon (2010 GGNRA)

* San Francisco garter snake occurrences are suppressed for species protection

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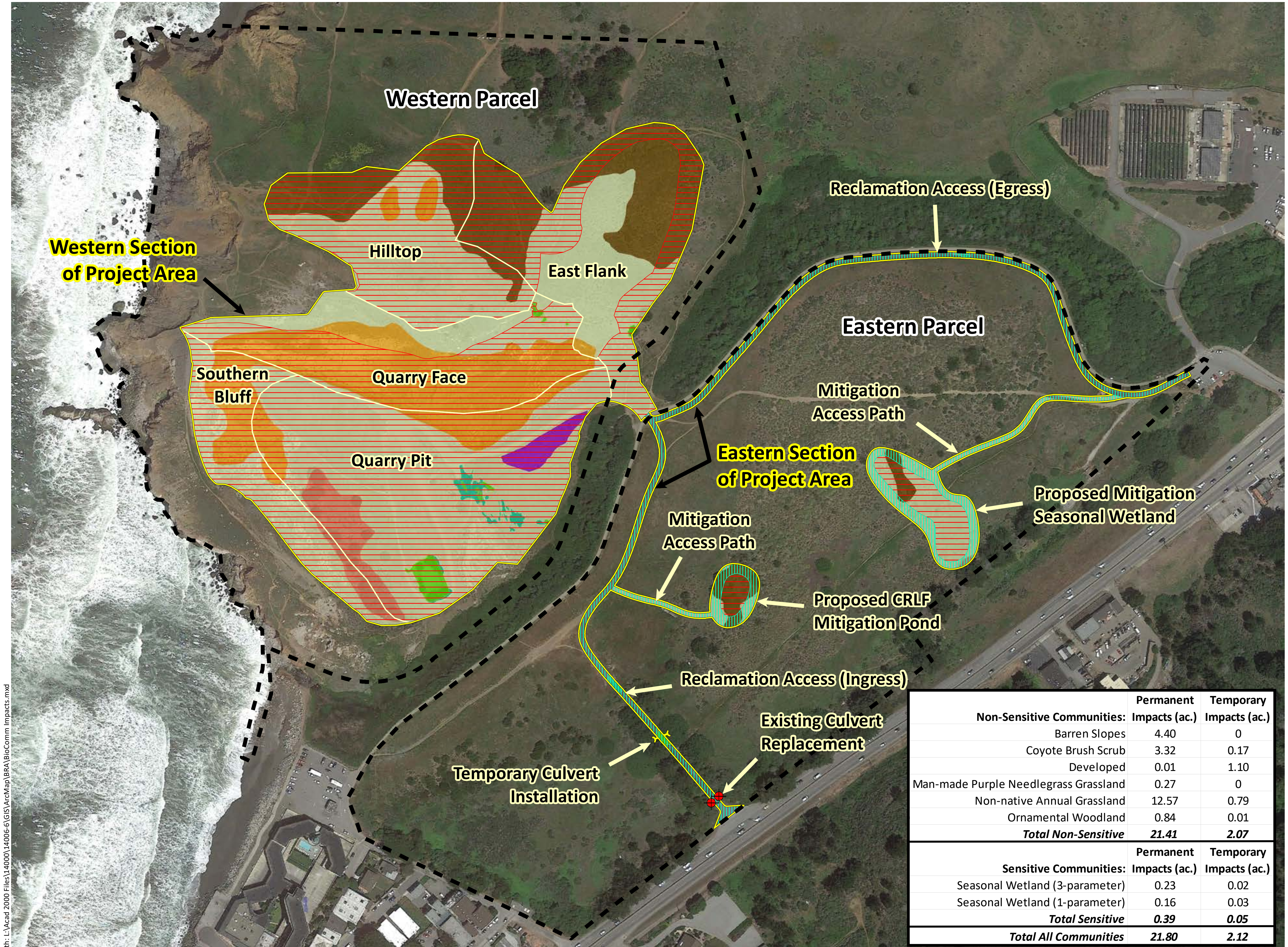
Path: L:\Acad 2000 Files\14000\14006-6\GIS\ArcMap\BRA\Special-Status.mxd

Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 2/24/2020



Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 5/15/2020

Figure 9. Vegetation Communities Impacts

Biological Resource Assessment
Rockaway Quarry Reclamation Project
Pacifica, San Mateo County, California

- Property Boundary - 86.20 ac.
- Project Area - 27.70 ac.
- Reclamation Areas
- Culverts
- Permanent Impacts - 21.80 ac.
- Temporary Impacts - 2.12 ac.

Non-Sensitive Communities

- Barren Slopes - 4.78 ac.
- Coyote Brush Scrub - 4.45 ac.
- Developed - 1.11 ac.
- Man-made Purple Needlegrass Grassland - 0.27 ac.
- Non-native Annual Grassland - 15.80 ac.
- Ornamental Woodland - 0.85 ac.

Potential Waters of the U.S./State/CCC Jurisdictional Wetlands

- Seasonal Wetland (3-parameter) - 0.25 ac.

Additional Potentially CCC Jurisdictional 1-parameter Wetlands

- Seasonal Wetland (1-parameter) - 0.19 ac.

Non-Sensitive Communities:	Permanent Impacts (ac.)	Temporary Impacts (ac.)
Barren Slopes	4.40	0
Coyote Brush Scrub	3.32	0.17
Developed	0.01	1.10
Man-made Purple Needlegrass Grassland	0.27	0
Non-native Annual Grassland	12.57	0.79
Ornamental Woodland	0.84	0.01
Total Non-Sensitive	*21.41*	*2.07*
Sensitive Communities:	**Permanent Impacts (ac.)**	**Temporary Impacts (ac.)**
Seasonal Wetland (3-parameter)	0.23	0.02
Seasonal Wetland (1-parameter)	0.16	0.03
Total Sensitive	*0.39*	*0.05*
Total All Communities	*21.80*	*2.12*

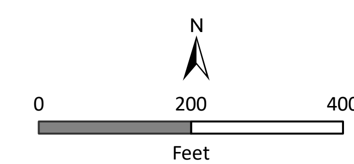


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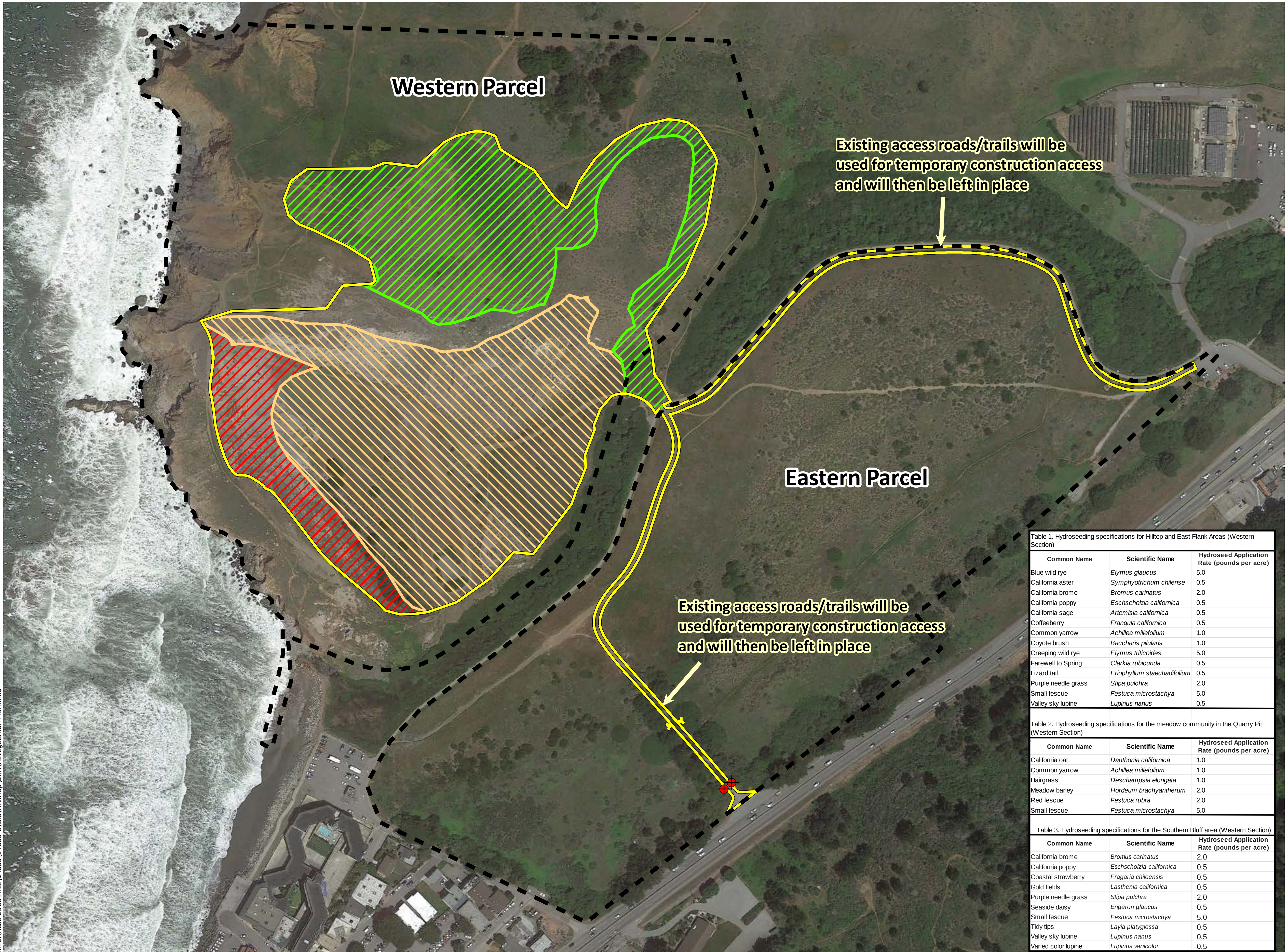
Figure 10.
Revegetation Plan

Biological Resource Assessment
Rockaway Quarry Reclamation Project
Pacifica, San Mateo County, California



Property Boundary - 86.20 ac.

Reclamation Area - 25.97 ac.

Culverts

Revegetation Plan - 21.04 ac.

Hilltop and East Flank - 7.25 ac.

Quarry Pit - 11.33 ac.

Southern Bluff - 2.46 ac.

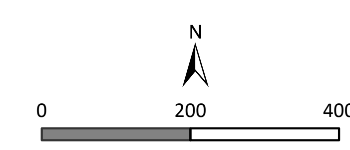


Table 1. Hydroseeding specifications for Hilltop and East Flank Areas (Western Section)

Common Name	Scientific Name	Hydroseed Application Rate (pounds per acre)
Blue wild rye	*Elymus glaucus*	5.0
California aster	*Symphyotrichum chilense*	0.5
California brome	*Bromus carinatus*	2.0
California poppy	*Eschscholzia californica*	0.5
California sage	*Artemisia californica*	0.5
Coffeeberry	*Frangula californica*	0.5
Common yarrow	*Achillea millefolium*	1.0
Coyote brush	*Baccharis pilularis*	1.0
Creeping wild rye	*Elymus triticoides*	5.0
Farewell to Spring	*Clarkia rubicunda*	0.5
Lizard tail	*Eriophyllum staechadifolium*	0.5
Purple needle grass	*Stipa pulchra*	2.0
Small fescue	*Festuca microstachya*	5.0
Valley sky lupine	*Lupinus nanus*	0.5

Table 2. Hydroseeding specifications for the meadow community in the Quarry Pit (Western Section)

Common Name	Scientific Name	Hydroseed Application Rate (pounds per acre)
California oat	*Danthonia californica*	1.0
Common yarrow	*Achillea millefolium*	1.0
Hairgrass	*Deschampsia elongata*	1.0
Meadow barley	*Hordeum brachyantherum*	2.0
Red fescue	*Festuca rubra*	2.0
Small fescue	*Festuca microstachya*	5.0

Table 3. Hydroseeding specifications for the Southern Bluff area (Western Section)

Common Name	Scientific Name	Hydroseed Application Rate (pounds per acre)
California brome	*Bromus carinatus*	2.0
California poppy	*Eschscholzia californica*	0.5
Coastal strawberry	*Fragaria chiloensis*	0.5
Gold fields	*Lasthenia californica*	0.5
Purple needle grass	*Stipa pulchra*	2.0
Seaside daisy	*Erigeron glaucus*	0.5
Small fescue	*Festuca microstachya*	5.0
Tidy tips	*Layia platyglossa*	0.5
Valley sky lupine	*Lupinus nanus*	0.5
Varied color lupine	*Lupinus variicolor*	0.5

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Sources: Google Earth 2018 Aerial, WRA | Prepared By: mrochelle, 2/24/2020

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APPENDIX B

LIST OF OBSERVED PLANT SPECIES

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Appendix B-1. Plant species observed during the August 22 and August 26, 2019 site visits

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	CAL-IPC Status[2]	Wetland Status[3]
Acacia sp.	Acacia	non-native	shrub	-	-	-
Acmispon sp.	Lotus	native	annual	-	-	-
Ammi visnaga	Bisnaga	non-native	annual, biennial herb	-	-	-
Artemisia californica	Coastal sage brush	native	shrub	-	-	-
Avena barbata	Slim oat	non-native (invasive)	annual, perennial grass	-	Moderate	-
Baccharis pilularis	Coyote brush	native	shrub	-	-	-
Brachypodium distachyon	Purple false brome	non-native (invasive)	annual, perennial grass	-	Moderate	-
Briza maxima	Rattlesnake grass	non-native (invasive)	annual grass	-	Limited	-
Briza minor	Little rattlesnake grass	non-native	annual grass	-	-	FAC
Bromus diandrus	Ripgut brome	non-native (invasive)	annual grass	-	Moderate	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	CAL-IPC Status[2]	Wetland Status[3]
Bromus hordeaceus	Soft chess	non-native (invasive)	annual grass	-	Limited	FACU
Carduus pycnocephalus ssp. *pycnocephalus*	Italian thistle	non-native (invasive)	annual herb	-	Moderate	-
Carpobrotus edulis	Iceplant	non-native (invasive)	perennial herb	-	High	-
Ceanothus thyrsiflorus	Blueblossom	native	tree, shrub	-	-	-
Cirsium vulgare	Bullthistle	non-native (invasive)	perennial herb	-	Moderate	FACU
Conium maculatum	Poison hemlock	non-native (invasive)	perennial herb	-	Moderate	FACW
Convolvulus arvensis	Field bindweed	non-native	perennial herb, vine	-	-	-
Cortaderia jubata	Andean pampas grass	non-native (invasive)	perennial grass	-	High	FACU
Crypsis schoenoides	Swamp grass	non-native	annual grass	-	-	FACW

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	CAL-IPC Status[2]	Wetland Status[3]
Cyperus eragrostis	Tall cyperus	native	perennial grasslike herb	-	-	FACW
Daucus carota	Carrot	non-native	perennial herb	-	-	UPL
Delairea odorata	Cape ivy	non-native (invasive)	perennial herb	-	High	-
Dipsacus sativus	Indian teasel	non-native (invasive)	biennial herb	-	Moderate	-
Epilobium brachycarpum	Willow herb	native	annual herb	-	-	-
Epilobium ciliatum	Slender willow herb	native	perennial herb	-	-	FACW
Erigeron canadensis	Canada horseweed	native	annual herb	-	-	FACU
Eschscholzia californica	California poppy	native	annual, perennial herb	-	-	-
Festuca myuros	Rattail sixweeks grass	non-native (invasive)	annual grass	-	Moderate	FACU

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	CAL-IPC Status[2]	Wetland Status[3]
Festuca perennis	Italian rye grass	non-native (invasive)	annual, perennial grass	-	Moderate	FAC
Foeniculum vulgare	Fennel	non-native (invasive)	perennial herb	-	High	-
Fragaria chiloensis	Beach strawberry	native	perennial herb	-	-	FACU
Genista monspessulana	French broom	non-native (invasive)	shrub	-	High	-
Geranium dissectum	Wild geranium	non-native (invasive)	annual herb	-	Limited	-
Helminthotheca echioides	Bristly ox-tongue	non-native (invasive)	annual, perennial herb	-	Limited	FAC
Hesperocyparis macrocarpa	Monterey cypress	native	tree	Rank 1B.2*	-	-
Heteromeles arbutifolia	Toyon	native	shrub	-	-	-
Hirschfeldia incana	Short-podded mustard	non-native (invasive)	perennial herb	-	Moderate	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	CAL-IPC Status[2]	Wetland Status[3]
Hordeum brachyantherum	Meadow barley	native	perennial grass	-	-	FACW
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	non-native (invasive)	annual grass	-	Moderate	FAC
Isolepis cernua	Low bulrush	native	annual grasslike herb	-	-	OBL
Juncus balticus ssp. *ater*	Baltic rush	native	perennial grasslike herb	-	-	FACW
Juncus bufonius	Common toad rush	native	annual grasslike herb	-	-	FACW
Juncus effusus	Common bog rush	native	perennial grasslike herb	-	-	FACW
Juncus patens	Common rush	native	perennial grasslike herb	-	-	FACW
Lactuca saligna	Willow lettuce	non-native	annual herb	-	-	UPL
Lactuca serriola	Prickly lettuce	non-native	annual herb	-	-	FACU
Lotus corniculatus	Bird's foot trefoil	non-native	perennial herb	-	-	FAC

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	CAL-IPC Status[2]	Wetland Status[3]
Lotus tenuis	Narrow-leaf bird's-foot trefoil	non-native	perennial herb	-	-	FACU
Lysimachia arvensis	Scarlet pimpernel	non-native	annual herb	-	-	FAC
Lythrum hyssopifolia	Hyssop loosestrife	non-native (invasive)	annual, perennial herb	-	Limited	OBL
Madia sativa	Coastal tarweed	native	annual herb	-	-	-
Medicago polymorpha	California burclover	non-native (invasive)	annual herb	-	Limited	FACU
Melilotus albus	White sweetclover	non-native	annual, biennial herb	-	-	-
Melilotus indicus	Annual yellow sweetclover	non-native	annual herb	-	-	FACU
Myoporum laetum	Ngaio tree	non-native (invasive)	tree, shrub	-	Moderate	FACU
Phalaris aquatica	Harding grass	non-native (invasive)	perennial grass	-	Moderate	FACU
Pinus radiata	Monterey pine	native	tree	Rank 1B.1	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	CAL-IPC Status[2]	Wetland Status[3]
Plantago coronopus	Cut leaf plantain	non-native	annual herb	-	-	FAC
Plantago lanceolata	Ribwort	non-native (invasive)	perennial herb	-	Limited	FAC
Polypogon monspeliensis	Annual beard grass	non-native (invasive)	annual grass	-	Limited	FACW
Raphanus sativus	Wild radish	non-native (invasive)	annual, biennial herb	-	Limited	-
Rubus ursinus	California blackberry	native	vine, shrub	-	-	FAC
Rumex californicus	California dock	native	perennial herb	-	-	FACW
Rumex crispus	Curly dock	non-native (invasive)	perennial herb	-	Limited	FAC
Salix lasiolepis	Arroyo willow	native	tree, shrub	-	-	FACW
Sambucus racemosa var. *racemosa*	Red elderberry	native	shrub	-	-	FACU
Silybum marianum	Milk thistle	non-native (invasive)	annual, perennial herb	-	Limited	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	CAL-IPC Status[2]	Wetland Status[3]
Sonchus oleraceus	Common sow thistle	non-native	annual herb	-	-	UPL
Stipa pulchra	Purple needle grass	native	perennial grass	-	-	-
Symphyotrichum chilense	Pacific aster	native	perennial herb	-	-	FAC
Toxicodendron diversilobum	Poison oak	native	vine, shrub	-	-	FACU
Trifolium dubium	Shamrock	non-native	annual herb	-	-	UPL
Typha sp.	Cattail	-	perennial grasslike herb	-	-	-
Vicia sativa	Spring vetch	non-native	annual herb, vine	-	-	FACU
Zeltnera muehlenbergii	Muehlenberg's centaury	native	annual herb	-	-	FAC

- All species identified using the *Jepson eFlora* [Jepson Flora Project (eds.) 2019]; nomenclature follows *Jepson eFlora* [Jepson Flora Project (eds.) 2019]

*Special-status only within its native range. The Project Area is outside of the native range of this species.

[1]Rarity Status: The CNPS Inventory of Rare and Endangered Plants (CNPS 2019)

FE:	Federal Endangered
FT:	Federal Threatened
SE:	State Endangered
ST:	State Threatened
SR:	State Rare
Rank 1A:	Plants presumed extinct in California
Rank 1B:	Plants rare, threatened, or endangered in California and elsewhere
Rank 2:	Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3:	Plants about which we need more information – a review list

Rank 4:	Plants of limited distribution – a watch list

[2]Invasive Status: California Invasive Plant Inventory (Cal-IPC 2019)

High:	Severe ecological impacts; high rates of dispersal and establishment; most are widely distributed ecologically.
Moderate:	Substantial and apparent ecological impacts; moderate-high rates of dispersal, establishment dependent on disturbance; limited-moderate distribution ecologically
Limited:	Minor or not well documented ecological impacts; low-moderate rate of invasiveness; limited distribution ecologically
Assessed:	Assessed by Cal-IPC and determined to not be an existing current threat

[3]Wetland Status: National List of Plant Species that Occur in Wetlands, California – Arid West Region (Lichvar et al. 2016)

OBL:	Almost always found in wetlands;
FACW:	Usually found in wetlands
FAC:	Equally found in wetlands and uplands
FACU:	Usually not found in wetlands
UPL:	Almost never found in wetlands
NL:	Not listed, assumed almost never found in wetlands
NI:	No information; not factored during wetland delineation

Appendix B-2. Wildlife species observed in the Project Area on August 22, and August 26, 2019.

Scientific Name	Common Name
Birds	
Cathartes aura	turkey vulture
Charadrius vociferus	killdeer
Corvus corax	common raven
Columba livia	rock dove
Elanus leucurus	white-tailed kite
Melozone crissalis	California towhee
Passerculus sandwichensis	Savannah sparrow
Zonotrichia leucophrys	white-crowned sparrow

APPENDIX C

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALS TABLE

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Appendix C. Potential for Special Status Plant and Wildlife Species to Occur in the Project Area. List compiled from the U.S. Fish and Wildlife Service (USFWS) Species Lists (2019), the California Department of Fish and Wildlife (CDFW) Natural Diversity Database (2019) and California Native Plant Society (CNPS) Electronic Inventory (2019) searches of the San Francisco South, Hunters Point, Montara Mountain, San Mateo, Half Moon Bay, and Woodside USGS 7.5' quadrangles and a review of other CDFG lists and publications (Jennings and Hayes 1994, Zeiner *et al.* 1990, Burridge 1995, Shuford and Gardali 2008).

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Plants				
San Mateo thorn-mint *Acanthomintha duttonii*	FE, SE, Rank 1B.1	Chaparral, valley and foothill grassland. Elevation ranges from 160 to 985 feet (50 to 300 meters). Blooms Apr-Jun.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Blasdale's bent grass *Agrostis blasdalei*	Rank 1B.2	Coastal bluff scrub, coastal dunes, coastal prairie. Elevation ranges from 0 to 490 feet (0 to 150 meters). Blooms May-Jul.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Franciscan onion *Allium peninsulare var. franciscanum*	Rank 1B.2	Cismontane woodland, valley and foothill grassland. Elevation ranges from 170 to 1000 feet (52 to 305 meters). Blooms (Apr)May-Jun.	**Unlikely.** Suitable habitat not present within Project Area. No serpentine soils present within the Project Area.	No further actions are recommended for this species.
bent-flowered fiddleneck *Amsinckia lunaris*	Rank 1B.2	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation ranges from 5 to 1640 feet (3 to 500 meters). Blooms Mar-Jun.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
California androsace *Androsace elongata ssp. acuta*	Rank 4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland. Elevation ranges from 490 to 4280 feet (150 to 1305 meters). Blooms Mar-Jun.	**No Potential.** Suitable habitat not present within Project Area. Project Area is out of the species elevation range.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
coast rockcress *Arabis blepharophylla*	Rank 4.3	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub. Elevation ranges from 5 to 3610 feet (3 to 1100 meters). Blooms Feb-May.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Anderson's manzanita *Arctostaphylos andersonii*	Rank 1B.2	Broadleafed upland forest, chaparral, north coast coniferous forest. Elevation ranges from 195 to 2495 feet (60 to 760 meters). Blooms Nov-May.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Franciscan manzanita *Arctostaphylos franciscana*	FE, Rank 1B.1	Coastal scrub (serpentine). Elevation ranges from 195 to 985 feet (60 to 300 meters). Blooms Feb-Apr.	**Unlikely.** Suitable habitat not present within Project Area. Serpentine soils not present. Site has been heavily disturbed.	No further actions are recommended for this species.
San Bruno Mountain manzanita *Arctostaphylos imbricata*	SE, Rank 1B.1	Chaparral, coastal scrub. Elevation ranges from 900 to 1215 feet (275 to 370 meters). Blooms Feb-May.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Presidio manzanita *Arctostaphylos montana ssp. ravenii*	FE, SE, Rank 1B.1	Chaparral, coastal prairie, coastal scrub. Elevation ranges from 145 to 705 feet (45 to 215 meters). Blooms Feb-Mar.	**Unlikely.** Suitable habitat not present within Project Area. Serpentine soils not present. Site has been heavily disturbed.	No further actions are recommended for this species.
Montara manzanita *Arctostaphylos montaraensis*	Rank 1B.2	Chaparral (maritime), coastal scrub. Elevation ranges from 260 to 1640 feet (80 to 500 meters). Blooms Jan-Mar.	**No Potential.** Suitable habitat not present within Project Area. Project Area is out of species elevation range.	No further actions are recommended for this species.
Pacific manzanita *Arctostaphylos pacifica*	SE, Rank 1B.1	Chaparral, coastal scrub. Elevation ranges from 1080 to 1085 feet (330 to 330 meters). Blooms Feb-Apr.	**No Potential.** Suitable habitat not present within Project Area. Project Area is out of species elevation range.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Kings Mountain manzanita *Arctostaphylos regismontana*	Rank 1B.2	Broadleafed upland forest, chaparral, north coast coniferous forest. Elevation ranges from 1000 to 2395 feet (305 to 730 meters). Blooms Dec-Apr.	**No Potential.** Suitable habitat not present within Project Area. Project Area is out of species elevation range.	No further actions are recommended for this species.
ocean bluff milk-vetch *Astragalus nuttallii var. nuttallii*	Rank 4.2	Coastal bluff scrub, coastal dunes. Elevation ranges from 5 to 395 feet (3 to 120 meters). Blooms Jan-Nov.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
coastal marsh milk-vetch *Astragalus pycnostachyus var. pycnostachyus*	Rank 1B.2	Coastal dunes (mesic), coastal scrub, marshes and swamps (coastal salt, streamsides). Elevation ranges from 0 to 100 feet (0 to 30 meters). Blooms (Apr)Jun-Oct.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
alkali milk-vetch *Astragalus tener var. tener*	Rank 1B.2	Playas, valley and foothill grassland (adobe clay), vernal pools. Elevation ranges from 0 to 195 feet (1 to 60 meters). Blooms Mar-Jun.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Brewer's calandrinia *Calandrinia breweri*	Rank 4.2	Chaparral, coastal scrub. Elevation ranges from 30 to 4005 feet (10 to 1220 meters). Blooms (Jan)Mar-Jun.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Oakland star-tulip *Calochortus umbellatus*	Rank 4.2	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Elevation ranges from 325 to 2295 feet (100 to 700 meters). Blooms Mar-May.	**No Potential.** Suitable habitat not present within Project Area. Serpentine soils not present. Project Area is out of species elevation range.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
johnny-nip *Castilleja ambigua var. ambigua*	Rank 4.2	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, vernal pools margins. Elevation ranges from 0 to 1425 feet (0 to 435 meters). Blooms Mar-Aug.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Congdon's tarplant *Centromadia parryi ssp. congdonii*	Rank 1B.1	Valley and foothill grassland (alkaline). Elevation ranges from 0 to 755 feet (0 to 230 meters). Blooms May-Oct(Nov).	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
pappose tarplant *Centromadia parryi ssp. parryi*	Rank 1B.2	Chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt), valley and foothill grassland (vernally mesic). Elevation ranges from 0 to 1380 feet (0 to 420 meters). Blooms May-Nov.	**Moderate.** An occurrence of pappose tarplant was observed less than 0.5 mile from the Project Area in 2006. Due to proximity of this occurrence and presence of suitable habitat, pappose tarplant has a moderate potential to occur in the Project Area.	Pre-construction rare plant survey is recommended during the blooming season, between May and November, to verify the presence or absence of this species.
Point Reyes bird's beak *Chloropyron maritimum* ssp. *palustre*	Rank 1B.2	Marshes and swamps. Elevation ranges from 0 to 30 feet (0 to 10 meters). Blooms June-Oct.	**No Potential.** Suitable habitat not present within Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
San Francisco Bay spineflower *Chorizanthe cuspidata var. cuspidata*	Rank 1B.2	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub. Elevation ranges from 5 to 705 feet (3 to 215 meters). Blooms Apr-Jul (Aug).	**Moderate.** An occurrence of San Francisco Bay spineflower as documented within 2 miles of the Project Area in May 1925. Due to proximity of this occurrence and presence of suitable habitat, San Francisco Bay spineflower has a moderate potential to occur in the Project Area.	Pre-construction rare plant survey is recommended during the blooming season, between April and July, to verify the presence or absence of this species.
robust spineflower *Chorizanthe robusta var. robusta*	FE, Rank 1B.1	Chaparral (maritime), cismontane woodland (openings), coastal dunes, coastal scrub. Elevation ranges from 5 to 985 feet (3 to 300 meters). Blooms Apr-Sep.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Franciscan thistle *Cirsium andrewsii*	Rank 1B.2	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub. Elevation ranges from 0 to 490 feet (0 to 150 meters). Blooms Mar-Jul.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Crystal Springs fountain thistle *Cirsium fontinale var. fontinale*	FE, SE, Rank 1B.1	Chaparral (openings), cismontane woodland, meadows and seeps, valley and foothill grassland. Elevation ranges from 145 to 575 feet (45 to 175 meters). Blooms (Apr)May-Oct.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
compact cobwebby thistle *Cirsium occidentale var. compactum*	Rank 1B.2	Chaparral, coastal dunes, coastal prairie, coastal scrub. Elevation ranges from 15 to 490 feet (5 to 150 meters). Blooms Apr-Jun.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
lost thistle *Cirsium praeteriens*	Rank 1A	Elevation ranges from 0 to 330 feet (0 to 100 meters). Blooms Jun-Jul.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
round-headed Chinese-houses *Collinsia corymbosa*	Rank 1B.2	Coastal dunes. Elevation ranges from 0 to 65 feet (0 to 20 meters). Blooms Apr-Jun.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
San Francisco collinsia *Collinsia multicolor*	Rank 1B.2	Closed-cone coniferous forest, coastal scrub. Elevation ranges from 95 to 820 feet (30 to 250 meters). Blooms (Feb) Mar-May.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
clustered lady's-slipper *Cypripedium fasciculatum*	Rank 4.2	Lower montane coniferous forest, north coast coniferous forest. Elevation ranges from 325 to 7990 feet (100 to 2435 meters). Blooms Mar-Aug.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
western leatherwood *Dirca occidentalis*	Rank 1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland. Elevation ranges from 80 to 1395 feet (25 to 425 meters). Blooms Jan-Mar(Apr).	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
California bottle-brush grass *Elymus californicus*	Rank 4.3	Broadleafed upland forest, cismontane woodland, north coast coniferous forest, riparian woodland. Elevation ranges from 45 to 1540 feet (15 to 470 meters). Blooms May-Aug(Nov).	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
marsh horsetail *Equisetum palustre*	Rank 3	Marshes and swamps. Elevation ranges from 145 to 3280 feet (45 to 1000 meters).	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
San Mateo woolly sunflower *Eriophyllum latilobum*	FE, SE, Rank 1B.1	Cismontane woodland (often serpentine, on roadcuts), coastal scrub, lower montane coniferous forest. Elevation ranges from 145 to 1085 feet (45 to 330 meters). Blooms May-Jun.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Hoover's button-celery *Eryngium aristulatum var. hooveri*	Rank 1B.1	Vernal pools. Elevation ranges from 5 to 150 feet (3 to 45 meters). Blooms (Jun) Jul (Aug).	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Jepson's coyote thistle *Eryngium jepsonii*	Rank 1B.2	Valley and foothill grassland, vernal pools. Elevation ranges from 5 to 985 feet (3 to 300 meters). Blooms Apr-Aug.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
San Francisco wallflower *Erysimum franciscanum*	Rank 4.2	Chaparral, coastal dunes, coastal scrub, valley and foothill grassland. Elevation ranges from 0 to 1805 feet (0 to 550 meters). Blooms Mar-Jun.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Hillsborough chocolate lily *Fritillaria biflora var. ineziana*	Rank 1B.1	Cismontane woodland, valley and foothill grassland. Elevation ranges from 490 to 490 feet (150 to 150 meters). Blooms Mar-Apr.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed Project Area is out of species elevation range.	No further actions are recommended for this species.
Marin checker lily *Fritillaria lanceolata var. tristulis*	Rank 1B.1	Coastal bluff scrub, coastal prairie, coastal scrub. Elevation ranges from 45 to 490 feet (15 to 150 meters). Blooms Feb-May.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
fragrant fritillary *Fritillaria liliacea*	Rank 1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Elevation ranges from 5 to 1345 feet (3 to 410 meters). Blooms Feb-Apr.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
blue coast gilia *Gilia capitata ssp. chamissonis*	Rank 1B.1	Coastal dunes, coastal scrub. Elevation ranges from 5 to 655 feet (2 to 200 meters). Blooms Apr-Jul.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
dark-eyed gilia *Gilia millefoliata*	Rank 1B.2	Coastal dunes. Elevation ranges from 5 to 100 feet (2 to 30 meters). Blooms Apr-Jul.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
San Francisco gumplant *Grindelia hirsutula var. maritima*	Rank 3.2	Coastal bluff scrub, coastal scrub, valley and foothill grassland. Elevation ranges from 45 to 1310 feet (15 to 400 meters). Blooms Jun-Sep.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Diablo helianthella *Helianthella castanea*	Rank 1B.2	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Elevation ranges from 195 to 4265 feet (60 to 1300 meters). Blooms Mar-Jun.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	Rank 1B.2	Valley and foothill grassland. Elevation ranges from 65 to 1835 feet (20 to 560 meters). Blooms Apr-Nov.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	Rank 1B.2	Coastal bluff scrub (sandy), coastal dunes, coastal prairie. Elevation ranges from 0 to 705 feet (0 to 215 meters). Blooms Mar-Jun.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Marin western flax *Hesperolinon congestum*	FT, ST, Rank 1B.1	Chaparral, valley and foothill grassland. Elevation ranges from 15 to 1215 feet (5 to 370 meters). Blooms Apr-Jul.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
water star-grass *Heteranthera dubia*	Rank 2B.2	Marshes and swamps (alkaline, still or slow-moving water). Elevation ranges from 95 to 4905 feet (30 to 1495 meters). Blooms Jul-Oct.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Kellogg's horkelia *Horkelia cuneata var. sericea*	Rank 1B.1	Closed-cone coniferous forest, chaparral (maritime), coastal dunes, coastal scrub. Elevation ranges from 30 to 655 feet (10 to 200 meters). Blooms Apr-Sep.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Point Reyes horkelia *Horkelia marinensis*	Rank 1B.2	Coastal dunes, coastal prairie, coastal scrub. Elevation ranges from 15 to 2475 feet (5 to 755 meters). Blooms May-Sep.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
island rock lichen *Hypogymnia schizidiata*	Rank 1B.3	Closed-cone coniferous forest, chaparral. Elevation ranges from 1180 to 1330 feet (360 to 405 meters).	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed Project Area is out of species elevation range.	No further actions are recommended for this species.
coast iris *Iris longipetala*	Rank 4.2	Coastal prairie, lower montane coniferous forest, meadows and seeps. Elevation ranges from 0 to 1970 feet (0 to 600 meters).	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
		Blooms Mar-May.		
perennial goldfields *Lasthenia californica ssp. macrantha*	Rank 1B.2	Coastal bluff scrub, coastal dunes, coastal scrub. Elevation ranges from 15 to 1705 feet (5 to 520 meters). Blooms Jan-Nov.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
serpentine leptosiphon *Leptosiphon ambiguus*	Rank 4.2	Cismontane woodland, coastal scrub, valley and foothill grassland. Elevation ranges from 390 to 3705 feet (120 to 1130 meters). Blooms Mar-Jun.	**No potential.** Serpentine soils not present within Project Area.	No further actions are recommended for this species.
coast yellow leptosiphon *Leptosiphon croceus*	SS, Rank 1B.1	Coastal bluff scrub, coastal prairie. Elevation ranges from 30 to 490 feet (10 to 150 meters). Blooms Apr-Jun.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
rose leptosiphon *Leptosiphon rosaceus*	Rank 1B.1	Coastal bluff scrub. Elevation ranges from 0 to 330 feet (0 to 100 meters). Blooms Apr-Jul.	**Moderate.** An occurrence of rose leptosiphon was documented within 0.25 mile of the Project Area in 2009 and 300 feet north of the Project Area in 2010. Due to proximity of this occurrence and presence of potentially suitable habitat, rose leptosiphon has a moderate potential to occur in the Project Area.	Pre-construction rare plant survey is recommended during the blooming season, between April and July, to verify the presence or absence of this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Crystal Springs lessingia *Lessingia arachnoidea*	Rank 1B.2	Cismontane woodland, coastal scrub, valley and foothill grassland. Elevation ranges from 195 to 655 feet (60 to 200 meters). Blooms Jul-Oct.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
San Francisco lessingia *Lessingia germanorum*	FE, SE, Rank 1B.1	Coastal scrub (remnant dunes). Elevation ranges from 80 to 360 feet (25 to 110 meters). Blooms (Jun)Jul-Nov.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
woolly-headed lessingia *Lessingia hololeuca*	Rank 3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland. Elevation ranges from 45 to 1000 feet (15 to 305 meters). Blooms Jun-Oct.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Coast lily *Lilium martimum*	Rank 1B.1	Sometimes roadside. Broadleafed upland forest, closed-cone coniferous forest, coastal prairie, coastal scrub, marshes and swamps (freshwater), North Coast coniferous forest. Elevation ranges from 16 to 1558 feet (5 to 475 meters). Blooms May-Aug.	**Unlikely.** Suitable habitat not present within the Project Area.	No further actions are recommended for this species.
Ornduff's meadowfoam *Limnanthes douglasii ssp. ornduffii*	Rank 1B.1	Meadows and seeps. Elevation ranges from 30 to 65 feet (10 to 20 meters). Blooms Nov-May.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
San Mateo tree lupine *Lupinus arboreus var. eximius*	Rank 3.2	Chaparral, coastal scrub. Elevation ranges from 295 to 1805 feet (90 to 550 meters). Blooms Apr-Jul.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Indian Valley bush-mallow *Malacothamnus aboriginum*	Rank 1B.2	Chaparral, cismontane woodland. Elevation ranges from 490 to 5575 feet (150 to 1700 meters). Blooms Apr-Oct.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
arcuate bush-mallow *Malacothamnus arcuatus*	Rank 1B.2	Chaparral, cismontane woodland. Elevation ranges from 45 to 1165 feet (15 to 355 meters). Blooms Apr-Sep.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Davidson's bush-mallow *Malacothamnus davidsonii*	Rank 1B.2	Chaparral, cismontane woodland, coastal scrub, riparian woodland. Elevation ranges from 605 to 3740 feet (185 to 1140 meters). Blooms Jun-Jan.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed Project Area is out of species elevation range.	No further actions are recommended for this species.
Hall's bush-mallow *Malacothamnus hallii*	Rank 1B.2	Chaparral, coastal scrub. Elevation ranges from 30 to 2495 feet (10 to 760 meters). Blooms (Apr)May-Sep(Oct).	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Mt. Diablo cottonweed *Micropus amphibolus*	Rank 3.2	Broadleafed upland forest, chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 145 to 2705 feet (45 to 825 meters). Blooms Mar-May.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
northern curly-leaved monardella *Monardella sinuata ssp. nigrescens*	Rank 1B.2	Chaparral (scr co.), coastal dunes, coastal scrub, lower montane coniferous forest (scr co., ponderosa pine sandhills). Elevation ranges from 0 to 985 feet (0 to 300 meters). Blooms (Apr)May-Jul(Aug-Sep).	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
woodland woolythreads *Monolopia gracilens*	Rank 1B.2	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, north coast coniferous forest (openings), valley and foothill grassland. Elevation ranges from 325 to 3935 feet (100 to 1200 meters). Blooms (Feb)Mar-Jul.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed Project Area is out of species elevation range.	No further actions are recommended for this species.
Dudley's lousewort *Pedicularis dudleyi*	SR, Rank 1B.2	Chaparral (maritime), cismontane woodland, north coast coniferous forest, valley and foothill grassland. Elevation ranges from 195 to 2955 feet (60 to 900 meters). Blooms Apr-Jun.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed	No further actions are recommended for this species.
white-rayed pentachaeta *Pentachaeta bellidiflora*	FE, SE, Rank 1B.1	Cismontane woodland, valley and foothill grassland (often serpentine). Elevation ranges from 110 to 2035 feet (35 to 620 meters). Blooms Mar-May.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed No serpentine soils present in Project Area.	No further actions are recommended for this species.
Choris' popcornflower *Plagiobothrys chorisianus var. chorisianus*	Rank 1B.2	Chaparral, coastal prairie, coastal scrub. Elevation ranges from 5 to 525 feet (3 to 160 meters). Blooms Mar-Jun.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Oregon polemonium *Polemonium carneum*	Rank 2B.2	Coastal prairie, coastal scrub, lower montane coniferous forest. Elevation ranges from 0 to 6005 feet (0 to 1830 meters). Blooms Apr-Sep.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Hickman's cinquefoil *Potentilla hickmanii*	FE, SE, Rank 1B.1	Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps (vernally mesic), marshes and swamps (freshwater). Elevation ranges from 30 to 490 feet (10 to 149 meters). Blooms Apr-Aug.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
Lobb's aquatic buttercup *Ranunculus lobbii*	Rank 4.2	Cismontane woodland, north coast coniferous forest, valley and foothill grassland, vernal pools. Elevation ranges from 45 to 1540 feet (15 to 470 meters). Blooms Feb-May.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed	No further actions are recommended for this species.
chaparral ragwort *Senecio aphanactis*	Rank 2B.2	Chaparral, cismontane woodland, coastal scrub. Elevation ranges from 45 to 2625 feet (15 to 800 meters). Blooms Jan-Apr(May).	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed	No further actions are recommended for this species.
Scouler's catchfly *Silene scouleri ssp. scouleri*	Rank 2B.2	Coastal bluff scrub, coastal prairie, valley and foothill grassland. Elevation ranges from 0 to 1970 feet (0 to 600 meters). Blooms (Mar-May)Jun-Aug(Sep).	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
San Francisco campion *Silene verecunda ssp. verecunda*	Rank 1B.2	Coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and foothill grassland. Elevation ranges from 95 to 2115 feet (30 to 645 meters). Blooms (Feb)Mar-Jun(Aug).	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
slender-leaved pondweed *Stuckenia filiformis ssp. alpina*	Rank 2B.2	Marshes and swamps (assorted shallow freshwater). Elevation ranges from 980 to 7055 feet (300 to 2150 meters). Blooms May-Jul.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed Project Area is out of species elevation range.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
California seablite *Suaeda californica*	FE, Rank 1B.1	Marshes and swamps (coastal salt). Elevation ranges from 0 to 50 feet (0 to 15 meters). Blooms Jul-Oct.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed Project Area does not contain marshes or swamps.	No further actions are recommended for this species.
two-fork clover *Trifolium amoenum*	FE, Rank 1B.1	Coastal bluff scrub, valley and foothill grassland (sometimes serpentine). Elevation ranges from 15 to 1360 feet (5 to 415 meters). Blooms Apr-Jun.	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
saline clover *Trifolium hydrophilum*	Rank 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), and vernal pools. Elevation ranges from 0 to 984 feet (0 to 300 meters). Blooms Apr-June.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
San Francisco owl's-clover *Triphysaria floribunda*	Rank 1B.2	Coastal prairie, coastal scrub, valley and foothill grassland. Elevation ranges from 30 to 525 feet (10 to 160 meters). Blooms Apr-Jun.	**No Potential.** Suitable habitat not present within Project Area. Site has been heavily disturbed and does not contain alkaline substrate.	No further actions are recommended for this species.
coastal triquetrella *Triquetrella californica*	Rank 1B.2	Coastal bluff scrub, coastal scrub. Elevation ranges from 30 to 330 feet (10 to 100 meters).	**Unlikely.** Suitable habitat not present within Project Area. Site has been heavily disturbed.	No further actions are recommended for this species.
caper-fruited tropidocarpum *Tropidocarpum capparideum*	Rank 1B.1	Valley and foothill grassland (alkaline hills). Elevation ranges from 0 to 1495 feet (1 to 455 meters). Blooms Mar-Apr.	**No Potential.** Suitable habitat not present within Project Area.	No further actions are recommended for this species.
Methuselah's beard lichen *Usnea longissima*	Rank 4.2	Broadleafed upland forest, north coast coniferous forest. Elevation ranges from 160 to 4790 feet (50 to 1460 meters).	**No Potential.** Suitable habitat not present within Project Area.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
Mammals				
American badger *Taxidea taxus*	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	**Unlikely.** Soils within the Project Area are rocky and compacted due to historical land use. No burrows indicative of use by badger were observed during the August 2019 site visit. The nearest documented occurrence is approximately 3.5 miles to the south from 1933 (CDFW 2019).	No further actions are recommended.
big free-tailed bat *Nyctinomops macrotis*	SSC, WBWG med-high	Occurs rarely in low-lying arid areas. Requires high cliffs or rocky outcrops for roosting sites.	**Unlikely.** This species was documented in the vicinity of the Project Area in 1984 (CDFW 2019). However, the Project Area is outside of this species typical range (southern California, Arizona, New Mexico and Texas). It is unlikely this species would roost in the Project Area.	No further actions are recommended.
fringed myotis *Myotis thysanodes*	WBWG High	Associated with a wide variety of habitats including dry woodlands, desert scrub, mesic coniferous forest, grassland, and sage-grass steppes. Buildings, mines and large trees and snags are important day and night roosts.	**Unlikely.** There are no suitable mines, buildings, large trees, or snags in the Project Area to support roosting by this species. This species may occasionally forage or migrate through the Project Area.	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
hoary bat *Lasiurus cinereus*	WBWG Medium	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires standing water to drink.	**Unlikely.** This species is highly associated with forested habitats in the west, and no such habitat is present within or adjacent to the Project Area. This species may occasionally forage or migrate through the Project Area.	No further actions are recommended.
pallid bat *Antrozous pallidus*	SSC, WBWG High	Found in deserts, grasslands, shrublands, woodlands, and forests. Roost sites include old ranch buildings, rocky outcrops and caves within sandstone outcroppings. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Unlikely.** The Project Area does not contain suitable rocky outcrops, caves, or buildings to support roosting by this species. This species may occasionally forage or migrate through the Project Area.	No further actions are recommended.
salt marsh harvest mouse *Reithrodontomys raviventris*	FE, SE, CFP	Endemic to emergent salt and brackish wetlands of the San Francisco Bay Estuary. Pickleweed marshes are primary habitat; also occurs in various other wetland communities with dense vegetation. Does not burrow, builds loosely organized nests. Requires higher areas for flood escape.	**No Potential.** The Project Area is outside the known range for this species. Additionally no salt marsh or other suitable habitat is present.	No further actions are recommended.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	SSC	Forest habitats of moderate canopy and moderate to dense understory. Also in chaparral habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	**Unlikely.** The Project Area does not contain forest habitat or chaparral with suitable canopy or coverage to support this species.	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
southern sea otter *Enhydra lutris nereis*	FT, CFP, SSC	Nearshore marine environments from about Año Nuevo, San Mateo County. To Point Sal, Santa Barbara County. Needs canopies of giant kelp and bull kelp for rafting and feeding. Prefers rocky substrates with abundant invertebrates.	**No Potential.** No marine habitats are present within the Project Area that might support this species.	No further actions are recommended.
Townsend's big-eared bat *Corynorhinus townsendii*	SSC, WBWG High	This species is associated with a wide variety of habitats from deserts to mid-elevation mixed coniferous-deciduous forest. Females form maternity colonies in buildings, caves and mines and males roost singly or in small groups. Foraging occurs in open forest habitats where they glean moths from vegetation.	**Unlikely.** There are no buildings, caves or mines within the Project Area to provide roosting sites for this species. This species may occasionally forage or migrate through the Project Area.	No further actions are recommended.
Birds				
Alameda song sparrow *Melospiza melodia pusillula*	BCC, SSC	Year-round resident of salt marshes bordering the south arm of San Francisco Bay. Inhabits primarily pickleweed marshes; nests placed in marsh vegetation, typically shrubs such as gumplant.	**Unlikely.** The Project Area does not contain marsh habitat to support this species.	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
American peregrine falcon *Falco peregrinus anatum*	CFP	Year-round resident and winter visitor. Occurs in a wide variety of habitats, though often associated with coasts, bays, marshes and other bodies of water. Nests on protected cliffs and also on man-made structures including buildings and bridges. Preys on birds, especially waterbirds. Forages widely.	**Moderate Potential.** This species has been observed foraging in the vicinity of the Project Area. Additionally, the bluff to the west of the Project Area may contain suitable nesting habitat for this species.	Perform ground disturbance and vegetation removal outside of the breeding bird season (Sep 1 – Jan 31). If project activities occur within the breeding bird season (Feb 1 – Aug 31), perform preconstruction breeding bird survey within 14 days start of work. Any active nests will be protected by work windows or exclusion buffers. See section 5.3 for further details.
bald eagle *Haliaeetus leucocephalus*	SE, CFP	Occurs year-round in California, but primarily a winter visitor; breeding population is growing. Nests in large trees in the vicinity of larger lakes, reservoirs and rivers. Wintering habitat somewhat more variable but usually features large concentrations of waterfowl or fish.	**Unlikely.** The Project Area does not contain trees of suitable structure to support nesting by this species. This species may occasionally be observed flying through the Project Area.	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
bank swallow *Riparia riparia*	ST	Summer resident in riparian and other lowland habitats near rivers, lakes and the ocean in northern California. Nests colonially in excavated burrows on vertical cliffs and bank cuts (natural and manmade) with fine-textured soils. Historical nesting range in southern and central areas of California has been eliminated by habitat loss. Currently known to breed in Siskiyou, Shasta, and Lassen Cos., portions of the north coast, and along Sacramento River from Shasta Co. south to Yolo Co.	**Unlikely.** The nearest documented breeding colony is approximately 7 miles north of the Project Area at Fort Funston (CDFW 2019). This species may occasionally forage in the Project Area.	No further actions are recommended.
burrowing owl *Athene cunicularia*	SSC	Year-round resident and winter visitor. Occurs in open, dry grasslands and scrub habitats with low-growing vegetation, perches and abundant mammal burrows. Preys upon insects and small vertebrates. Nests and roosts in old mammal burrows, most commonly those of ground squirrels.	**Unlikely.** Soils within the Project Area are rocky and compacted due to historical land use. No mammal burrows were observed during the August 2019 site visit. Additionally, there are no documented occurrences within 10 miles of the Project Area (CDFW 2019).	No further actions are recommended.
California black rail *Laterallus jamaicensis coturniculus*	ST, CFP	Year-round resident in marshes (saline to freshwater) with dense vegetation within four inches of the ground. Prefers larger, undisturbed marshes that have an extensive upper zone and are close to a major water source. Extremely secretive and cryptic.	**No Potential**. No suitable nesting or foraging marsh habitat is present within the Project Area.	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
California least tern *Sternula antillarum browni*	FE, SE, CFP	Summer resident along the coast from San Francisco Bay south to northern Baja California; inland breeding also very rarely occurs. Nests colonially on barren or sparsely vegetated areas with sandy or gravelly substrates near water, including beaches, islands, and gravel bars. In San Francisco Bay, has also nested on salt pond margins.	**No Potential.** The Project Area does not contain suitable sandy beaches, or alkaline lakes to support nesting by the species	No further actions are recommended.
California Ridgway's (clapper) rail *Rallus longirostris obsoletus*	FE, SE, CFP	Year-round resident in tidal marshes of the San Francisco Bay estuary. Requires tidal sloughs and intertidal mud flats for foraging, and dense marsh vegetation for nesting and cover. Typical habitat features abundant growth of cordgrass and pickleweed. Feeds primarily on mollusks and crustaceans.	**No Potential.** No suitable nesting or foraging marsh habitat is present within the Project Area. Additionally, the Project Area is outside of the known range of this species.	No further actions are recommended.
golden eagle *Aquila chrysaetos*	CFP	Occurs year-round in rolling foothills, mountain areas, sage-juniper flats, and deserts. Cliff-walled canyons provide nesting habitat in most parts of range; also nests in large trees, usually within otherwise open areas.	**Unlikely.** The Project Area does not contain suitable cliff or large tree habitat to support nesting by this species. This species may occasionally be observed flying through the Project Area.	No further actions are recommended.
grasshopper sparrow *Ammodramus savannarum*	SSC	Summer resident. Breeds in open grasslands in lowlands and foothills, generally with low- to moderate-height grasses and scattered shrubs. Well-hidden nests are placed on the ground.	**Unlikely.** The Project Area does not contain open grassland habitat suitable to support this species.	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
loggerhead shrike *Lanius ludovicianus*	SSC	Year-round resident in open woodland, grassland, savannah and scrub. Prefers areas with sparse shrubs, trees, posts, and other suitable perches for foraging. Preys upon large insects and small vertebrates. Nests are well-concealed in densely-foliaged shrubs or trees.	**Unlikely.** The Project Area does not contain open grassland suitable for foraging habitat.	No further actions are recommended.
long-eared owl *Asio otus*	SSC	Occurs year-round in California. Nests in trees in a variety of woodland habitats, including oak and riparian, as well as tree groves. Requires adjacent open land with rodents for foraging, and the presence of old nests of larger birds (hawks, crows, magpies) for breeding.	**Unlikely.** The Project Area does not contain suitable riparian, tree groves, or oak woodland for nesting by this species. This species is rarely observed in the vicinity of the Project Area (eBird 2019).	No further actions are recommended.
marbled murrelet *Brachyramphus marmoratus*	FT, SE	Predominantly coastal marine. Nests in old-growth coniferous forests up to 30 miles inland along the Pacific coast, from Eureka to Oregon border, and in Santa Cruz/San Mateo Counties. Nests are highly cryptic, and typically located on platform-like branches of mature redwoods and Douglas firs. Forages on marine invertebrates and small fishes.	**No Potential.** The Project Area does not contain old-growth coniferous trees suitable for nesting.	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
northern harrier *Circus cyaneus*	SSC	Year-round resident and winter visitor. Found in open habitats including grasslands, prairies, marshes and agricultural areas. Nests on the ground in dense vegetation, typically near water or otherwise moist areas. Preys on small vertebrates.	**Unlikely.** The Project Area does not provide suitable open country to support nesting by this species. This species may occasionally pass through or forage within the Project Area.	No further actions are recommended.
San Francisco (salt marsh) common yellowthroat *Geothlypis trichas sinuosa*	SCC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**Moderate Potential.** This species may nest in freshwater habitat in Calera Creek.	Perform ground disturbance and vegetation removal outside of the breeding bird season (Sep 1 – Jan 31). If project activities occur within the breeding bird season (Feb 1 – Aug 31), perform preconstruction breeding bird survey within 14 days start of work. Any active nests will be protected by work windows or exclusion buffers. See section 5.3 for further details.
short-eared owl *Asio flammeus*	SSC	Occurs year-round, but primarily as a winter visitor; breeding very restricted in most of California. Found in open, treeless areas (e.g., marshes, grasslands) with elevated sites for foraging perches and dense herbaceous vegetation for roosting and nesting. Preys mostly on small mammals, particularly voles.	**Unlikely.** The Project Area does not provide suitable open country habitat to support this species. The Project Area is outside of this species breeding range in California.	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
short-tailed albatross *Phoebastria albatrus*	FE, SSC	Highly pelagic; comes to land only when breeding. Nests on remote Pacific islands. A rare non-breeding visitor to the eastern Pacific.	**No Potential.** The Project Area is located on the coast, but does not contain islands or other similar habitat used by the species. Additionally this species is not known to breed in San Mateo County.	No further actions are recommended.
western snowy plover *Charadrius alexandrinus nivosus*	FT, SSC	Federal listing applies only to the Pacific coastal population. Year-round resident and winter visitor. Occurs on sandy beaches, salt pond levees, and the shores of large alkali lakes. Nests on the ground, requiring sandy, gravelly or friable soils.	**Unlikely**. The Project Area is located along the coast but does not contain beach, shore, or salt pond habitat to support nesting by the species.	No further actions are recommended.
white-tailed kite *Elanus leucurus*	CFP	Year-round resident in coastal and valley lowlands with scattered trees and large shrubs, including grasslands, marshes and agricultural areas. Nests in trees, of which the type and setting are highly variable. Preys on small mammals and other vertebrates.	**Present.** The Project Area contains open land with scattered shrubs and trees which may support nesting and foraging by this species. White-tailed kite was observed in the Project Area during the August 2019 site visit.	Perform ground disturbance and vegetation removal outside of the breeding bird season (Sep 1 – Jan 31). If project activities occur within the breeding bird season (Feb 1 – Aug 31), perform preconstruction breeding bird survey within 14 days start of work. Any active nests will be protected by work windows or exclusion buffers. See section 5.3 for further details.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
yellow warbler *Dendroica petechia brewsteri*	SCC	Summer resident throughout much of California. Breeds in riparian vegetation close to water, including streams and wet meadows. Microhabitat used for nesting variable, but dense willow growth is typical. Occurs widely on migration.	**Moderate Potential.** This species may nest and forage in freshwater habitat in Calera Creek.	Perform ground disturbance and vegetation removal outside of the breeding bird season (Sep 1 – Jan 31). If project activities occur within the breeding bird season (Feb 1 – Aug 31), perform preconstruction breeding bird survey within 14 days start of work. Any active nests will be protected by work windows or exclusion buffers. See section 5.3 for further details.
Reptiles and Amphibians				
California giant salamander *Dicamptodon ensatus*	SSC	Occurs in the north-central Coast Ranges. Moist coniferous and mixed forests are typical habitat; also uses woodland and chaparral. Adults are terrestrial and fossorial, breeding in cold, permanent or semi-permanent streams. Larvae usually remain aquatic for over a year.	**No Potential.** The Project Area does not contain moist forest habitat suitable for this species.	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
California red-legged frog *Rana aurora draytonii*	FT, SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Associated with quiet perennial to intermittent ponds, stream pools and wetlands. Prefers shorelines with extensive vegetation. Disperses through upland habitats after rains.	**Present.** This species has been documented in the CNDDB within the Project Area and is considered to be present (CDFW 2019).	Mitigation measures include worker environmental awareness training, preconstruction surveys, construction monitoring, exclusion fence, covering trenches, work windows, delineating boundaries, disposal of trash, no mon-filament netting, and speed limit restrictions. See section 5.3 for further details.
California tiger salamander *Ambystoma californiense*	FT, ST	Populations in Santa Barbara and Sonoma counties currently listed as endangered. Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Seasonal ponds and vernal pools are crucial to breeding. Adults utilize mammal burrows as aestivation habitat.	**Unlikely.** The nearest CNDDB occurrence is over 15 miles to the southeast from 1962 (CDFW 2019). The Project is outside of this species documented range.	No further actions are recommended.
foothill yellow-legged frog *Rana boylii*	SC, SSC	Found in or near rocky streams in a variety of habitats. Prefers partly-shaded, shallow streams and riffles with a rocky substrate; requires at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis. Feeds on both aquatic and terrestrial invertebrates.	**No Potential.** The Project Area does not contain suitable rocky stream habitat. Two occurrences were documented on the southern peninsula of the San Francisco Bay in 1928 and 1938, in areas where populations are now considered extirpated (CDFW 2019).	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
green sea turtle *Chelonia mydas*	FT (west coast population s)	Found in fairly shallow waters inside reefs, bays and inlets with marine grass and algae. Open beaches with a sloping platform and minimal disturbance are required for nesting. This species exhibits high site fidelity.	**Unlikely.** The Project Area does not contain beach or marine habitats that would be required for the species. Additionally, this species is uncommon along the California coast. This turtles prefers warm waters and only a few sightings have been documented in the San Francisco Bay Area.	No further actions are recommended.
San Francisco garter snake *Thamnophis sirtalis tetrataenia*	FE, SE, CFP	Vicinity of freshwater marshes, ponds and slow moving streams in San Mateo County and extreme northern Santa Cruz County. Prefers dense cover and water depths of at least one foot. Upland areas near water are also very important.	**Present.** This species is known to occur within the Mori Point segment of the Golden Gate National Recreation Area and is considered present.	Mitigation measures include worker environmental awareness training, preconstruction surveys, construction monitoring, exclusion fence, covering trenches, work windows, delineating boundaries, disposal of trash, no mon-filament netting, and speed limit restrictions. See section 5.3 for further details.

SPECIES	**STATUS***	**HABITAT**	**POTENTIAL FOR OCCURENCE**	**RECOMMENDATIONS**
Santa Cruz black salamander *Aneides flavipunctatus niger*	SSC	Climbing salamanders of the genus *Aneides* frequent damp woodlands and are usually found hiding under various debris (i.e. bark, woodrat nests, logs). The Santa Cruz black salamander exists south of the San Francisco Bay and was only recently recognized as a separate and protected species. Santa Cruz black salamander is highly sedentary, preferring to stay hidden under riparian debris. Prey items include millipedes, spiders, and other insects (Stebbins and McGinnis 2012).	**Unlikely.** The Project Area does not contain suitable woodland habitat and is north of this species documented range.	No further actions are recommended.
western pond turtle *Actinemys marmorata*	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg-laying.	**Unlikely.** The Project Area does not contain suitable aquatic habitat with pools and basking sites. The nearest CNDDB occurrence is over 6 miles to the east of the Project Area (CDFW 2019).	No further actions are recommended.
Fishes				
Delta smelt *Hypomesus transpacificus*	FT, SE	Lives in the Sacramento-San Joaquin estuary in areas where salt and freshwater systems meet. Occurs seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt; most often at salinities < 2 ppt.	**No Potential.** This species is restricted to San Francisco Bay and lower Sacramento and San Joaquin Rivers. The Project Area is outside the range of this species.	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
hardhead *Mylopharodon conocephalus*	SSC	Found in low to mid-elevation streams in the Sacramento-San Joaquin drainage; also occurs in the Russian River and tributaries. Favors clear, deep pools with sand-gravel-boulder bottoms and slow water velocity. Not found where exotic Centrarchids predominate.	**Unlikely.** The Project Area does not contain any aquatic habitats that's are known to support this species.	No further actions are recommended.
longfin smelt *Spirinchus thaleichthys*	FC, ST	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt, but can be found in completely freshwater to almost pure seawater.	**No Potential.** The Project Area is outside of the known distribution for this species.	No further actions are recommended.
steelhead - central CA coast ESU *Oncorhynchus mykiss*	FT	Occurs from the Russian River south to Soquel Creek and Pajaro River. Also in San Francisco and San Pablo Bay Basins. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for one or more years before migrating downstream to the ocean.	**Unlikely.** The Project Area does not contain any aquatic habitats that's are known to support this species.	No further actions are recommended.
tidewater goby *Eucyclogobius newberryi*	FE, SSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches; requires fairly still but not stagnant water and high oxygen levels.	**Unlikely.** The Project Area does not contain any lagoon habitat that may be occupied by this species. This species is considered extirpated from areas south of San Francisco Bay to San Gregorio Creek, an area which encompasses the Project Area (USFWS 2007).	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
Invertebrates				
Bay checkerspot butterfly *Euphydryas editha bayensis*	FT	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay. *Plantago erecta* is the primary host plant; *Orthocarpus densiflorus* and *O. purpurscens* are the secondary host plants.	**Unlikely.** The species has been eliminated from San Bruno Mountain and the adjacent areas by a fire in 1986 and is not known to have repopulated this portion of the San Francisco Peninsula yet (USFWS 1998).	No further actions are recommended.
Callippe silverspot butterfly *Speyeria callippe callippe*	FE	Two populations in San Bruno mountain and the Cordelia Hills are recognized. Hostplant is Viola pedunculata, which is found on serpentine soils. Most adults found on east-facing slopes; males congregate on hilltops in search of females.	**Unlikely.** The Project Area is outside the known range for this species. The nearest known population is located on San Bruno Mountain more than 5-miles from the Project Area. Additionally, Entomological Consulting Services conducted a habitat assessment and surveys for the species in 2006. Neither the species nor host plants were observed (Entomological Consulting 2006).	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
Mission blue butterfly *Icaricia icarioides missionensis*	FE	Inhabits grasslands and coastal chaparral of the San Francisco peninsula and southern Marin County, but mostly found on San Bruno Mountain. Three larval host plants: *Lupinus albifrons*, *L. variicolor*, and *L. formosus*, of which *L. albifrons* is favored.	**Unlikely.** This species is known to occur in nearby habitats including Milagra Ridge and the San Francisco Peninsula Watershed lands (USFWS 2010). However, these occupied habitats and any other areas known to be used by the species are all outside of the Project Area. Additionally, Entomological Consulting Services conducted a habitat assessment and surveys for the species in 2006. Neither the species nor host plants were observed (Entomological Consulting 2006).	No further actions are recommended.
monarch butterfly *Danaus plexippus*	None (Winter roost sites protected by CDFW)	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, Monterey cypress), with nectar and water sources nearby.	**Unlikely.** The Project Area does not contain wind-protected tree groves to support roosting by this species. Monarchs may occasionally be observed migrating through the Project Area.	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
Myrtle's silverspot butterfly *Speyeria zerene myrtleae*	FE	Restricted to the fog belt of northern Marin and southernmost Sonoma County, including the Point Reyes peninsula; extirpated from coastal San Mateo County. Occurs in coastal prairie, dunes, and grassland. Larval foodplant is typically Viola adunca. Adult flight season may range from late June to early September.	**Unlikely.** The Project Area does not contain suitable habitat and is outside of the current known range. It is considered extirpated from San Mateo County (USFWS 2019). Additionally, Entomological Consulting Services conducted a habitat assessment and surveys for the species in 2006. Neither the species nor host plants were observed (Entomological Consulting 2006).	No further actions are recommended.
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE	Limited to the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on in rocky outcrops and cliffs in coastal scrub habitat on steep, north-facing slopes within the fog belt. Species range is tied to the distribution of the larval host plant, Sedum spathulifolium.	**Unlikely.** This species is known to occur in nearby habitats including Milagra Ridge and the San Francisco Peninsula Watershed lands (USFWS 2010). However, these occupied habitats and any other areas known to be used by the species are all outside of the Project Area. Additionally the Project Area does not contain suitable north facing slopes to support the host plant. Additionally, Entomological Consulting Services conducted a habitat assessment and surveys for the species in 2006. Neither the species nor host plants were observed (Entomological Consulting 2006).	No further actions are recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURENCE	RECOMMENDATIONS
western bumble bee *Bombus occidentalis*	SC	Once widespread in the western United States and Canada, populations of this insect have drastically declined in recent decades. Pollinates a variety of wild flowering plants and crops. Nests in the ground, usually in association with small mammal burrows with sunny aspects. Current populations are thought to be restricted to high elevation sights in the Sierras with scattered occurrences on the northern California coast (Xerces, 2018).	**No Potential.** The Project Area is outside of this species documented current range (Xerces 2018).	No further actions are recommended.

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
SE	State Endangered
ST	State Threatened
SR	State Rare
CFP	CDFW Fully Protected Species
SSC	CDFW Species of Special Concern
BCC	USFWS Bird of Conservation Concern
SSI	Special Status Invertebrate
WBWG	Western Bat Working Group High or Medium Priority species
RP	Recovery Plan exists for this species
Rank 1A	CNPS Rank 1A: Plants presumed extinct in California
Rank 1B	CNPS Rank 1B: Plants rare, threatened or endangered in California and elsewhere
Rank 2	CNPS Rank 2: Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3	CNPS Rank 3: Plants about which CNPS needs more information (a review list) *[not special status]*

Species Evaluations:

No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.

High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.

Present. Species was observed on the site or has been recorded (i.e. CNDDB, other reports) on the site recently.

APPENDIX D

PROJECT PLANS

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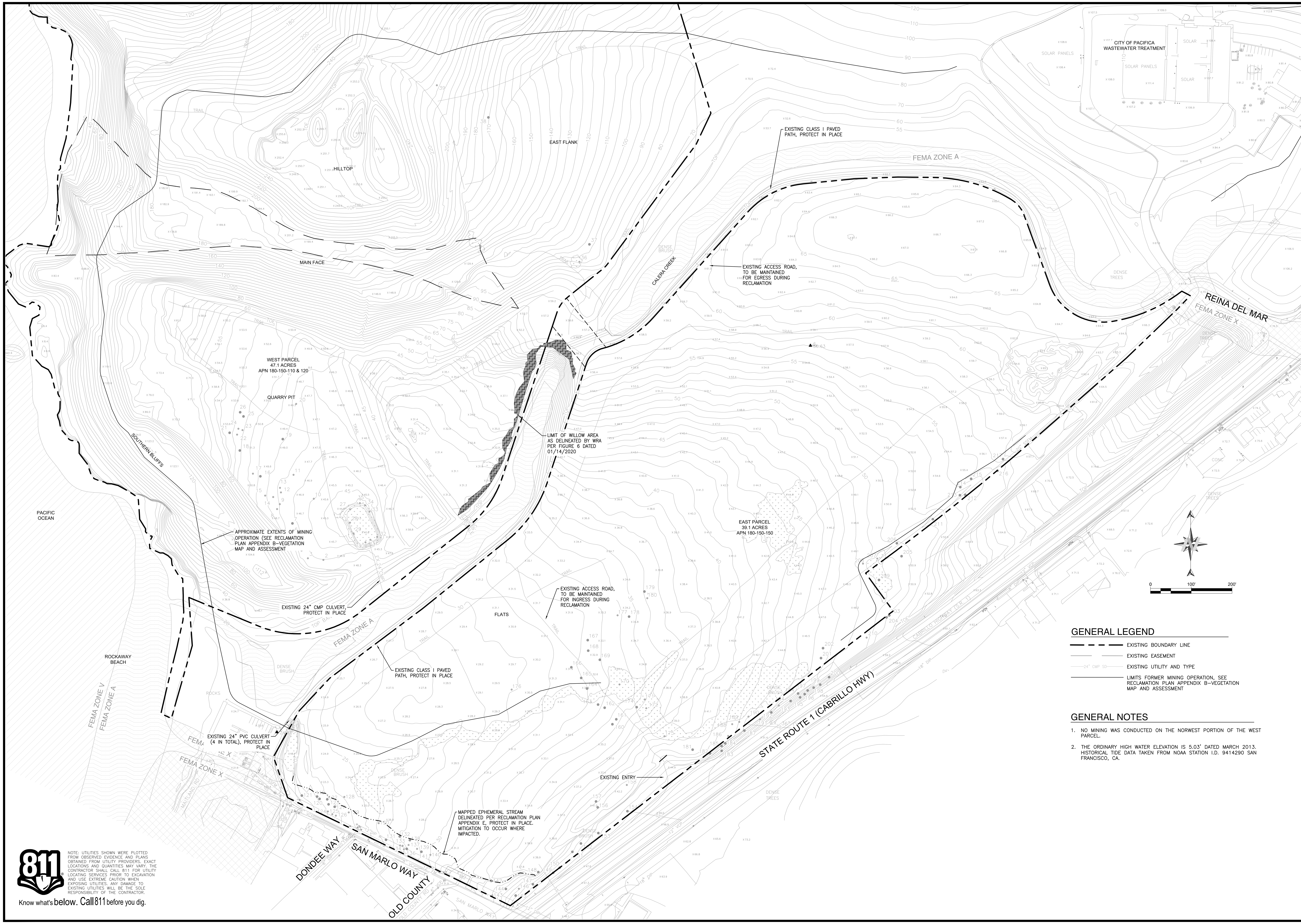

GENERAL LEGEND

- EXISTING BOUNDARY LINE
- EXISTING EASEMENT
- 24" CMP SD — EXISTING UTILITY AND TYPE
- LIMITS FORMER MINING OPERATION, SEE RECLAMATION PLAN APPENDIX B–VEGETATION MAP AND ASSESSMENT

GENERAL NOTES

1. NO MINING WAS CONDUCTED ON THE NORWEST PORTION OF THE WEST PARCEL.
2. THE ORDINARY HIGH WATER ELEVATION IS 5.03' DATED MARCH 2013. HISTORICAL TIDE DATA TAKEN FROM NOAA STATION I.D. 9414290 SAN FRANCISCO, CA.

NOTE: UTILITIES SHOWN WERE PLOTTED FROM OBSERVED EVIDENCE AND PLANS OBTAINED FROM UTILITY PROVIDERS. EXACT LOCATIONS AND QUANTITIES MAY VARY. THE CONTRACTOR SHALL CALL 811 FOR UTILITY LOCATING SERVICES PRIOR TO EXCAVATION AND USE EXTREME CAUTION WHEN EXPOSING UTILITIES. ANY DAMAGE TO EXISTING UTILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

811®
Know what's below. Call 811 before you dig.

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NO.	DATE	REVISIONS
1	03/16/2020	GRADING SOUTH QUARRY

WALSH ENGINEERING
WALSHENGINEERING.NET (805) 319-4948
979 OSOS ST, SUITE F-4 SAN LUIS OBISPO, CA 93401

ROCKAWAY QUARRY RECLAMATION PLAN

PACIFICA, CA

REGISTERED PROFESSIONAL ENGINEER
MATTHEW R. WALSH
C 79026
CIVIL
STATE OF CALIFORNIA

DESIGNED BY: KKE
DRAFTED BY: KKE
CHECKED BY: MRW
DATE: 03/16/2020

EXISTING CONDITIONS PLAN

SHEET
C0.0

NOTE: UTILITIES SHOWN WERE PLOTTED FROM OBSERVED EVIDENCE AND PLANS OBTAINED FROM UTILITY PROVIDERS. EXACT LOCATIONS AND QUANTITIES MAY VARY. THE CONTRACTOR SHALL CALL 811 FOR UTILITY LOCATING SERVICES PRIOR TO EXCAVATION AND USE EXTREME CAUTION WHEN EXPOSING UTILITIES. ANY DAMAGE TO EXISTING UTILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

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CITY OF PACIFICA LOT COVERAGE

$C = 40 - \frac{S^2}{2}$ PER CITY OF PACIFICA MUNICIPAL CODE 4.2257

C = MAXIMUM ALLOWABLE LAND COVERAGE

S = AVERAGE PERCENT OF NATURAL SLOPE

S = 0.00229IL/A

A = AREA OF SITE (ACRES)

L = SITUATION OF LENGTH OF COUNTOUR LINES (FEET)

I = CONTOUR INTERVAL (FEET)

LOT COVERAGE CALCULATION

*A = 79.5 ACRES

*SITE AREA INCLUDES: EASEMENT CONNECTING PARCELS, EAST PARCEL, AND WEST PARCEL EXCLUDING OCEAN SIDE BLUFF.

I = 5 FEET

L = 131,645 FEET

S = 0.00229(5 FEET)(131,645 FEET)/(79.5 ACRES) = 19.0%

$C = 40 - \frac{(19.0\%)^2}{35} = 29.7\%$, 23.6 ACRES

0 100' 200'

NO.	DATE	REVISIONS
1	03/16/2020	GRADING SOUTH QUARRY

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979 OSOS ST, SUITE F-4 SAN LUIS OBISPO, CA 93401

ROCKAWAY QUARRY RECLAMATION PLAN
PACIFICA, CA

REGISTERED PROFESSIONAL ENGINEER MATTHEW R. WALSH C 79026 CIVIL STATE OF CALIFORNIA

DESIGNED BY: KKE
DRAFTED BY: KKE
CHECKED BY: MRW
DATE: 03/16/2020

LOT COVERAGE EXHIBIT

SHEET C0.1

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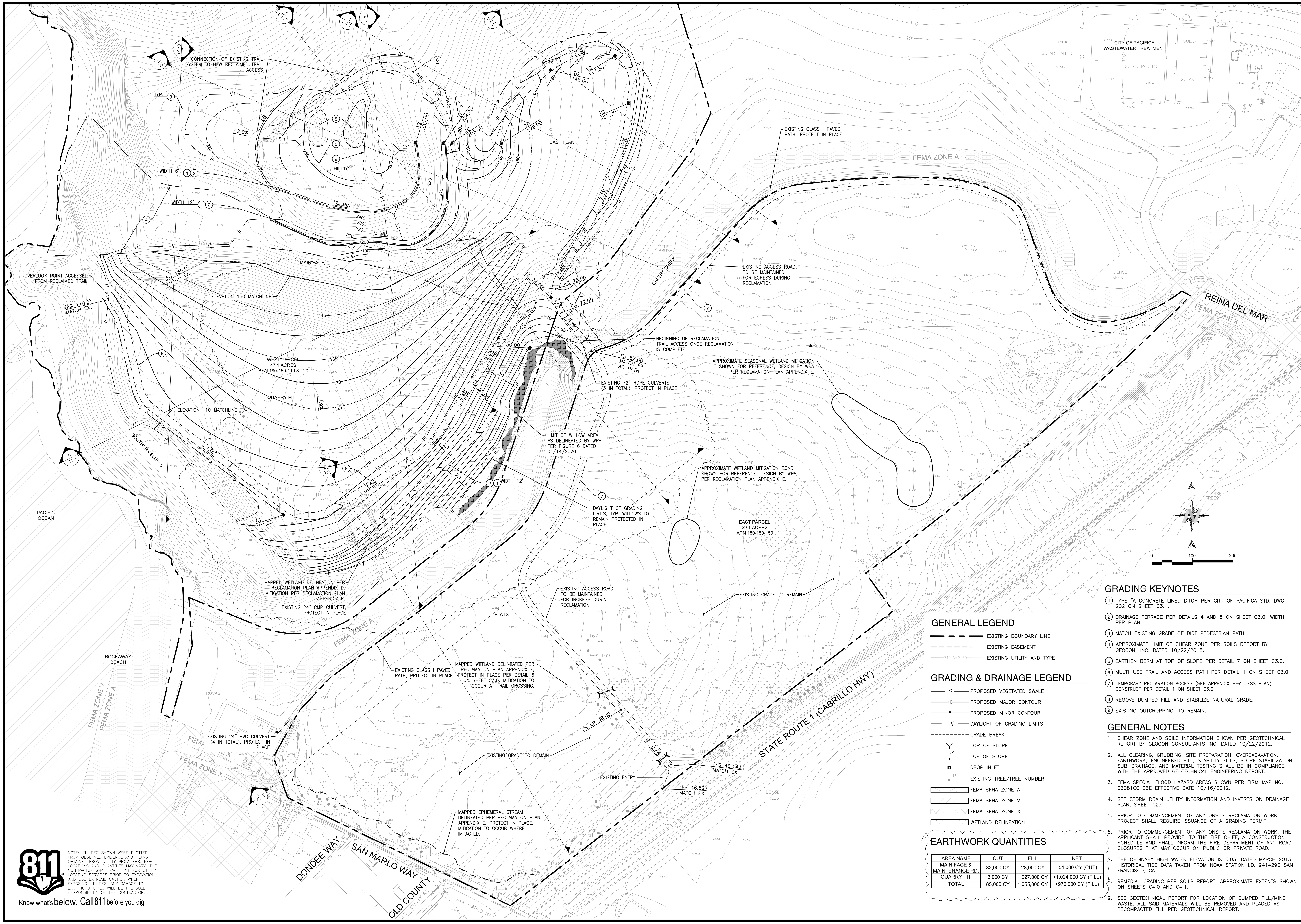


GENERAL LEGEND

- EXISTING BOUNDARY LINE
- EXISTING EASEMENT
- 24" CMP SD — EXISTING UTILITY AND TYPE

GRADING & DRAINAGE LEGEND

- PROPOSED VEGETATED SWALE
- 10 — PROPOSED MAJOR CONTOUR
- 5 — PROPOSED MINOR CONTOUR
- DAYLIGHT OF GRADING LIMITS
- GRADE BREAK
- TOP OF SLOPE
- 2:1 TOE OF SLOPE
- DROP INLET
- 19 EXISTING TREE/TREE NUMBER
- FEMA SFHA ZONE A
- FEMA SFHA ZONE V
- FEMA SFHA ZONE X
- WETLAND DELINEATION

EARTHWORK QUANTITIES

AREA NAME	CUT	FILL	NET
MAIN FACE & MAINTENANCE RD.	82,000 CY	28,000 CY	-54,000 CY (CUT)
QUARRY PIT	3,000 CY	1,027,000 CY	+1,024,000 CY (FILL)
TOTAL	85,000 CY	1,055,000 CY	+970,000 CY (FILL)

GRADING KEYNOTES

1. TYPE "A CONCRETE LINED DITCH PER CITY OF PACIFICA STD. DWG 202 ON SHEET C3.1.
2. DRAINAGE TERRACE PER DETAILS 4 AND 5 ON SHEET C3.0. WIDTH PER PLAN.
3. MATCH EXISTING GRADE OF DIRT PEDESTRIAN PATH.
4. APPROXIMATE LIMIT OF SHEAR ZONE PER SOILS REPORT BY GEOCON, INC. DATED 10/22/2015.
5. EARTHEN BERM AT TOP OF SLOPE PER DETAIL 7 ON SHEET C3.0.
6. MULTI-USE TRAIL AND ACCESS PATH PER DETAIL 1 ON SHEET C3.0.
7. TEMPORARY RECLAMATION ACCESS (SEE APPENDIX H-ACCESS PLAN). CONSTRUCT PER DETAIL 1 ON SHEET C3.0.
8. REMOVE DUMPED FILL AND STABILIZE NATURAL GRADE.
9. EXISTING OUTCROPPING, TO REMAIN.

GENERAL NOTES

1. SHEAR ZONE AND SOILS INFORMATION SHOWN PER GEOTECHNICAL REPORT BY GEOCON CONSULTANTS INC. DATED 10/22/2012.
2. ALL CLEARING, GRUBBING, SITE PREPARATION, OVEREXCAVATION, EARTHWORK, ENGINEERED FILL, STABILITY FILLS, SLOPE STABILIZATION, SUB-DRAINAGE, AND MATERIAL TESTING SHALL BE IN COMPLIANCE WITH THE APPROVED GEOTECHNICAL ENGINEERING REPORT.
3. FEMA SPECIAL FLOOD HAZARD AREAS SHOWN PER FIRM MAP NO. 06081C0126E EFFECTIVE DATE 10/16/2012.
4. SEE STORM DRAIN UTILITY INFORMATION AND INVERTS ON DRAINAGE PLAN, SHEET C2.0.
5. PRIOR TO COMMENCEMENT OF ANY ONSITE RECLAMATION WORK, PROJECT SHALL REQUIRE ISSUANCE OF A GRADING PERMIT.
6. PRIOR TO COMMENCEMENT OF ANY ONSITE RECLAMATION WORK, THE APPLICANT SHALL PROVIDE, TO THE FIRE CHIEF, A CONSTRUCTION SCHEDULE AND SHALL INFORM THE FIRE DEPARTMENT OF ANY ROAD CLOSURES THAT MAY OCCUR ON PUBLIC OR PRIVATE ROAD.
7. THE ORDINARY HIGH WATER ELEVATION IS 5.03' DATED MARCH 2013. HISTORICAL TIDE DATA TAKEN FROM NOAA STATION I.D. 9414290 SAN FRANCISCO, CA.
8. REMEDIAL GRADING PER SOILS REPORT. APPROXIMATE EXTENTS SHOWN ON SHEETS C4.0 AND C4.1.
9. SEE GEOTECHNICAL REPORT FOR LOCATION OF DUMPED FILL/MINE WASTE. ALL SAID MATERIALS WILL BE REMOVED AND PLACED AS RECOMPACTED FILL PER GEOTECHNICAL REPORT.

NO.	DATE	REVISIONS
1	03/16/2020	GRADING SOUTH QUARRY

WALSH ENGINEERING
WALSHENGINEERING.NET (805) 319-4948
979 OSOS ST, SUITE F-4 SAN LUIS OBISPO, CA 93401

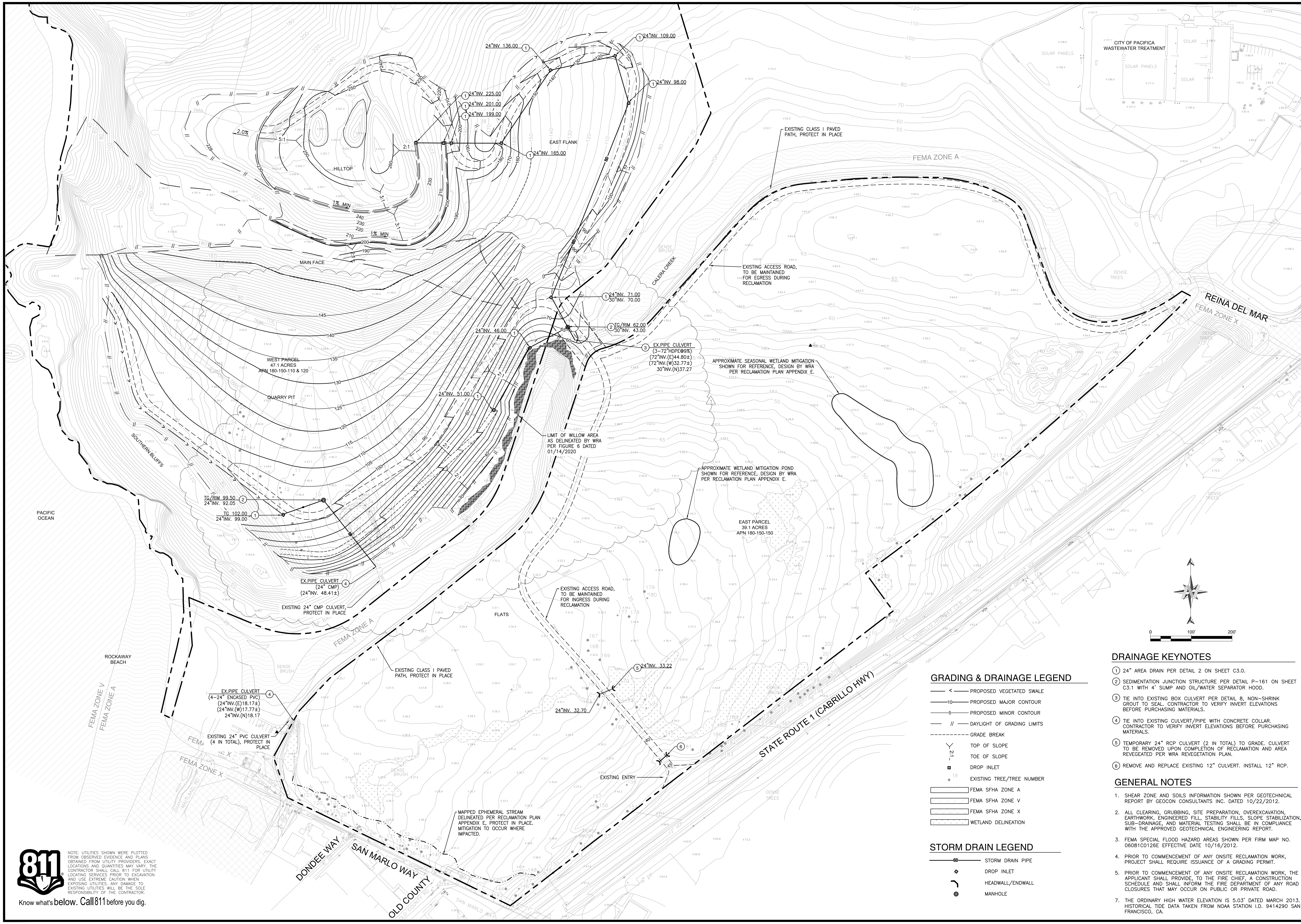
ROCKAWAY QUARRY
RECLAMATION PLAN
PACIFICA, CA

REGISTERED PROFESSIONAL ENGINEER MATTHEW R. WALSH C79026 CIVIL STATE OF CALIFORNIA

DESIGNED BY: KKE
DRAFTED BY: KKE
CHECKED BY: MRW
DATE: 03/16/2020

GRADING PLAN

SHEET C1.0



GRADING & DRAINAGE LEGEND

- PROPOSED VEGETATED SWALE
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- DAYLIGHT OF GRADING LIMITS
- GRADE BREAK
- TOP OF SLOPE
- TOE OF SLOPE
- DROP INLET
- EXISTING TREE/TREE NUMBER
- FEMA SFHA ZONE A
- FEMA SFHA ZONE V
- FEMA SFHA ZONE X
- WETLAND DELINEATION

STORM DRAIN LEGEND

- STORM DRAIN PIPE
- DROP INLET
- HEADWALL/ENDWALL
- MANHOLE

DRAINAGE KEYNOTES

1. 24" AREA DRAIN PER DETAIL 2 ON SHEET C3.0.
2. SEDIMENTATION JUNCTION STRUCTURE PER DETAIL P–161 ON SHEET C3.1 WITH 4' SUMP AND OIL/WATER SEPARATOR HOOD.
3. TIE INTO EXISTING BOX CULVERT PER DETAIL 8, NON–SHRINK GROUT TO SEAL. CONTRACTOR TO VERIFY INVERT ELEVATIONS BEFORE PURCHASING MATERIALS.
4. TIE INTO EXISTING CULVERT/PIPE WITH CONCRETE COLLAR. CONTRACTOR TO VERIFY INVERT ELEVATIONS BEFORE PURCHASING MATERIALS.
5. TEMPORARY 24" RCP CULVERT (2 IN TOTAL) TO GRADE. CULVERT TO BE REMOVED UPON COMPLETION OF RECLAMATION AND AREA REVEGEATED PER WRA REVEGETATION PLAN.
6. REMOVE AND REPLACE EXISTING 12" CULVERT. INSTALL 12" RCP.

GENERAL NOTES

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811

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1	03/16/2020	GRADING SOUTH QUARRY

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ROCKAWAY QUARRY
RECLAMATION PLAN
PACIFICA, CA

REGISTERED PROFESSIONAL ENGINEER
MATTHEW R. WALSH
C79026
CIVIL
STATE OF CALIFORNIA

DESIGNED BY:	KKE
DRAFTED BY:	KKE
CHECKED BY:	MRW
DATE:	03/16/2020

DRAINAGE PLAN

SHEET
C2.0

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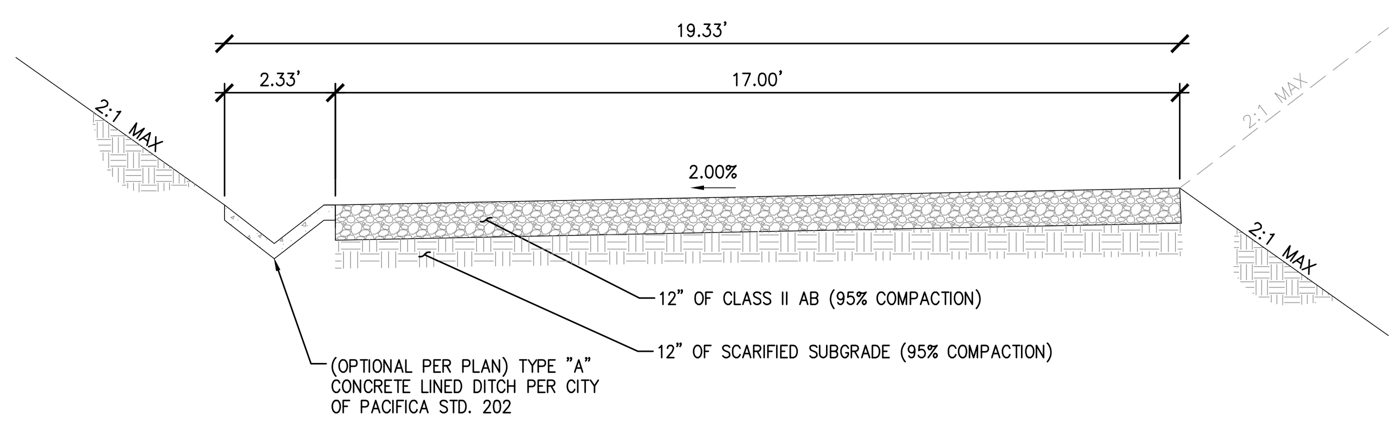
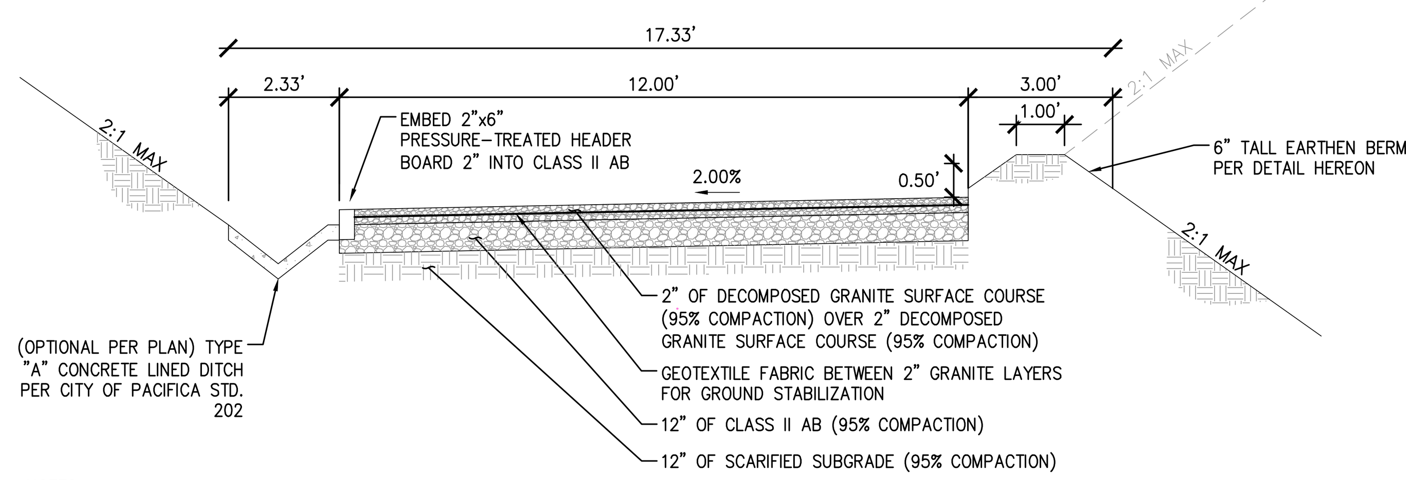


TEMPORARY CONDITION FOR RECLAMATION EQUIPMENT ACCESS

NOTES:
1. ACCESS PATH TO PROVIDE ALL WEATHER EQUIPMENT ACESS DURING RECLAMATION OPERATIONS. FINAL CONDITIONS TO BE STABILIZED PER MULTI-USE TRAIL DETAIL HEREON.
2. A VEGETATED SWALE SHALL BE USED WHERE APPROPRIATE. SWALE LOCATION PER PLAN.

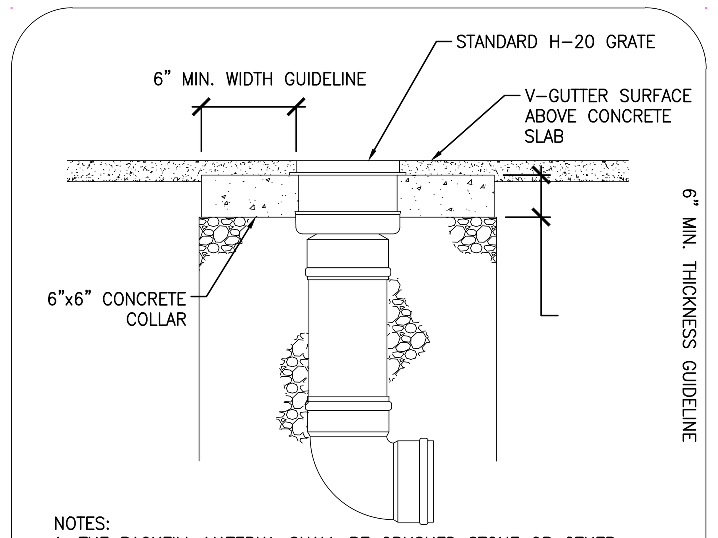


NOTES:
1. DESIGN BASED ON U.S. DEPARTMENT OF TRANSPORTATION SHARED USE TRAIL STANDARDS DATED 03/27/2018.
2. A VEGETATED SWALE SHALL BE USED WHERE APPROPRIATE. SWALE LOCATION PER PLAN.

FINAL CONDITION FOR MULTI-USE TRAIL

1 MULTI-USE TRAIL AND ACCESS PATH

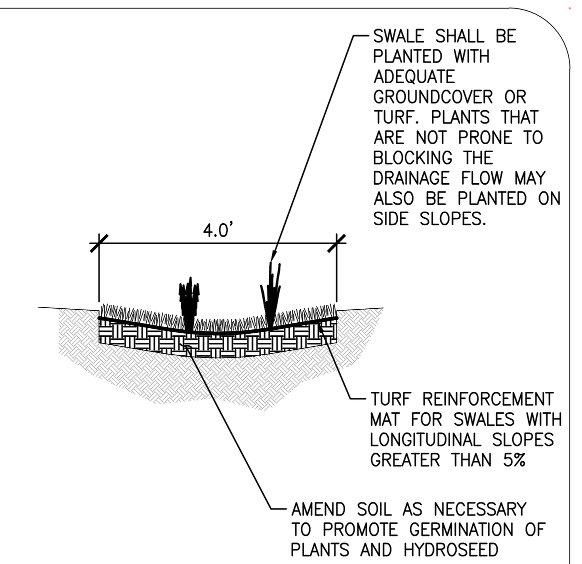
NTS



NOTES:
1. THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS II MATERIAL AS DEFINED IN ASTM D2321, OR AS DETERMINED BY LOCAL STANDARDS & SITE ENGINEER. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.

2 NYLOPLAST INLINE DRAIN (HEAVY DUTY)

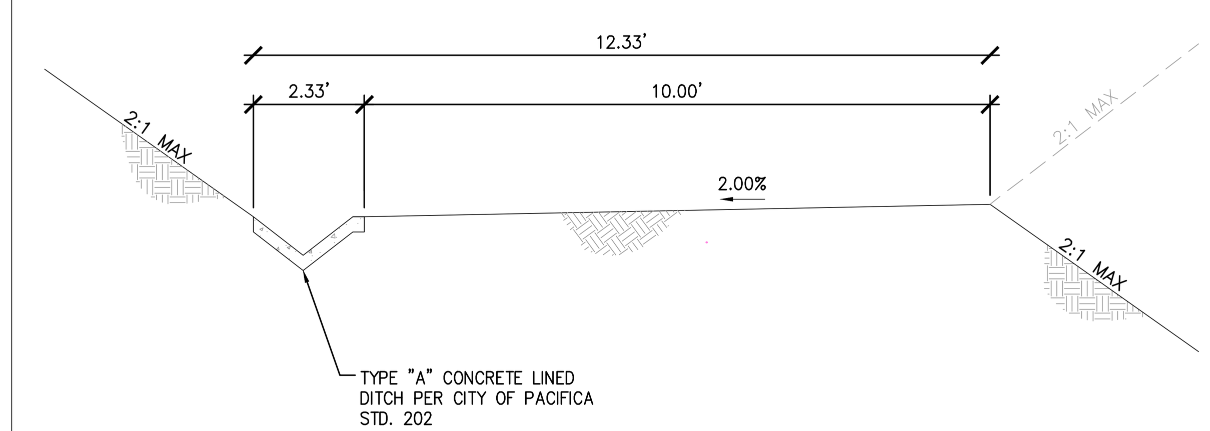
NTS



NOTES:
1. SWALES SHALL BE VEGETATED AND STABILIZED TO EFFECTIVELY MANAGE EROSION AND SEDIMENT CONTROL OF GRADED AREAS.
2. VEGETATED SWALES ON GRADES OF MORE THAN 5% FOR A LENGTH GREATER THAN 25 FEET MUST INSTALL CHECK DAMS TO LIMIT THE SLOPE OF THE SWALE UNLESS OTHERWISE APPROVED.

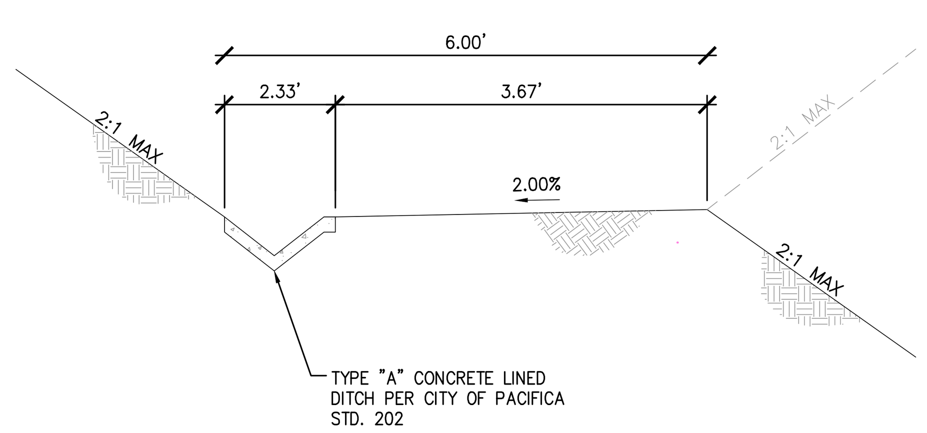
3 VEGETATED SWALE

NTS



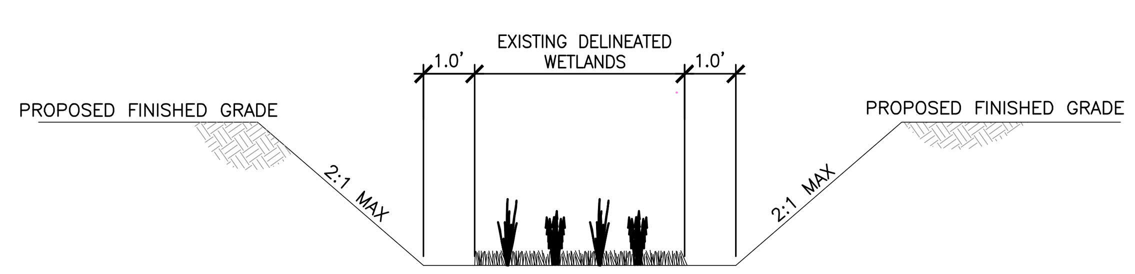
4 TYPICAL 12' TERRACE SECTION

NTS



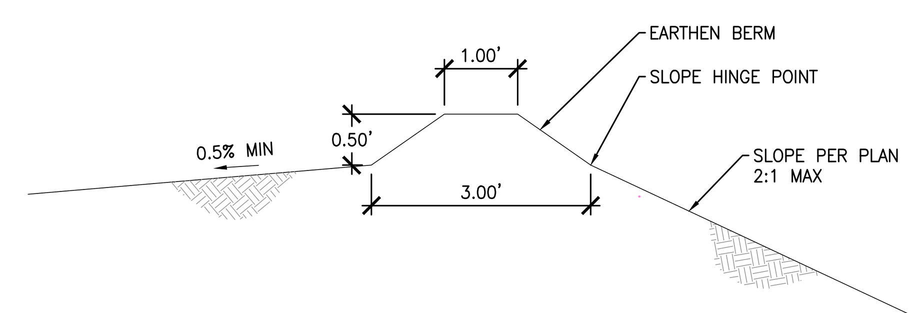
5 TYPICAL 6' TERRACE SECTION

NTS



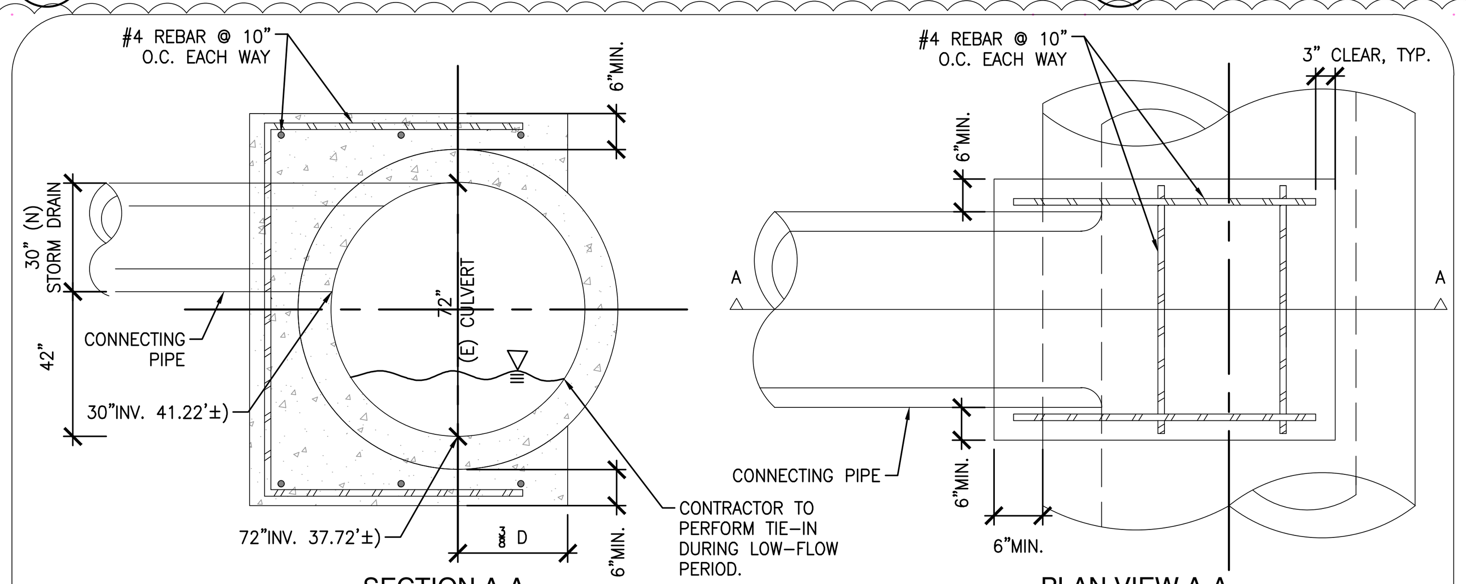
6 PROTECT IN PLACE EXISTING WETLANDS

NTS



7 EARTHEN BERM

NTS



SECTION A-A

PLAN VIEW A-A

NOTES:
1. THE END OF THE CONNECTING PIPE SHALL NOT PROJECT INTO THE WATER WAY OF THE LARGER PIPE.
2. CONCRETE SHALL BE MIN. COMPRESSIVE STRENGTH OF 2,500 PSI.
3. IF 10" O.C. SPACING OF REBAR CANNOT BE ACHIEVED DUE TO SMALL PIPE SIZED, THEN PLACE ONE #4 BAR AT THE FOLLOWING: EACH SIDE OF CONNECTING PIPE, TOP OF LARGER PIPE, AND BOTTOM OF LARGER PIPE.

8 CULVERT TIE-IN DETAIL

NTS

NO.	DATE	REVISIONS
1	03/16/2020	GRADING SOUTH QUARRY

WALSH ENGINEERING
WALSHENGINEERING.NET (805) 319-4948
979 OSOS ST, SUITE F-4 SAN LUIS OBISPO, CA 93401

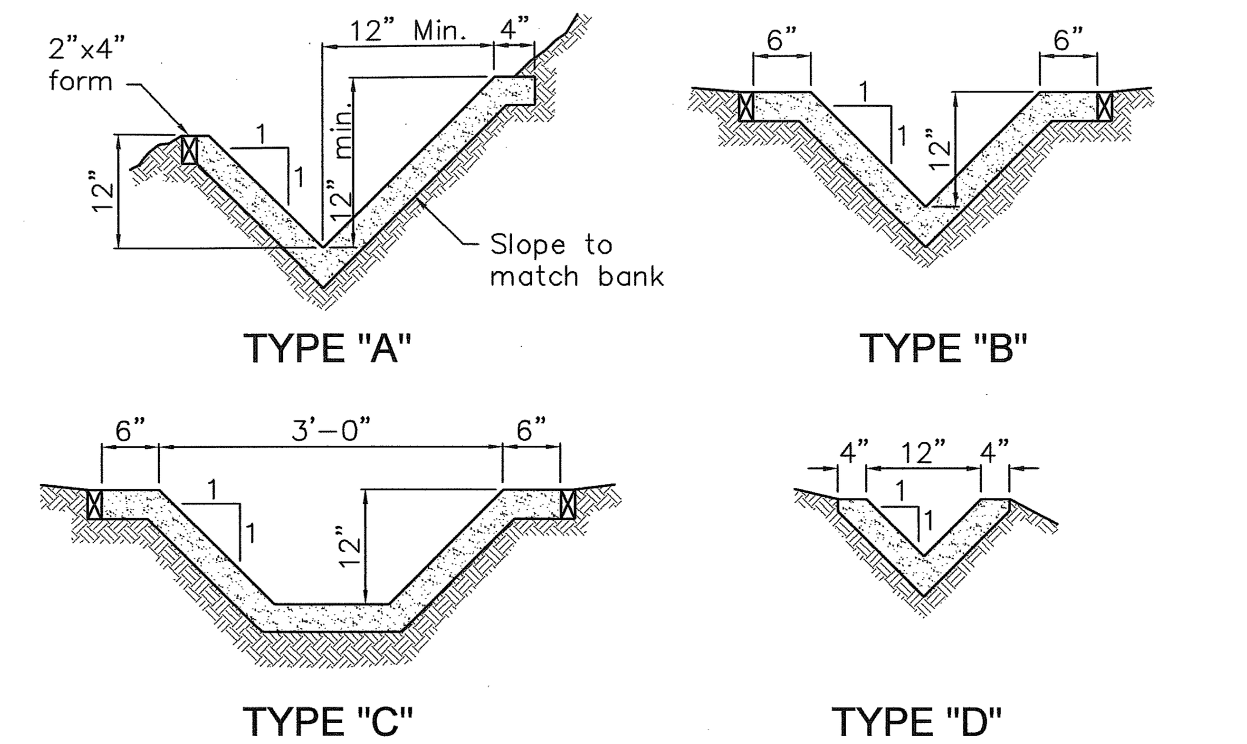
ROCKAWAY QUARRY
RECLAMATION PLAN
PACIFICA, CA

REGISTERED PROFESSIONAL ENGINEER
MATTHEW R. WALSH
C 79026
CIVIL
STATE OF CALIFORNIA

DESIGNED BY: KKE
DRAFTED BY: KKE
CHECKED BY: MRW
DATE: 03/16/2020

SECTIONS AND DETAILS

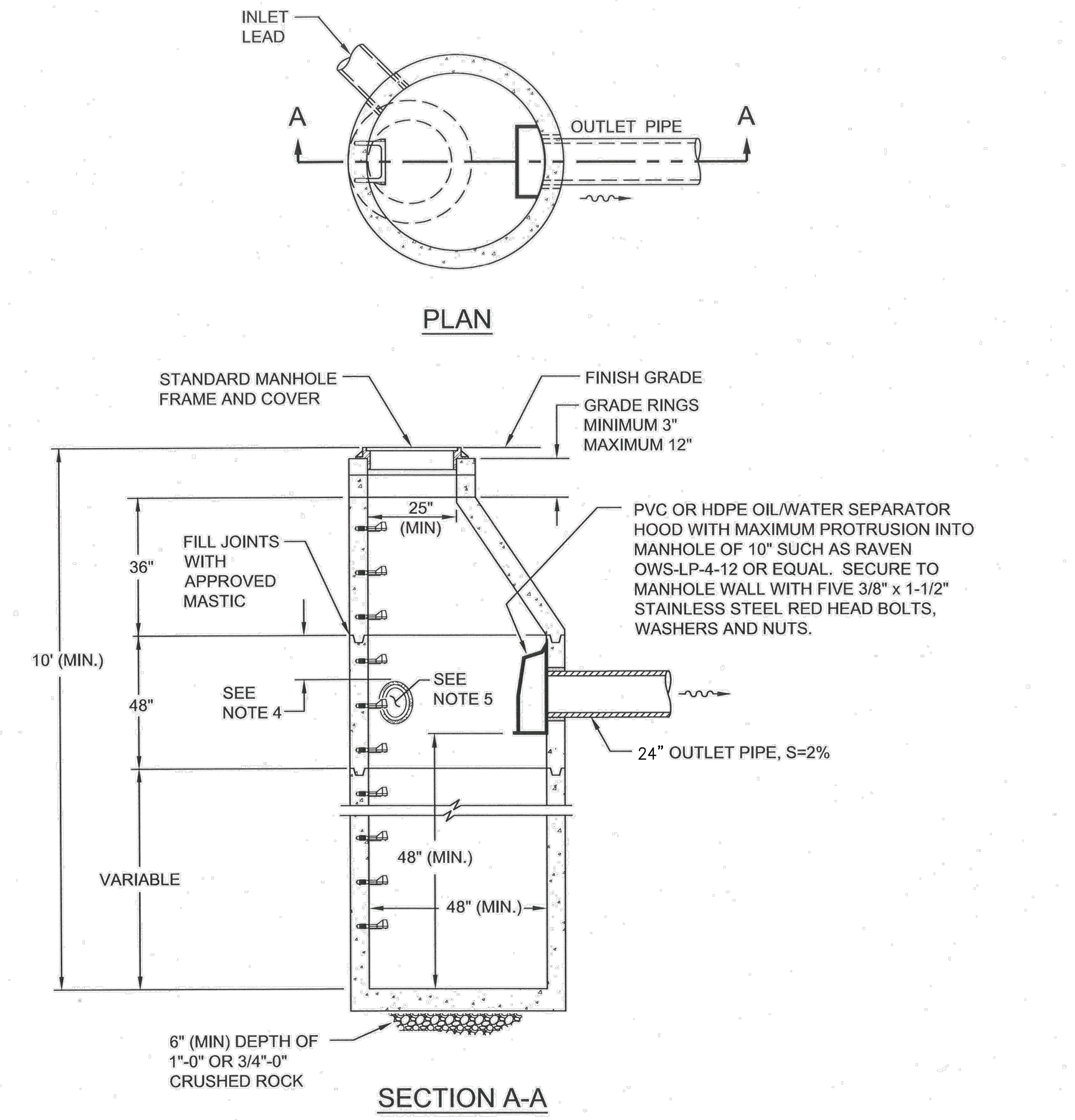
SHEET
C3.0



NOTE:

1. All sections shall be at least 4" thick.
2. Concrete shall be Class "B" (5 sack).
3. Both sides of the ditch shall be formed with 2"x4" lumber, WHERE SHOWN.
4. Concrete finish shall conform to Section 51–1.18A of the latest State Specification.
5. Ditch sides shall be back filled and compacted immediately after the removal of side forms.
6. No concrete shall be placed prior to form inspection by the Agency Engineer.
7. No ditch is to be constructed on filled ground prior to certification of the fill to the Agency by the Soil Engineer.
8. No expansion joints shall be required.

CITY OF PACIFICA DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	STANDARD CONCRETE LINED DITCHES	REV	DATE	BY:	SEPT. 1986 DWG. NO. 202



P–161_SED_MANHOLE_HOOD_(MODIFIED).DWG 12/7/15 10:32 AM RICKS

NOTES:

1. ALL PRECAST SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF PACIFICA MANUFACTURING STANDARDS FOR PRECAST CONCRETE PRODUCTS
2. MANHOLE STEPS
3. PROVIDE A FLEXIBLE JOINT FOR ALL CONNECTED PIPES:
   - RIGID PIPE < 36 INCHES – 18 INCHES (MAX.) FROM OUTSIDE WALL
   - FLEXIBLE PIPE – 18 INCHES (MAX.) FROM THE OUTSIDE WALL UNLESS A FLEXIBLE JOINT FITTING IS INSTALLED AND ACCEPTED.
4. PROVIDE 12 INCHES (MIN.) OF SEPARATION BETWEEN A SECTION JOINT AND THE OUTER EDGE OF ANY OPENING.
5. LOCATE INVERT OF ANY INLET LEAD 6 INCHES (MIN.) ABOVE THE OUTLET PIPE INVERT

The selection and use of this Standard Detail, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.	Standard Detail Title: Sedimentation Manhole with Hood	
	Effective Date: 01-01-09 Calc. Book No.: N/A Baseline Report Date: N/A	Standard Detail No. P-161

SAN MATEO COUNTYWIDE
Water Pollution Prevention Program
Clean Water. Healthy Community.

Construction Best Management Practices (BMPs)

Construction projects are required to implement the stormwater best management practices (BMP) on this page, as they apply to your project, all year long.

Materials & Waste Management

Non-Hazardous Materials
- ❑ Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or if not actively being used within 14 days.
- ❑ Use (but don't overuse) reclaimed water for dust control.

Hazardous Materials
- ❑ Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state and federal regulations.
- ❑ Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecast.
- ❑ Follow manufacturer's application instructions for hazardous materials and be careful not to use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- ❑ Arrange for appropriate disposal of all hazardous wastes.

Waste Management
- ❑ Cover waste disposal containers securely with tarps at the end of every work day and during wet weather.
- ❑ Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on the construction site.
- ❑ Clean or replace portable toilets, and inspect them frequently for leaks and spills.
- ❑ Dispose of all wastes and debris properly. Recycle materials and wastes that can be recycled (such as asphalt, concrete, aggregate base materials, wood, gyp board, pipe, etc.)
- ❑ Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.

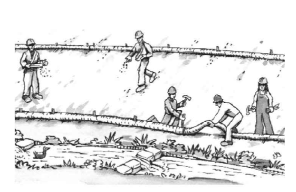
Construction Entrances and Perimeter
- ❑ Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- ❑ Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking.

Equipment Management & Spill Control

Maintenance and Parking
- ❑ Designate an area, fitted with appropriate BMPs, for vehicle and equipment parking and storage.
- ❑ Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- ❑ If refueling or vehicle maintenance must be done onsite, work in a bermed area away from storm drains and over a drip pan or drop cloths big enough to collect fluids. Recycle or dispose of fluids as hazardous waste.
- ❑ If vehicle or equipment cleaning must be done onsite, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm drains, or surface waters.
- ❑ Do not clean vehicle or equipment onsite using soaps, solvents, degreasers, or steam cleaning equipment.

Spill Prevention and Control
- ❑ Keep spill cleanup materials (e.g., rags, absorbents and cat litter) available at the construction site at all times.
- ❑ Inspect vehicles and equipment frequently for and repair leaks promptly. Use drip pans to catch leaks until repairs are made.
- ❑ Clean up spills or leaks immediately and dispose of cleanup materials properly.
- ❑ Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags).
- ❑ Sweep up spilled dry materials immediately. Do not try to wash them away with water, or bury them.
- ❑ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- ❑ Report significant spills immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill: 1) Dial 911 or your local emergency response number, 2) Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).

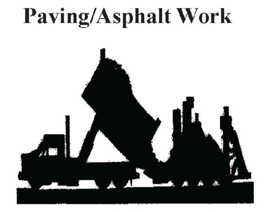
Earthmoving



- ❑ Schedule grading and excavation work during dry weather.
- ❑ Stabilize all denuded areas, install and maintain temporary erosion controls (such as erosion control fabric or bonded fiber matrix) until vegetation is established.
- ❑ Remove existing vegetation only when absolutely necessary, and seed or plant vegetation for erosion control on slopes or where construction is not immediately planned.
- ❑ Prevent sediment from migrating offsite and protect storm drain inlets, gutters, ditches, and drainage courses by installing and maintaining appropriate BMPs, such as fiber rolls, silt fences, sediment basins, gravel bags, berms, etc.
- ❑ Keep excavated soil on site and transfer it to dump trucks on site, not in the streets.

Contaminated Soils
- ❑ If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
  - Unusual soil conditions, discoloration, or odor.
  - Abandoned underground tanks.
  - Abandoned wells
  - Buried barrels, debris, or trash.

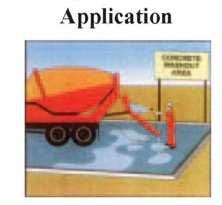
Paving/Asphalt Work



- ❑ Avoid paving and seal coating in wet weather or when rain is forecast, to prevent materials that have not cured from contacting stormwater runoff.
- ❑ Cover storm drain inlets and manholes when applying seal coat, tack coat, slurry seal, fog seal, etc.
- ❑ Collect and recycle or appropriately dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.
- ❑ Do not use water to wash down fresh asphalt concrete pavement.

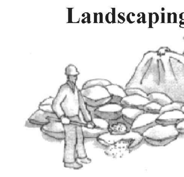
Sawcutting & Asphalt/Concrete Removal
- ❑ Protect nearby storm drain inlets when saw cutting. Use filter fabric, catch basin inlet filters, or gravel bags to keep slurry out of the storm drain system.
- ❑ Shovel, abosorb, or vacuum saw-cut slurry and dispose of all waste as soon as you are finished in one location or at the end of each work day (whichever is sooner!).
- ❑ If sawcut slurry enters a catch basin, clean it up immediately.

Concrete, Grout & Mortar Application



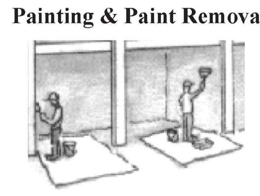
- ❑ Store concrete, grout, and mortar away from storm drains or waterways, and on pallets under cover to protect them from rain, runoff, and wind.
- ❑ Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and in a manner that will prevent leaching into the underlying soil or onto surrounding areas. Let concrete harden and dispose of as garbage.
- ❑ When washing exposed aggregate, prevent washwater from entering storm drains. Block any inlets and vacuum gutters, hose washwater onto dirt areas, or drain onto a bermed surface to be pumped and disposed of properly.

Landscaping



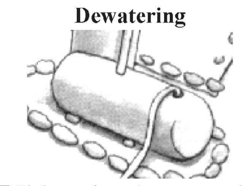
- ❑ Protect stockpiled landscaping materials from wind and rain by storing them under tarps all year-round.
- ❑ Stack bagged material on pallets and under cover.
- ❑ Discontinue application of any erodible landscape material within 2 days before a forecast rain event or during wet weather.

Painting & Paint Removal



Painting Cleanup and Removal
- ❑ Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream.
- ❑ For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain.
- ❑ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste.
- ❑ Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash.
- ❑ Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a state-certified contractor.

Dewatering



- ❑ Discharges of groundwater or captured runoff from dewatering operations must be properly managed and disposed. When possible send dewatering discharge to landscaped area or sanitary sewer. If discharging to the sanitary sewer call your local wastewater treatment plant.
- ❑ Divert run-on water from offsite away from all disturbed areas.
- ❑ When dewatering, notify and obtain approval from the local municipality before discharging water to a street gutter or storm drain. Filtration or diversion through a basin, tank, or sediment trap may be required.
- ❑ In areas of known or suspected contamination, call your local agency to determine whether the ground water must be tested. Pumped groundwater may need to be collected and hauled off-site for treatment and proper disposal.

Storm drain polluters may be liable for fines of up to $10,000 per day!

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NO.	DATE	REVISIONS
1	03/16/2020	GRADING SOUTH QUARRY
2		
3		
4		
5		
6		

WALSH ENGINEERING
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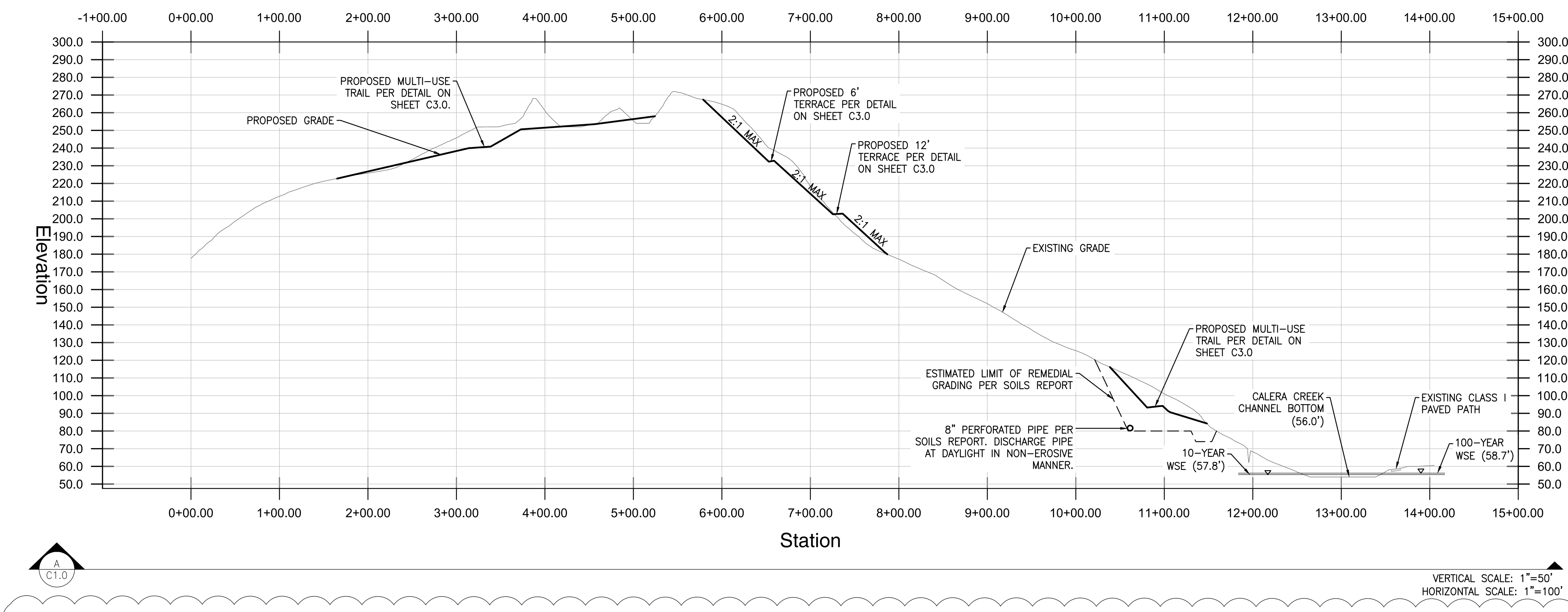
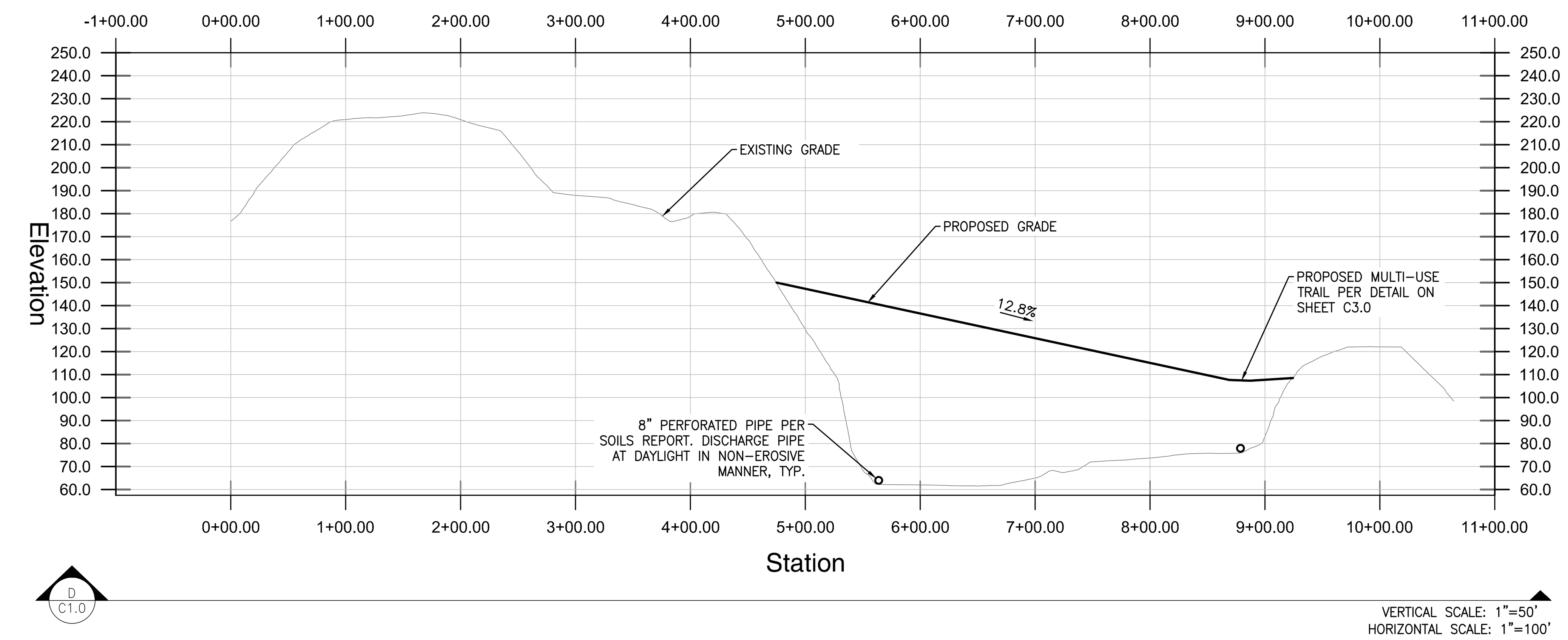
ROCKAWAY QUARRY
RECLAMATION PLAN
PACIFICA, CA

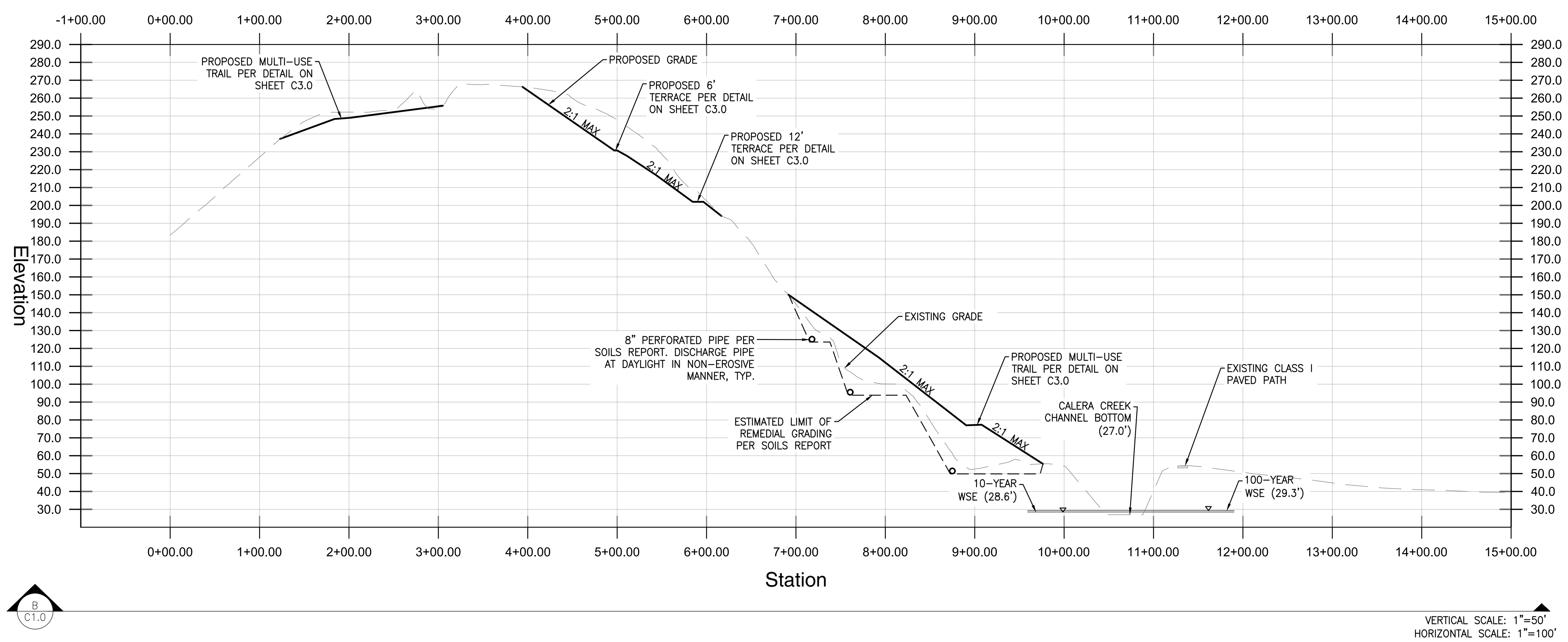
DESIGNED BY: KKE
DRAFTED BY: KKE
CHECKED BY: MRW
DATE: 03/16/2020

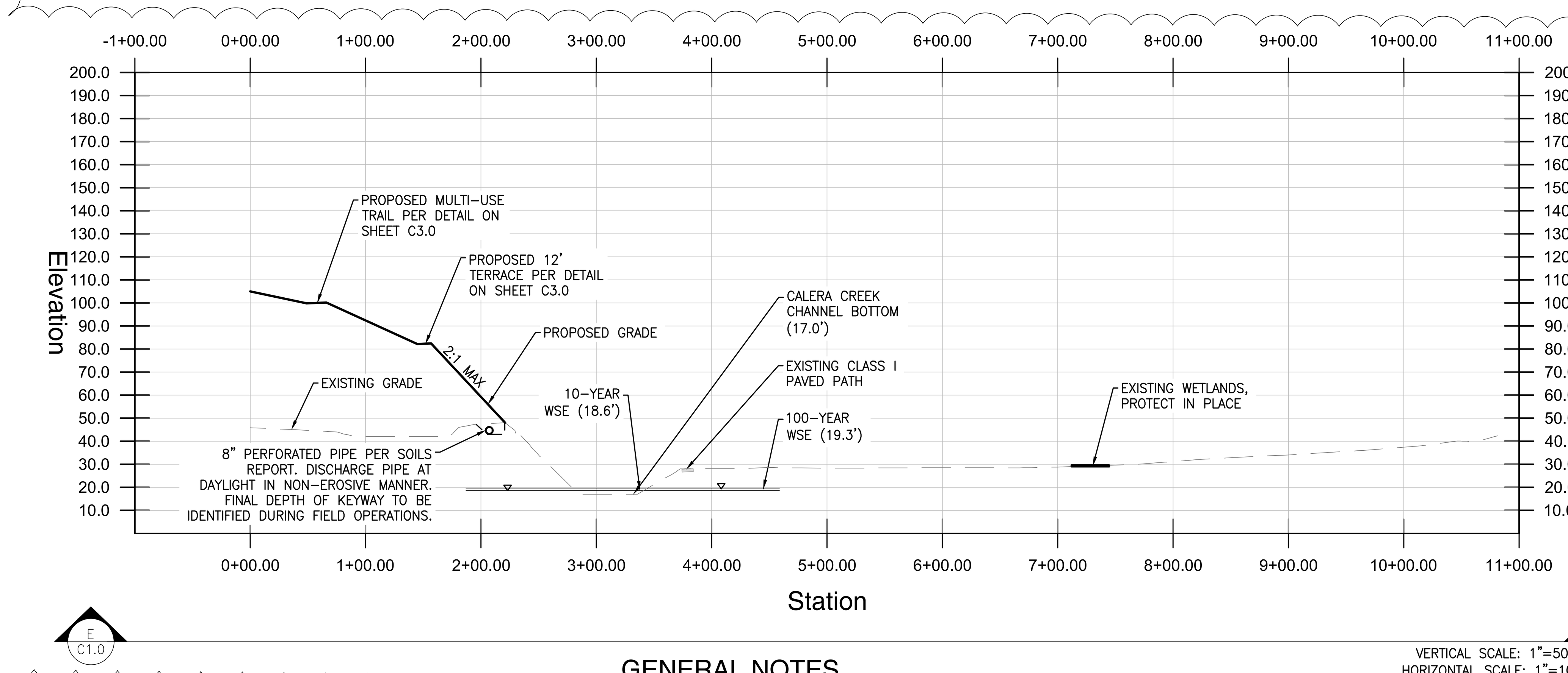
SECTIONS AND DETAILS

SHEET
C3.1



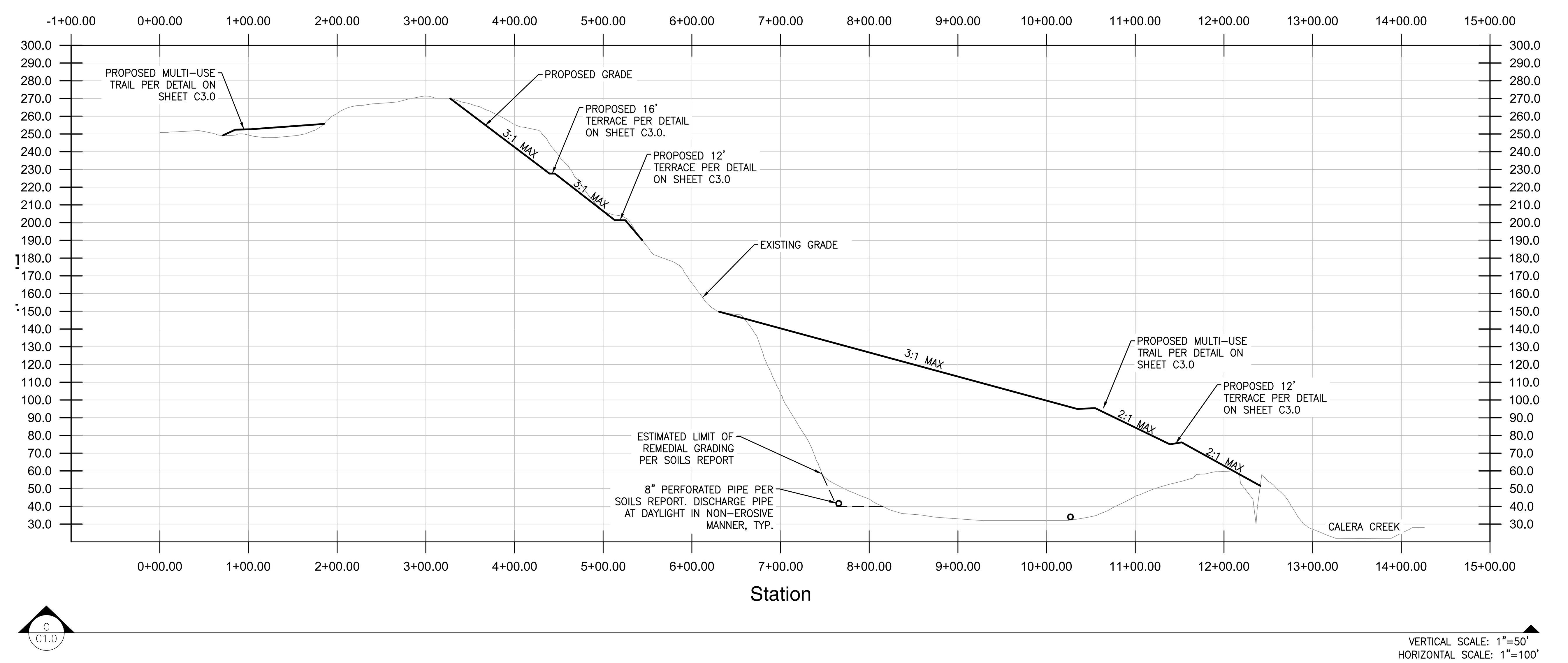


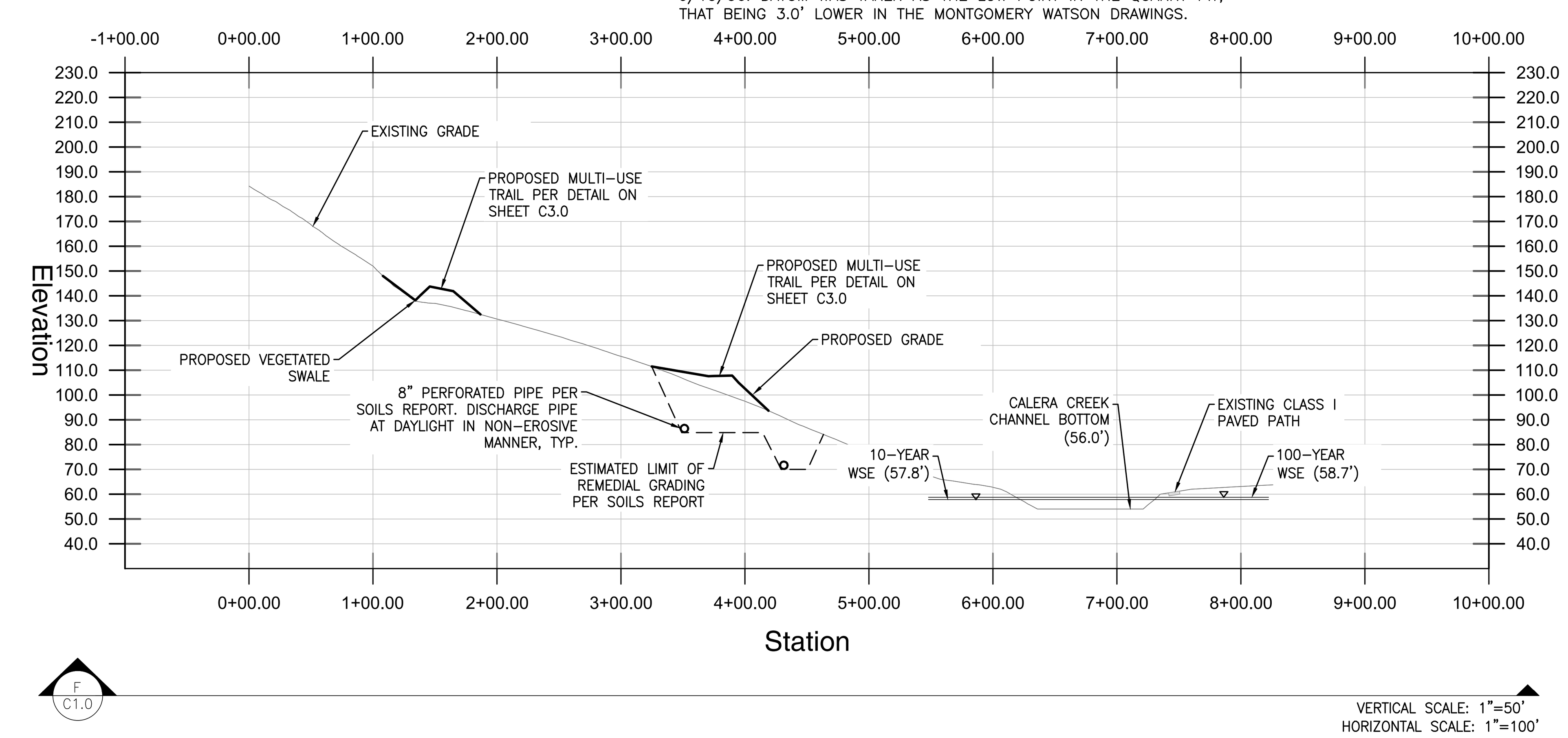




GENERAL NOTES

1. THE ORDINARY HIGH WATER ELEVATION IS 5.03' DATED MARCH 2013. HISTORICAL TIDE DATA TAKEN FROM NOAA STATION I.D. 9414290 SAN FRANCISCO, CA.
2. 10-YEAR AND 100-YEAR WATER SURFACE ELEVATIONS BASED ON PEAK DISCHARGES OBTAINED FROM FEMA FLOOD INSURANCE STUDY DATED 2/19/1997.
3. FOR CHANNEL PROPERTIES, CALERA CREEK WATER RECYCLING PLANT DRAWINGS BY MONTGOMERY WATSON WERE REFERENCE DATED 6/10/96. DATUM WAS TAKEN AS THE LOW POINT IN THE QUARRY PIT, THAT BEING 3.0' LOWER IN THE MONTGOMERY WATSON DRAWINGS.





NO.	DATE	REVISIONS
1	03/16/2020	GRADING SOUTH QUARRY

WALSH ENGINEERING
WALSHENGINEERING.NET (805) 319-4948
979 OSOS ST, SUITE F-4 SAN LUIS OBISPO, CA 93401

ROCKAWAY QUARRY
RECLAMATION PLAN
PACIFICA, CA

REGISTERED PROFESSIONAL ENGINEER MATTHEW R. WALSH C 79026 CIVIL STATE OF CALIFORNIA

DESIGNED BY: KKE
DRAFTED BY: KKE
CHECKED BY: MRW
DATE: 03/16/2020

SITE CROSS SECTIONS

SHEET
C4.0

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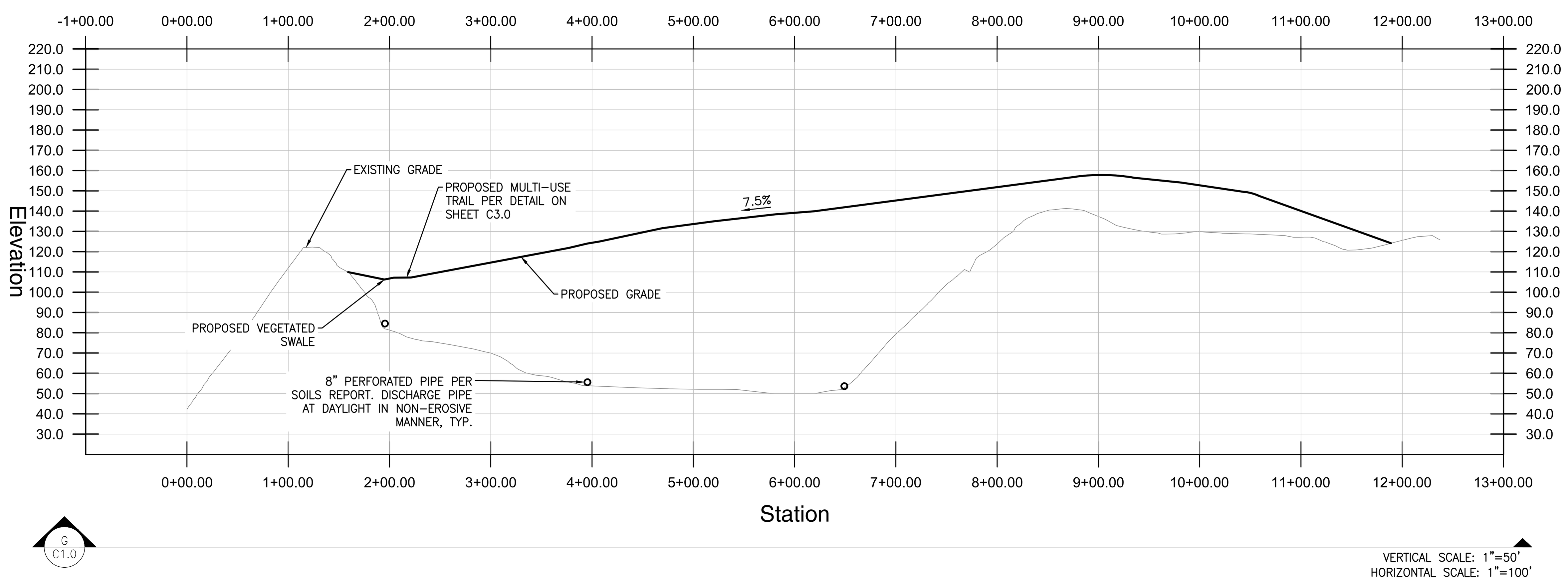

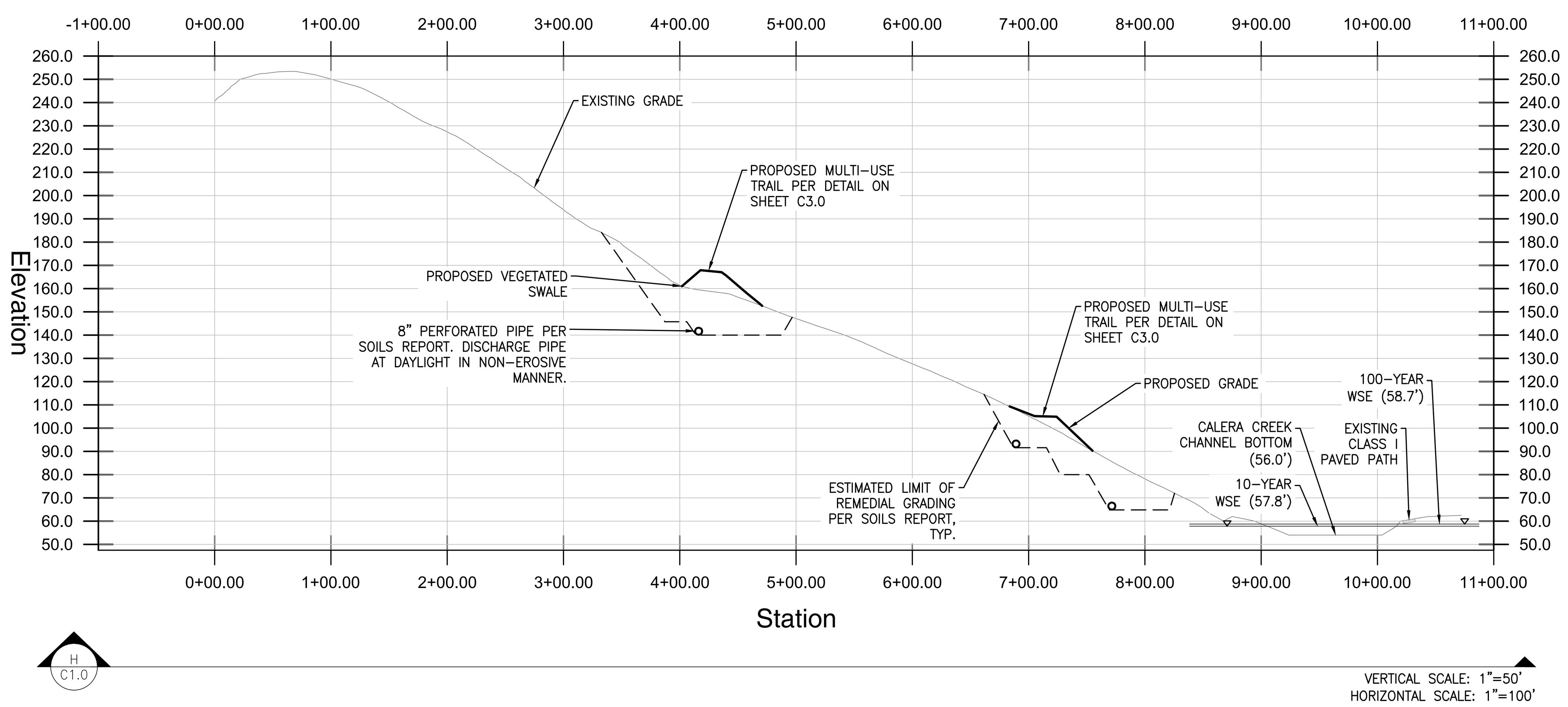

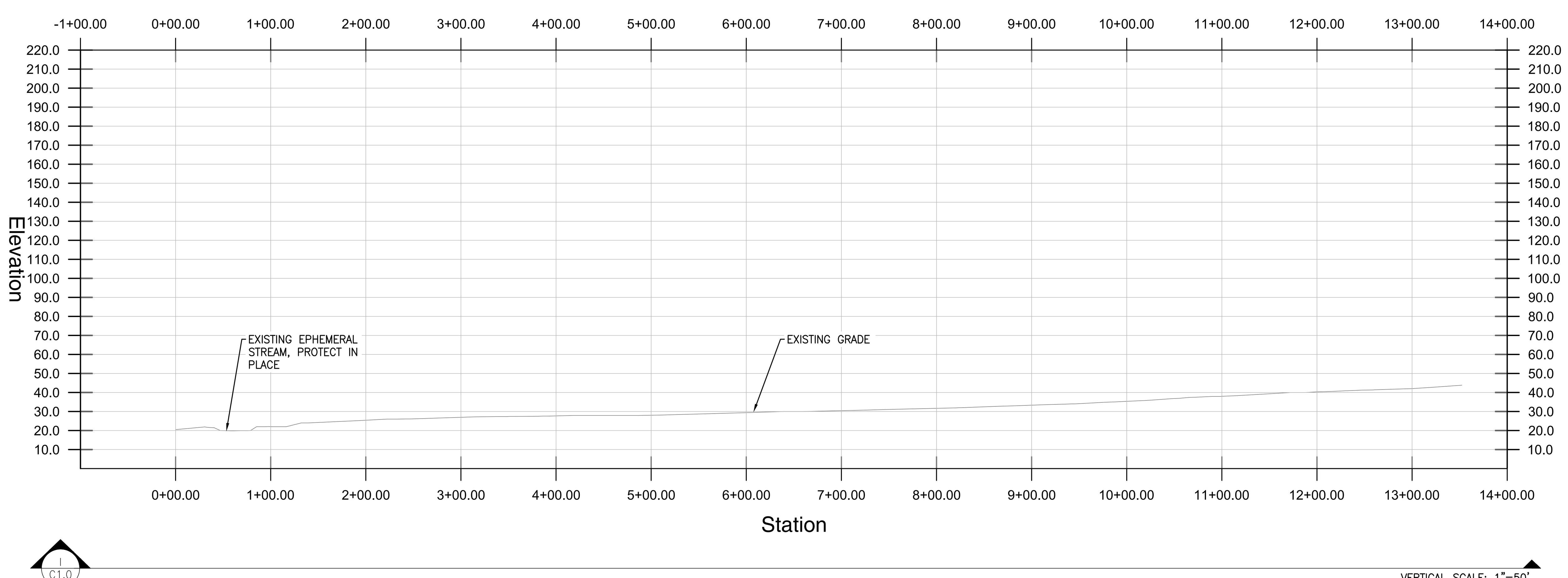

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STATE OF CALIFORNIA

DESIGNED BY: KKE
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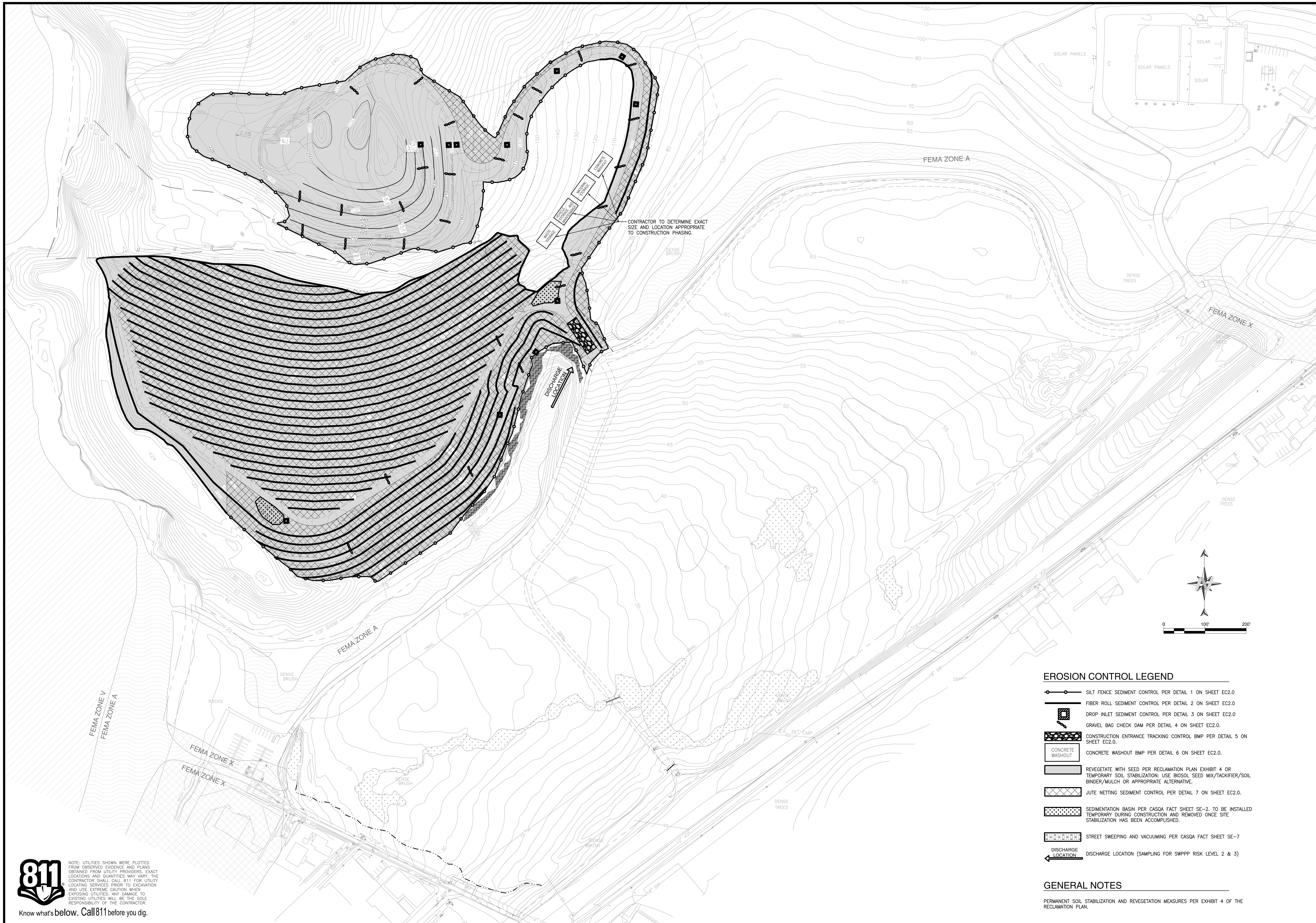
SITE CROSS SECTIONS

SHEET
C4.1



EROSION CONTROL LEGEND

- SILT FENCE SEDIMENT CONTROL PER DETAIL 1 ON SHEET EC2.0
- FIBER ROLL SEDIMENT CONTROL PER DETAIL 2 ON SHEET EC2.0
- DROP INLET SEDIMENT CONTROL PER DETAIL 3 ON SHEET EC2.0
- GRAVEL BAG CHECK DAM PER DETAIL 4 ON SHEET EC2.0.
- CONSTRUCTION ENTRANCE TRACKING CONTROL BMP PER DETAIL 5 ON SHEET EC2.0.
- CONCRETE WASHOUT — CONCRETE WASHOUT BMP PER DETAIL 6 ON SHEET EC2.0.
- REVEGETATE WITH SEED PER RECLAMATION PLAN EXHIBIT 4 OR TEMPORARY SOIL STABILIZATION: USE BIOSOL SEED MIX/TACKIFIER/SOIL BINDER/MULCH OR APPROPRIATE ALTERNATIVE.
- JUTE NETTING SEDIMENT CONTROL PER DETAIL 7 ON SHEET EC2.0.
- SEDIMENTATION BASIN PER CASQA FACT SHEET SE–2. TO BE INSTALLED TEMPORARY DURING CONSTRUCTION AND REMOVED ONCE SITE STABILIZATION HAS BEEN ACCOMPLISHED.
- STREET SWEEPING AND VACUUMING PER CASQA FACT SHEET SE–7
- DISCHARGE LOCATION — DISCHARGE LOCATION (SAMPLING FOR SWPPP RISK LEVEL 2 & 3)

GENERAL NOTES

PERMANENT SOIL STABILIZATION AND REVEGETATION MEASURES PER EXHIBIT 4 OF THE RECLAMATION PLAN.

NOTE: UTILITIES SHOWN WERE PLOTTED FROM OBSERVED EVIDENCE AND PLANS OBTAINED FROM UTILITY PROVIDERS. EXACT LOCATIONS AND QUANTITIES MAY VARY. THE CONTRACTOR SHALL CALL 811 FOR UTILITY LOCATING SERVICES PRIOR TO EXCAVATION AND USE EXTREME CAUTION WHEN EXPOSING UTILITIES. ANY DAMAGE TO EXISTING UTILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

811 Know what's below. Call 811 before you dig.

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NO.	DATE	REVISIONS
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WALSH ENGINEERING
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1108 GARDEN STREET, SUITE 202-204 SAN LUIS OBISPO, CA 93401

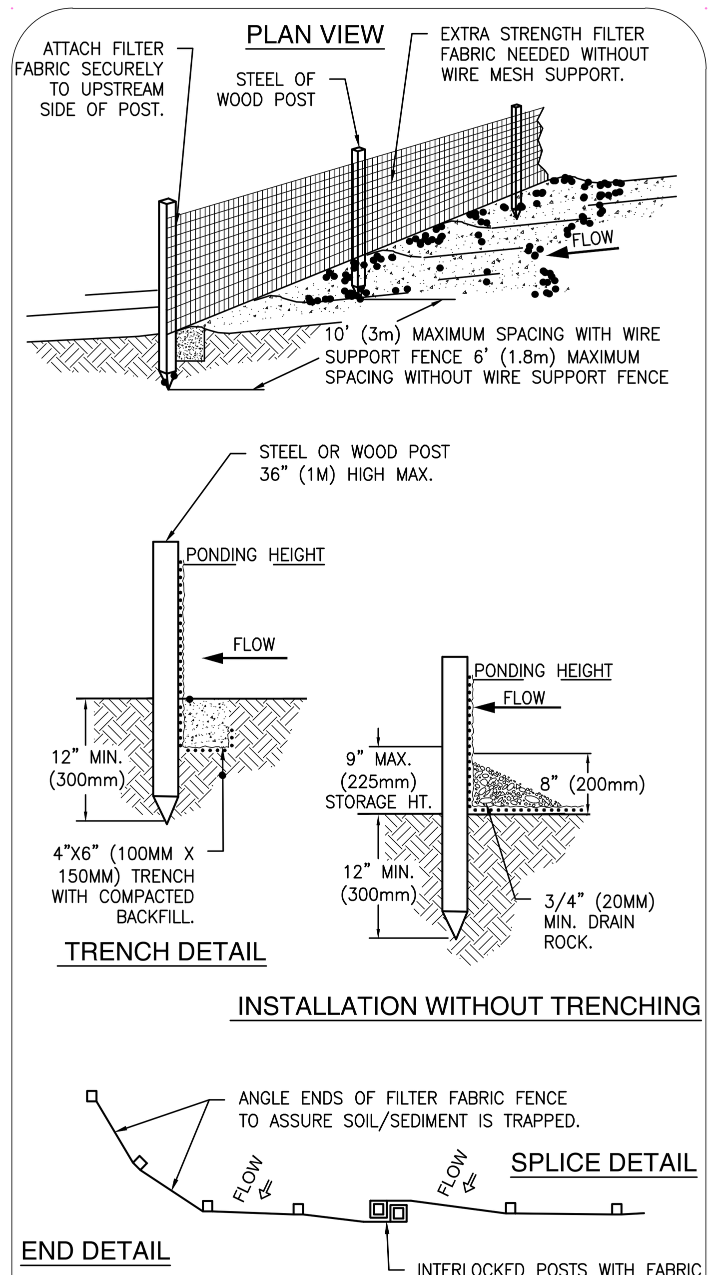
ROCKAWAY QUARRY
RECLAMATION PLAN
PACIFICA, CA

REGISTERED PROFESSIONAL ENGINEER MATTHEW R. WALSH C79026 CIVIL STATE OF CALIFORNIA

DESIGNED BY: KKE
DRAFTED BY: KKE
CHECKED BY: MRW
DATE: 03/16/2020

EROSION AND SEDIMENT CONTROL PLAN

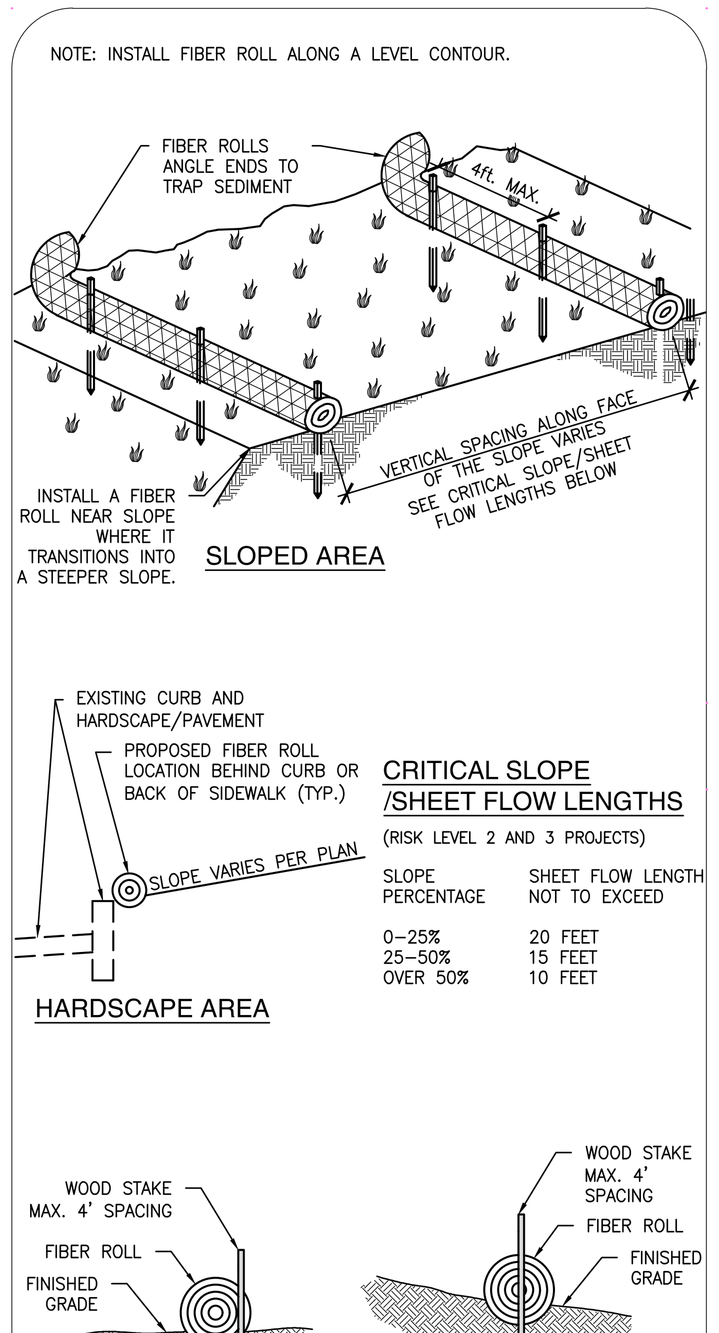
SHEET
1 EC1.0



NOTES:
1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. 9" MAXIMUM RECOMMENDED STORAGE HEIGHT.
3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE TO SEDIMENT TRANSPORT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

1 SILT FENCE
NTS

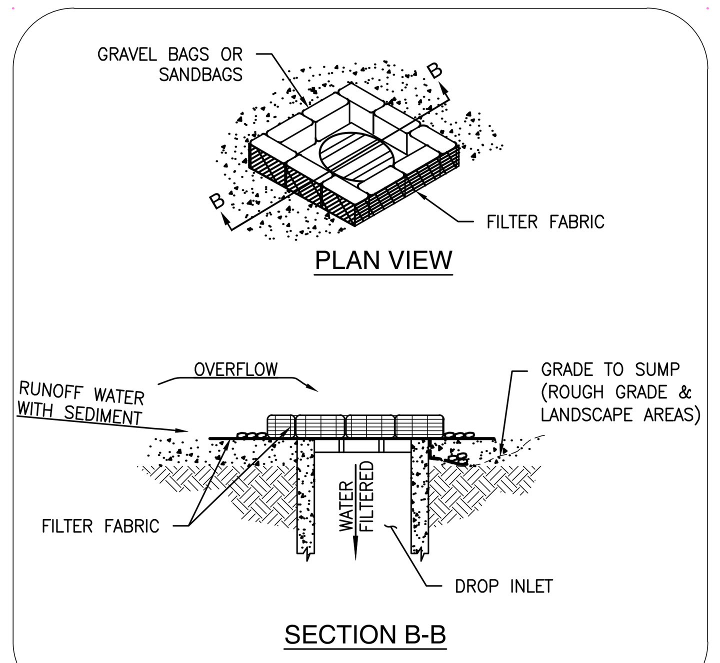
NOTE: INSTALL FIBER ROLL ALONG A LEVEL CONTOUR.



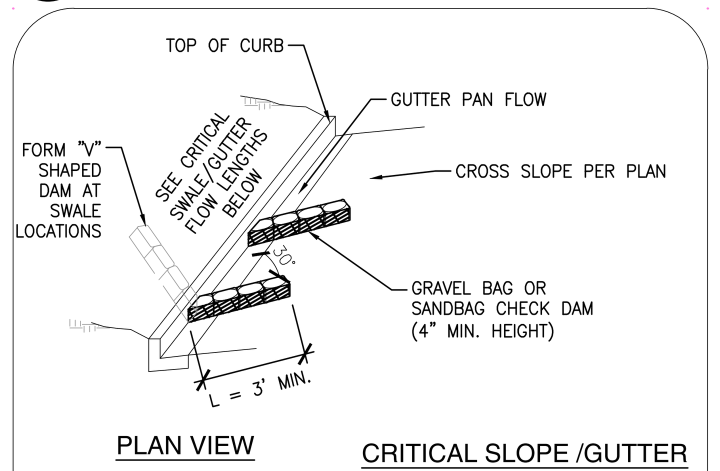
CRITICAL SLOPE /SHEET FLOW LENGTHS
(RISK LEVEL 2 AND 3 PROJECTS)

SLOPE PERCENTAGE	SHEET FLOW LENGTH NOT TO EXCEED
0–25%	20 FEET
25–50%	15 FEET
OVER 50%	10 FEET

2 FIBER ROLL
NTS



3 DROP INLET PROTECTION
NTS

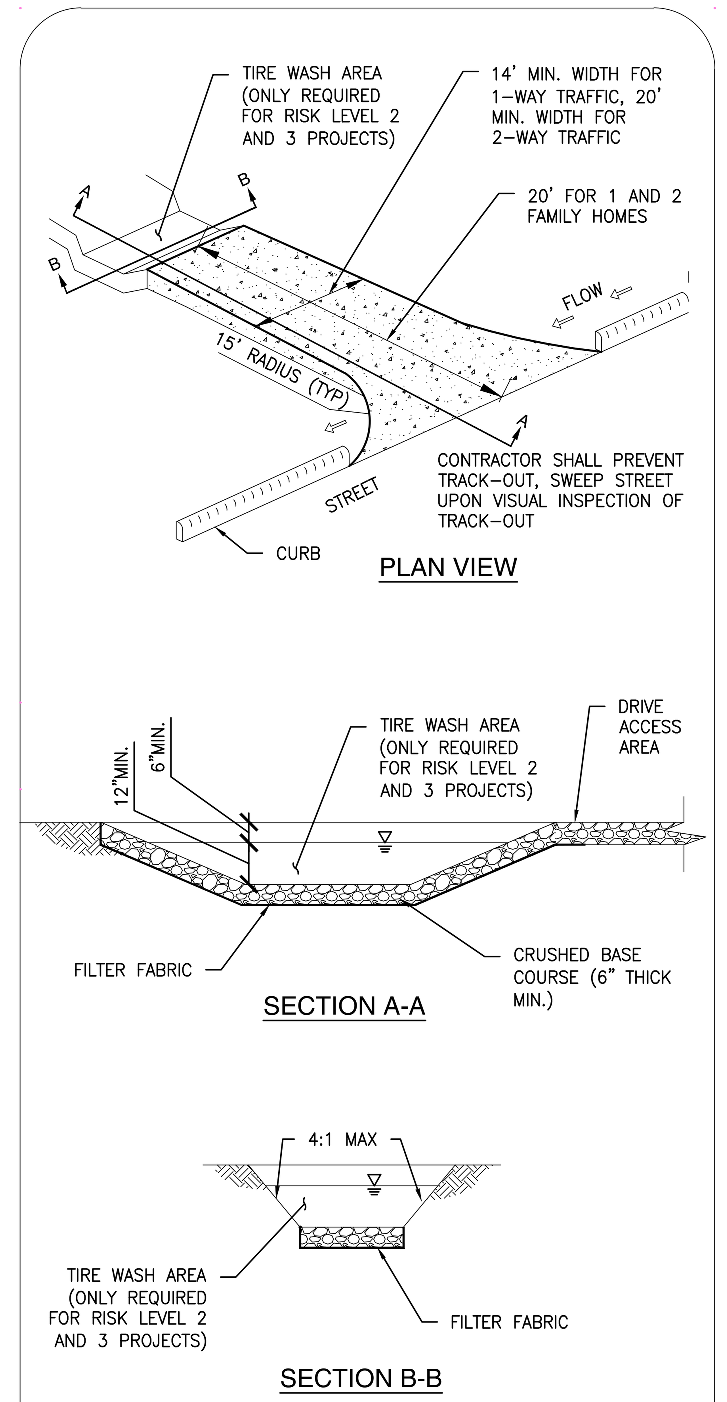


CRITICAL SLOPE /GUTTER FLOW LENGTHS

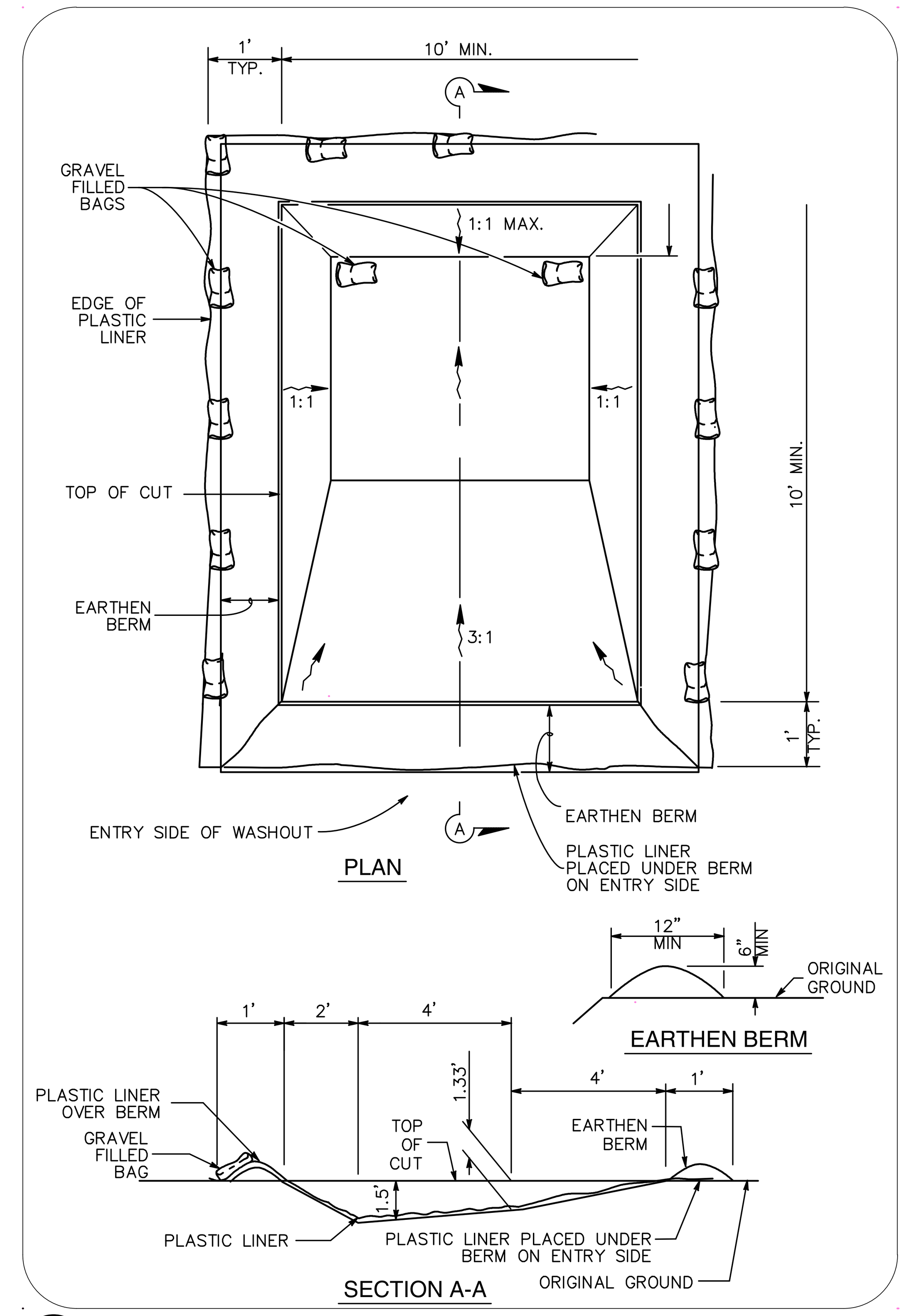
SLOPE PERCENTAGE	GUTTER FLOW LENGTH NOT TO EXCEED
0–2%	250 FEET
2–10%	150 FEET
OVER 10%	100 FEET

NOTES:
1. VISUALLY INSPECT SEDIMENT BUILD-UP. REMOVE/CLEAN WHEN SEDIMENT REACHES 3" MAX.

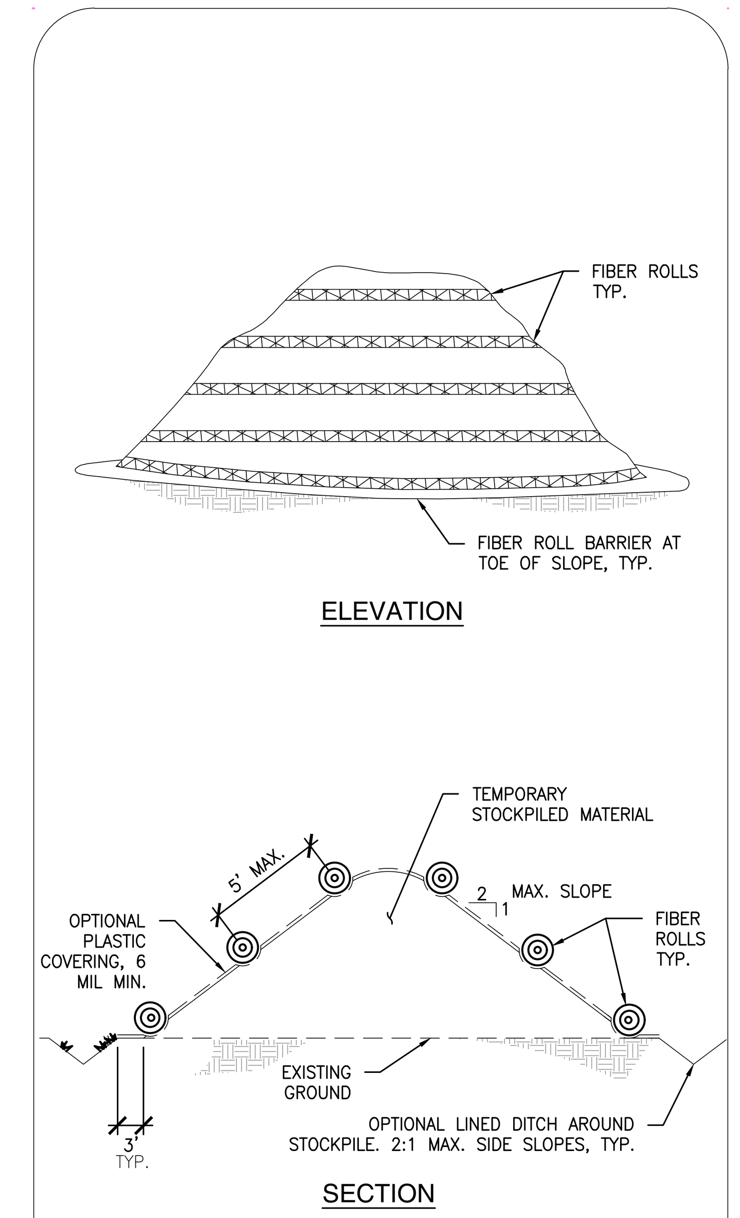
4 CHECK DAM
NTS



5 CONSTRUCTION ENTRANCE
NTS

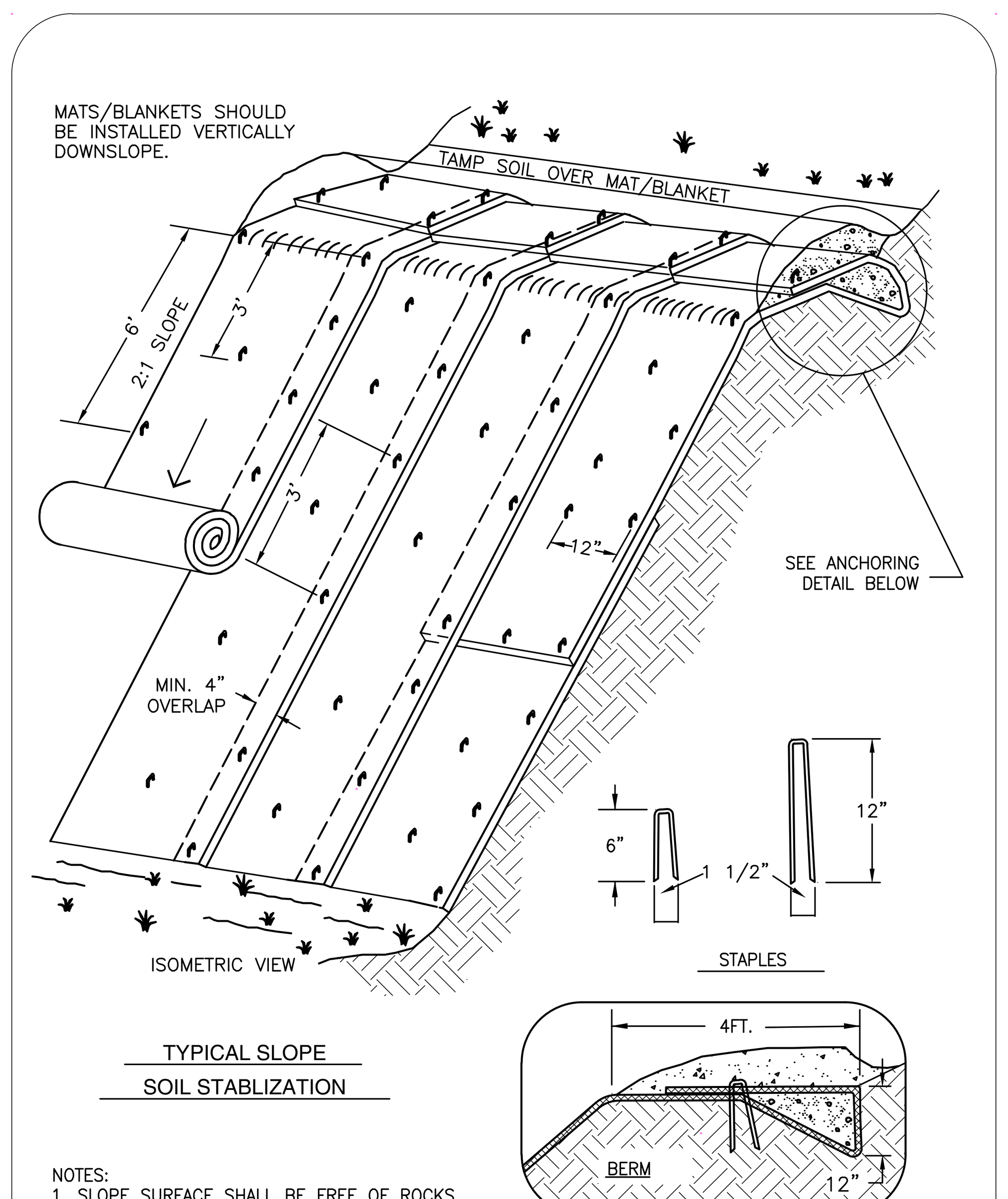


6 CONCRETE WASHOUT
NTS



NOTES:
1. SEE FIBER ROLL DETAIL ON THIS SHEET FOR ADDITIONAL REQUIREMENTS.
2. IF EROSION OF THE STOCKPILE IS OBSERVED, ADDITIONAL MEASURES SHALL BE INITIATED INCLUDING THE OPTIONAL REINFORCED PLASTIC COVERING AND THE OPTIONAL LINED DITCH AT THE TOE OF THE SLOPE.

7 STOCKPILE PROTECTION
NTS



TYPICAL SLOPE SOIL STABLIZATION

NOTES:
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS TO ENSURE MAT/BLANKET HAS GOOD SOIL CONTACT.
2. LAY BLANKETS AND STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL, DO NOT STRETCH.
3. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
4. APPLY SEED, FERTILIZER, AND IRRIGATE UNTIL VEGETATION IS GERMINATED THROUGH MAT AND SOIL IS EFFECTIVELY STABILIZED WITH VEGETATION.

8 JUTE NETTING EROSION CONTROL MAT
NTS

EROSION & SEDIMENT CONTROL NOTES

1. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE USED TO ENSURE THAT WATER ENTERING THE STORM DRAIN SYSTEM BELOW THE CONSTRUCTION SITE IS EQUIVALENT QUALITY AND CHARACTER AS THE WATER ABOVE THE SITE.
2. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PLACED IN FRONT OF INCOMPLETE STORM DRAIN SYSTEMS TO PREVENT DEBRIS AND SEDIMENT–LADEN WATER FROM ENTERING INTO THE PUBLIC STORM DRAIN SYSTEM. BEST MANAGEMENT PRACTICES SHALL BE USED WHEN DESIGNING AND INSTALLING SUCH DEVICES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTANT MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES AT ALL TIMES TO THE SATISFACTION OF THE ENGINEER AND CITY AGENCY. EROSION AND SEDIMENT CONTROL MEASURES AND THEIR INSTALLATION SHALL BE ACCOMPLISHED USING BEST MANAGEMENT PRACTICES.
4. IF THE STORM DRAIN SYSTEM IS NOT IN PLACE BY OCTOBER 15, ADDITIONAL MEASURES SHALL BE TAKEN SUCH AS TEMPORARY SETTLING BASINS WHICH MEET THE SATISFACTION OF THE ENGINEER AND THE CITY AGENCY. SILT AND/OR CATCH BASINS MUST BE CLEANED OUT ON A REGULAR BASIS AFTER STORMS TO MAINTAIN DESIGN CAPACITY.
5. STORM WATER RUNOFF FROM THE CONSTRUCTION SITE SHALL BE DIRECTED TOWARD AN INLET WITH A SEDIMENT OR FILTRATION INTERCEPTOR PRIOR TO ENTERING THE STORM DRAIN SYSTEM.
6. THE CONTRACTOR WILL BE RESPONSIBLE FOR CLEANING WATER THAT HAS BECOME POLLUTED DUE TO NOT TAKING NECESSARY EROSION AND SEDIMENT CONTROL ACTIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP OF MUD AND DEBRIS CARRIED ONTO SURROUNDING STREETS AND ROADS AS A RESULT OF CONSTRUCTION ACTIVITY ON THE SITE TO THE SATISFACTION OF THE CITY AGENCY.
8. ANY DENUDED OR DISTURBED SOILS SHALL BE PROTECTED USING BEST MANAGEMENT PRACTICES.
9. BETWEEN OCTOBER 15 AND APRIL 15, ALL PAVED AREAS WILL BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS. THE SITE IS TO BE MAINTAINED BY THE DEVELOPER, CONTRACTOR OR OWNER SO THAT A MINIMUM OF SEDIMENT–LADEN RUNOFF LEAVES THE SITE.
10. THE CONTRACTOR IS TO INFORM ALL CONSTRUCTION SITE WORKERS ABOUT THE MAJOR PROVISIONS OF THE EROSION AND SEDIMENT CONTROL PLAN AND SEEK THEIR COOPERATION IN AVOIDING THE DISTURBANCE OF THESE CONTROL MEASURES.
11. DURING THE RAINY SEASON (TYPICALLY OCTOBER 15 TO APRIL 15) ALL SEDIMENT BARRIERS ARE TO BE INSPECTED AND REPAIRED AT THE END OF EACH WORKING DAY AND, IN ADDITION, AFTER EACH STORM. CONTRACTOR SHALL INSPECT EROSION AND SEDIMENT CONTROL MEASURES AND INLETS AFTER EACH SIGNIFICANT RAINFALL AND DAILY DURING PROLONGED STORM EVENTS. REMOVE SEDIMENTS WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE BARRIER AND REPLACE FILTER DEVICES AS NECESSARY TO ENSURE PROPER FUNCTION.
12. UNSTABILIZED AREAS WILL BE REPAIRED AS SOON AS POSSIBLE AFTER BEING DAMAGED.
13. ALL GRADED OR DISTURBED AREAS SHALL BE STABILIZED IMMEDIATELY AFTER GRADING IS COMPLETE.
14. ENTRANCE TO THE PROJECT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT INTO PUBLIC RIGHT–OF–WAY. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE OF PUBLIC RIGHTS–OF– WAY. WHEN WASHING IS REQUIRED IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED ROCK THAT DRAINS INTO A SEDIMENT TRAP.
15. ALL SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO PUBLIC RIGHTS– OF–WAY SHALL BE REMOVED IMMEDIATELY USING BEST MANAGEMENT PRACTICES.
16. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR PURPOSE SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
17. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REPAIRED OR REPLACED WHEN THEY ARE NO LONGER FUNCTIONING PER BEST MANAGEMENT PRACTICES.
18. THE CONTRACTOR SHALL HAVE EROSION AND SEDIMENT CONTROL MEASURES ON SITE ADEQUATE TO PROTECT THE ENTIRE SITE PRIOR TO THE OCTOBER 15 DATE SUCH THAT IT IS IMMEDIATELY AVAILABLE IN PREPARATION OF THE UPCOMING WINTER SEASON OR IN THE EVENT OF AN EARLY RAIN.
19. AFTER CONSTRUCTION IS COMPLETE ALL STORM DRAIN SYSTEMS ASSOCIATED WITH THIS PROJECT SHALL BE INSPECTED AND CLEARED OF ACCUMULATED SEDIMENTS AND DEBRIS.
20. GRADED AREAS TO BE SEEDED FOR EROSION CONTROL SHALL USE GRASS SEED AT THE RATE OF 75–100/LBS. PER ACRE. SEEDED AREAS SHALL BE IRRIGATED TO ENSURE COVER IS ROOTED PRIOR TO RAINY SEASON.
21. HYDROSEED SHALL BE EITHER APPLIED MECHANICALLY OR BY HYDROSEEDING. HYDROSEEDING REQUIRES THE APPLICATION OF FIBER AND STABILIZING EMULSION. MECHANICAL APPLICATION SHALL REQUIRE ROLLING, TAMPING, OR OTHERWISE WORKING THE SEED APPROXIMATELY 0.5 INCHES INTO THE TOPSOIL.
22. STABILIZATION OF EXPOSED GRADED AREAS WITH STRAW MULCH SHALL BE APPLIED AT A RATE OF 2 TONS PER ACRE.
23. THIS PLAN PROVIDES EROSION CONTROL AND SEDIMENTATION INFORMATION AND DESIGN USING THE FOLLOWING ASSUMPTIONS:
    *GROUND HAS BEEN ROUGH GRADED.
    *STORM DRAIN UTILITIES AND INLETS HAVE BEEN INSTALLED.
24. CONTRACTOR SHALL ADJUST THE SEDIMENTATION AND EROSION CONTROL METHODS AS THE PROJECT DEVELOPS. IT SHALL BE THE QUALIFIED SWPPP PRACTITIONER'S (QSP) RESPONSIBILITY TO ENSURE THAT THE INSTALLED EROSION CONTROL AND SEDIMENTATION IMPROVEMENTS ARE IN CONFORMANCE WITH THE STATE OF CALIFORNIA STORM WATER POLLUTION PREVENTION PLAN GUIDELINES AND THE CALIFORNIA BEST MANAGEMENT PRACTICES.
25. TEMPORARY SILT AND DRAINAGE CONTROL FACILITIES SHALL BE INSTALLED TO CONTROL AND CONTAIN EROSION–CAUSED SILT DEPOSITS AND TO PROVIDE FOR THE SAFE DISCHARGE OF STORM WATERS INTO EXISTING STORM WATER FACILITIES. DESIGN OF THESE FACILITIES MUST BE APPROVED BY THE CITY ENGINEER AND IN PLACE PRIOR TO THE START OF GRADING.
26. THE CONTRACTOR SHALL COMPLY WITH ALL RULES, REGULATIONS AND PROCEDURES OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) FOR CONSTRUCTION AND ACTIVITIES AS PROMULGATED BY THE CALIFORNIA STATE WATER RESOURCE CONTROL BOARD OR ANY OF ITS REGIONAL WATER QUALITY CONTROL BOARDS.
27. ALL MATERIALS NECESSARY FOR WINTERIZATION SHALL BE AVAILABLE AT THE SITE BY OCTOBER 12, AND ALL WINTERIZATION MEASURES SHALL BE INSTALLED AND COMPLETED BY OCTOBER 15.
28. WINTERIZATION SHALL BE INSTALLED ACCORDING TO THIS PLAN AND AS DIRECTED BY THE QUALIFIED SWPPP PRACTITIONER (QSP), AND SHALL BE MAINTAINED BY THE CONTRACTOR THROUGH APRIL 1.
29. FILL SLOPES: AVOID LEAVING SHINY, SMOOTH GRADED SURFACES. THE LAST GRADING OPERATION SHALL BE TO WALK A TRACK–TYPE TRACTOR UP AND DOWN THE SLOPE, CREATING CLEAT MARKS ON THE SLOPE WITH CONTOURS. THESE WILL PROVIDE SEED AND FIBER COLLECTION POINTS.
30. CUT SLOPES: AVOID LEAVING SHINY, SMOOTH GRADED SURFACES. THE LAST GRADING OPERATION SHALL LEAVE THE SLOPE IN A ROUGHENED CONDITION WITH 2 INCHES OF LOOSENED MATERIAL FOR SEEDING.
31. EACH FIBER ROLL SHALL BE SECURELY HELD WITH 1"X1"X18" STAKES (MIN).
32. IF ANY GRAVEL BAGS ARE MOVED AND/OR RELOCATED IN GAINING ACCESS TO THE SITE DURING THE WINTER MONTHS, THEY SHALL BE REPLACED IF THEY ARE NO LONGER STABLE.
33. ONCE INSTALLED, ALL WINTERIZATION MATERIALS SHOULD BE CHECKED BEFORE EACH WEEKEND AND EACH STORM.
34. THIS PLAN IS INTENDED TO BE USED FOR EROSION CONTROL ONLY. OTHER INFORMATION SHOWN HEREIN MAY NOT BE THE MOST CURRENT.
35. AFTER THE UNDERGROUND STORM DRAIN SYSTEM IS INSTALLED, THE CATCH BASINS WILL BE INSTALLED (AS SOON AS PRACTICAL) AND THE SEDIMENT CONTROL DEVICE WILL BE PLACED AROUND THOSE CATCH BASINS AS SHOWN ON THIS PLAN AND IN THE DETAIL ON THE SHEET UNTIL THE SITE IS PAVED.
36. CONTRACTOR TO PROVIDE TEMPORARY SEDIMENT CONTROL DEVICE AT CATCH BASINS AS SHOWN IN DETAIL. CONTRACTOR MAY SUBSTITUTE OTHER SEDIMENT CONTROL DEVICES (GRAVEL BAGS, SILT TRAPS, ETC.) UNDER THE DIRECTION OF THE QSP. ALL MODIFICATIONS NEED TO BE APPROVED BY QSD, AND LOGGED IN THE SWPPP AMENDMENT LOG.
37. ACCESS ROADS: AS NECESSARY, ANY SEDIMENT OR OTHER CONSTRUCTION RELATED MATERIALS DEPOSITED ON ACCESS ROADS SHALL BE REMOVED PRIOR TO ANY RAIN EVENT BY VACUUMING OR SWEEPING.
38. WIND EROSION CONTROL: STOCKPILED WASTE MATERIAL SHALL BE CONTAINED AND SECURELY PROTECTED FROM WIND EROSION AT ALL TIMES WHEN NOT IN USE.
39. CONTRACTOR SHALL PROVIDE EFFECTIVE SOIL COVER FOR INACTIVE AREAS WHERE CONSTRUCTION ACTIVITY HAS DISTURBED SOIL BUT ARE NOT SCHEDULED TO RE–DISTURB SOIL FOR AT LEAST 14 DAYS.

DUST CONTROL NOTES

1. APPROPRIATE DUST CONTROL SHALL BE PROVIDED TO MINIMIZE ANY DUST NUISANCE, IN ACCORDANCE WITH THE CALTRANS STANDARD SPECIFICATIONS AND THE REQUIREMENTS OF THE CITY AGENCY.
2. SPRAY WATER ON ALL EXPOSED EARTH SURFACED DURING CLEARING, GRADING, EARTH MOVING AND OTHER SITE PREPARATION ACTIVITIES THROUGHOUT THE DAY TO MINIMIZE DUST. USE TARPAULINS OR OTHER EFFECTIVE COVERS ON ALL STOCKPILED EARTH MATERIAL AND ON ALL HAUL TRUCKS TO MINIMIZE DUST. SWEEP THE ADJACENT STREET FRONTAGES AT LEAST ONCE A DAY OR AS NEEDED TO REMOVE SILT AND OTHER DIRT WHICH IS EVIDENT FROM CONSTRUCTION ACTIVITIES. ENSURE THAT CONSTRUCTION VEHICLES ARE CLEANED PRIOR TO LEAVING THE SITE TO PREVENT DUST AND DIRT FROM BEING TRACKED OFF SITE.
3. ALL EXPOSED SURFACES SHALL BE WATERED A MINIMUM OF TWICE DAILY UNLESS DEEMED UNNECESSARY DUE TO WEATHER. WATER SHALL BE APPLIED AS PROVIDED IN THE CALTRANS STANDARD SPECIFICATIONS.
4. DUST PALLIATIVES MAY BE SUBSTITUTED FOR WATERING UPON THE APPROVAL OF THE CITY ENGINEER. DUST PALLIATIVES SHALL BE APPLIED AS PROVIDED IN SECTION 18 OF CALTRANS STANDARD SPECIFICATIONS.
5. ALL EXPOSED EARTH SURFACES SHALL BE PLANTED AT THE EARLIEST POSSIBLE TIME.
6. IF APPLICABLE, CONTRACTOR SHALL COMPLY WITH DUST CONTROL PERMIT AND PERFORMANCE REQUIREMENTS OF THE AIR POLLUTION CONTROL DISTRICT. COPIES OF THE APPROVED DUST CONTROL PLAN SHALL BE PROVIDED TO CITY ENGINEER AND MAINTAINED ON SITE.
7. CONTRACTOR TO PRACTICE DUST CONTROL MEASURES IN ACCORDANCE WITH THE CITY STANDARDS THROUGHOUT CONSTRUCTION.
8. VISIBLE DUST EMISSIONS (VDE) SHALL BE MINIMIZED TO THE EXTENT FEASIBLE WHERE SOIL IS BEING DISTURBED BY EQUIPMENT OR BY WIND.
9. DUST CONTROL MAY BE ACHIEVED BY APPLYING WATER BEFORE/DURING EARTHWORK AND ONTO UNPAVED TRAFFIC AREAS, APPLYING DUST PALLIATIVES, PHASING WORK TO LIMIT DUST, AND SETTING UP WIND FENCES TO LIMIT WIND BLOWN DUST.
10. SOIL STABILIZATION MAY BE REQUIRED AT REGULATED CONSTRUCTION SITES AFTER NORMAL WORKING HOURS AND ON WEEKENDS AND HOLIDAYS. THIS REQUIREMENT MAY ALSO APPLY TO INACTIVE CONSTRUCTION AREAS SUCH AS PHASED PROJECTS WHERE DISTURBED LAND IS LEFT UNATTENDED. APPLYING WATER TO FORM A VISIBLE CRUST ON THE SOIL AND RESTRICTING VEHICLE ACCESS ARE OFTEN EFFECTIVE FOR SHORT–TERM STABILIZATION OF DISTURBED SURFACE AREAS. LONG–TERM METHODS INCLUDING APPLYING DUST SUPPRESSANTS AND ESTABLISHING VEGETATIVE COVER MAY ALSO BE SUITABLE.
11. CARRYOUT AND TRACKOUT OF SOIL & SEDIMENT SHALL BE MINIMIZED TO THE EXTENT FEASIBLE. TRACKOUT MATERIAL MUST BE CLEANED UP AT LEAST DAILY, AND IMMEDIATELY IF IT EXTENDS MORE THAN 50 FEET FROM THE EXIT POINT ONTO A PAVED ROAD. METHODS MAY INCLUDE USING A BLOWER, DRY SWEEPING, MECHANICAL DEVICES OR STREET SWEEPING.
12. UNPAVED ACCESS AND HAUL ROADS, AS WELL AS UNPAVED VEHICLE AND EQUIPMENT TRAFFIC AREAS AT CONSTRUCTION SITES MAY REQUIRE DUST CONTROL. SPEED LIMIT SIGNS LIMITING VEHICLE SPEED MAY BE UTILIZED AS NECESSARY.
13. LITTER SHALL BE PREVENTED. ALL CONSTRUCTION MATERIAL AND DEBRIS SHALL BE LIMITED TO MATERIAL STORAGE AREAS AND TRASH AREAS.

NO.	DATE	REVISIONS
△	03/16/2020	GRADING SOUTH QUARRY

WALSH ENGINEERING
WALSHENGINEERING.NET (805) 319-4948
1108 GARDEN STREET, SUITE 202-204 SAN LUIS OBISPO, CA 93401

ROCKAWAY QUARRY
RECLAMATION PLAN
PACIFICA, CA

REGISTERED PROFESSIONAL ENGINEER
MATTHEW R. WALSH
C79026
CIVIL
STATE OF CALIFORNIA

DESIGNED BY: KKE
DRAFTED BY: KKE
CHECKED BY: MRW
DATE: 03/16/2020

EROSION AND SEDIMENT CONTROL DETAILS

SHEET
EC2.0

APPENDIX E

APPROVED JURISDICTONAL DETERMINATION OF THE WESTERN PARCEL

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DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

JAN 19 2018

Regulatory Division

Subject: File Number 2015-00286S

Mr. John Zentner
Zentner and Zentner
95 Linden Street, Suite 3
Oakland, California 94607

Dear Mr. Zentner:

This correspondence is in reference to your submittal of March 21, 2016, on behalf of Preserve at Pacifica LLC, requesting an approved jurisdictional determination of the extent of navigable waters of the United States and waters of the United States occurring on the 47-acre Pacifica Quarry Reclamation Project parcel, on the north side of Calera Creek in the City of Pacifica, San Mateo County, California (37.613675°N, -122.493104°W).

All proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States; or below the high tide line in tidal waters of the United States; or within the lateral extent of wetlands adjacent to these waters, typically require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 *et seq*.). Waters of the United States generally include the territorial seas; all traditional navigable waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters subject to the ebb and flow of the tide; wetlands adjacent to traditional navigable waters; non-navigable tributaries of traditional navigable waters that are relatively permanent, where the tributaries typically flow year-round or have continuous flow at least seasonally; and wetlands directly abutting such tributaries. Where a case-specific analysis determines the existence of a "significant nexus" effect with a traditional navigable water, waters of the United States may also include non-navigable tributaries that are not relatively permanent; wetlands adjacent to non-navigable tributaries that are not relatively permanent; wetlands adjacent to but not directly abutting a relatively permanent non-navigable tributary; and certain ephemeral streams in the arid West.

All proposed structures and work, including excavation, dredging, and discharges of dredged or fill material, occurring below the plane of mean high water in tidal waters of the United States; in former diked baylands currently below mean high water; outside the limits of mean high water but affecting the navigable capacity of tidal waters; or below the plane of ordinary high water in non-tidal waters designated as navigable waters of the United States, typically require Department of the Army authorization and the issuance of a permit under Section 10 of the Rivers and Harbors Act of 1899, as amended (33 U.S.C. § 403 *et seq*.). Navigable waters of the United States generally include all waters subject to the ebb and flow of the tide; and/or all waters presently used, or have been used in the past, or may be susceptible for future use to transport interstate or foreign commerce.

The enclosed delineation map titled *Pacifica Quarry Reclamation Project*, in 3 sheets date certified January 8, 2018 (enclosure 1) accurately depicts the extent and location of wetlands within the boundary area of the site that are subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act. This approved jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of July 12, 2016, and a review of other data included in your submittal. This approved jurisdictional determination will expire in five years from the date of this letter unless new information or a change in field conditions warrants a revision to the delineation map prior to the expiration date. The basis for this approved jurisdictional determination is explained in the enclosed *Approved Jurisdictional Determination Form* (enclosure 2). This approved jurisdictional determination is presumed to be consistent with the official interagency guidance of June 5, 2007, interpreting the Supreme Court decision *Rapanos v. United States*, 126 S. Ct. 2208 (2006).

You are advised that the approved jurisdictional determination may be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. § 331 (65 Fed. Reg. 16,486; Mar. 28, 2000) and outlined in the enclosed flowchart and *Notification of Administrative Appeal Options, Process, and Request for Appeal* (NAO-RFA) Form (enclosure 3). If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to this office for reconsideration of this decision. If you do not provide new information to this office, you may elect to submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process; the completed NAO-RFA Form must be submitted directly to the Appeal Review Officer at the address specified on the NAO-RFA Form. You will relinquish all rights to a review or an appeal unless this office or the Division Engineer receives new information or a completed NAO-RFA Form within 60 days of the date on the NAO-RFA Form. If you intend to accept the approved jurisdictional determination, you do not need to take any further action associated with the Administrative Appeal Process.

You may refer any questions on this matter to Greg Brown of my Regulatory staff by telephone at 415-503-6791 or by e-mail at gregory.g.brown@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: http://www.spn.usace.army.mil/Missions/Regulatory.aspx.

Sincerely,

Katerina Galacatos
fr Rick M. Bottoms, Ph.D.
Chief, Regulatory Division

Enclosures

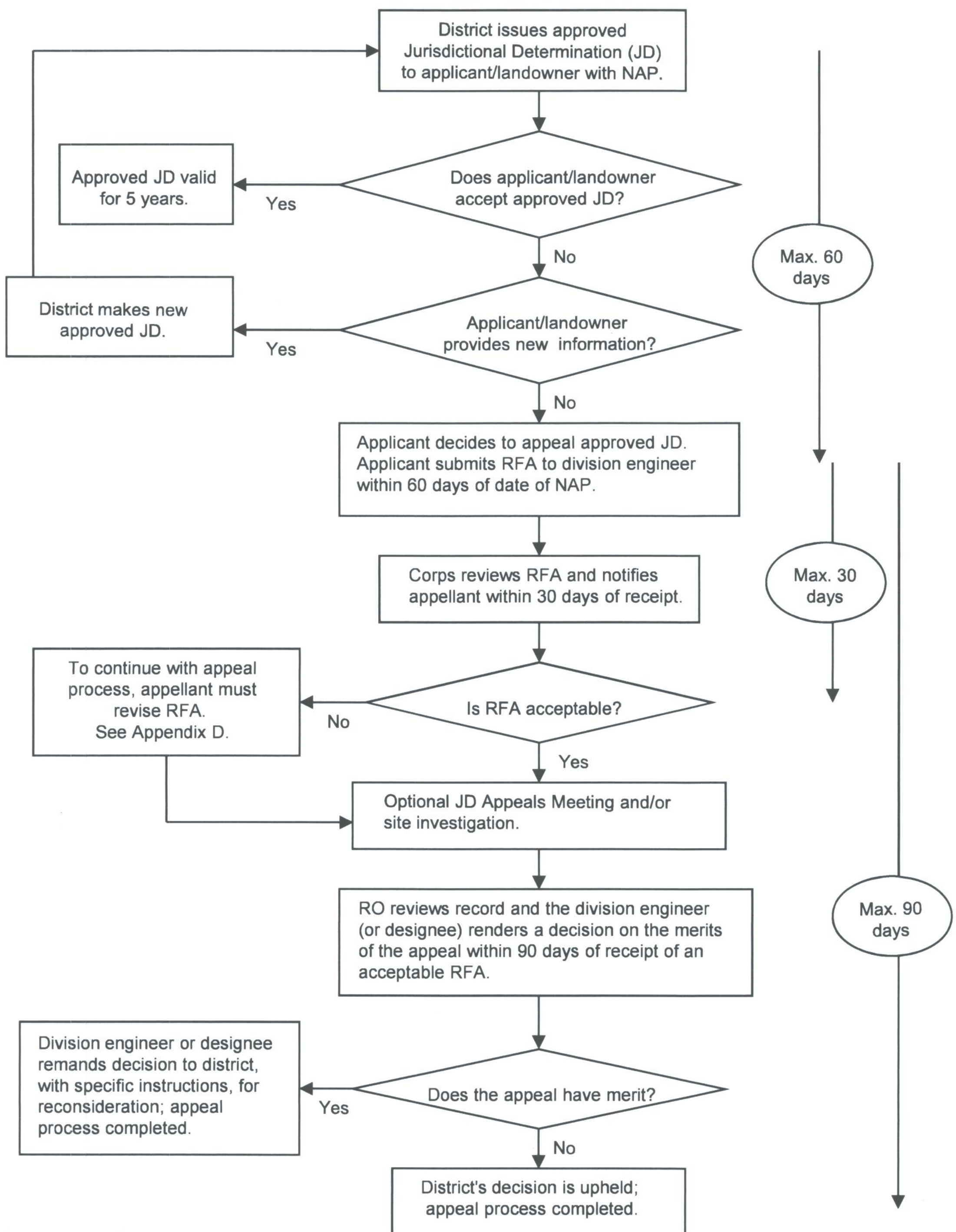
Copy Furnished (w/ encls):

Paul Heule, Preserve at Pacifica LLC, 231 West Fulton, Grand Rapids, MI 49053

Copies Furnished (w/ encl 1 only):

CA RWQCB, Oakland, CA
U.S. EPA, San Francisco, CA (Attn: Jennifer Siu)

Administrative Appeal Process for Approved Jurisdictional Determinations



Appendix C

Enclosure 1

LEGEND

- CORPS JURISDICTIONAL AREAS
- DATA POINT
- PROPERTY LINE

CORPS JURISDICTIONAL AREAS

HABITAT TYPE	ACRES
QUARRY PIT SEASONAL WETLANDS	0.209
EAST FLANK SEASONAL WETLANDS	0.036
TOTAL JURISDICTIONAL AREAS	**0.245**

Disclaimer: Section 404 Jurisdictional Map

This map and the accompanying details, exhibit conditions on the site at the time of completion of the delineation. For various reasons, conditions on a site may change, which may affect site wetland boundaries. Delineation maps generally expire five years after approval by the U.S. Army Corps of Engineers (Corps). Because regulations governing delineations are subject to change, this map should be reviewed by a qualified wetland consultant to ensure accuracy if not submitted to the Corps within six (6) months of preparation.

Field Work By: Zentner and Zentner, 07.08.15, 07.14.15

U.S. Army Corps of Engineers San Francisco District Regulatory Division

Extent of U.S. Army Corps of Engineers' Jurisdiction Pursuant to Section 404 Clean Water Act

Pacifica Quarry Reclamation Project
Pacifica, San Mateo County, California

Study Area Boundary

Accurate as depicted in legend

File ID: 2015-00286S　Date: January 8, 2018　Sheet 1 of 3

ZENTNER and ZENTNER
Land Planning and Restoration
95 Linden Street, Ste. 6, Oakland, CA 94607
Phone: 510.622.8110 Fax: 510.622.8116

FIGURE 4
DELINEATION OVERVIEW

PACIFICA QUARRY
PACIFICA, SAN MATEO COUNTY

N

0 100' 200'
1" = 200'

CARTOGRAPHER:
Christopher J. Long

AERIAL SOURCE: 8/24/15 Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

PROJECT NO. 1023

FILE: D:\Graphic Designer\My Documents\PROJECTS\1000-1100\1023 Pacifica Quarry\Adobe\DELINEATION\ Delin 03-07-16 overview

DATE: 03/07/2016, 02:01 pm

WETLAND AREAS

HABITAT TYPE	ACRES
A. SEASONAL WETLAND	0.180
B. SEASONAL WETLAND	0.003
C. SEASONAL WETLAND	0.007
D. SEASONAL WETLAND	0.008
E. SEASONAL WETLAND	0.008
F. SEASONAL WETLAND	0.004
QUARRY PIT TOTAL	0.209

ZENTNER and ZENTNER
Land Planning and Restoration
95 Linden Street, Ste. 6, Oakland, CA 94607
Phone: 510.622.8110 Fax: 510.622.8116

FIGURE 4.1
QUARRY PIT DELINEATION

PACIFICA QUARRY
PACIFICA, SAN MATEO COUNTY

N
0 30' 60'
1" = 60'

CARTOGRAPHER:
Christopher J. Long

AERIAL SOURCE: 8/24/15 Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

PROJECT NO. 1023

FILE: D: PROJECTS\1023\Adobe\Delin QP.ai

DATE: 11.21.2016

WETLAND AREAS

HABITAT TYPE	ACRES
H. SEASONAL WETLAND	0.019
I. SEASONAL WETLAND	0.002
J. SEASONAL WETLAND	0.015
EAST FLANK TOTAL	0.036

ZENTNER and ZENTNER
Land Planning and Restoration
95 Linden Street, Ste. 6, Oakland, CA 94607
Phone: 510.622.8110 Fax: 510.622.8116

FIGURE 4.2
EAST FLANK
DELINEATION

PACIFICA QUARRY
PACIFICA, SAN MATEO COUNTY

N
0 30' 60'
1" = 60'

CARTOGRAPHER:
Christopher J. Long

AERIAL SOURCE: 8/24/15 Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

PROJECT NO. 1023

FILE: D: PROJECTS\1023\Adobe\Delin eflank.ai

DATE: 11.21.2016

Enclosure 2

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): January 8, 2018

B. DISTRICT OFFICE: San Francisco District **FILE NUMBER:** 2015-00286S
File Name: Pacifica Quarry Reclamation
Waterbody Name: Calera Creek

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State: California County/parish/borough: San Mateo City: Pacifica
Center coordinates of site: (lat/long (in degree decimal format): Lat: 37.613675 N Long: -122.493104 W
Pick List (lat/long (in degree decimal format): Lat: Pick Long: Pick
Pick List (lat/long (in degree decimal format): Lat: Pick Long: Pick
Universal Transverse Mercator:
Name of nearest waterbody: Calera Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Pacific Ocean
Name of watershed or Hydrologic Unit Code (HUC): 18050006
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☒ Office (Desk) Determination. Date: April 10, 2017
☒ Field Determination. Date(s): July 12, 2016

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There are no "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*].
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. ***Explain:***

B. CWA SECTION 404 DETERMINATION OF JURISDICTION

There are "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. Waters of the U.S:
a. Indicate presence of waters of U.S. in review area (check all that apply): [1]

☐ TNWs, including territorial seas
☐ Wetlands adjacent to TNWs
☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
☐ Non-RPWs that flow directly or indirectly into TNWs
☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
☒ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
☐ Impoundments of jurisdictional waters
☐ Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area
Non-wetland waters: linear feet: width (ft) and/or acres. (other comments:)
Wetlands: 0.245 acres. (other comments:)

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual
Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):[3]
☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. ***Explain:***

---

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**

   Identify TNW:

   Summarize rationale supporting determination that waterbody is a TNW:

2. **Wetland adjacent to TNW**

   Summarize rationale supporting conclusion that wetland is "adjacent":

B CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) **General Area Conditions:**

   Watershed size: 1150 acres
   Drainage area: 94 acres
   Average annual rainfall: 29.5 inches
   Average annual snowfall: 0 inches

   (ii) **Physical Characteristics:**

   a. **Relationship with TNW:**

   ☒ Tributary flows directly into TNW
   ☐ Tributary flows through Pick List tributaries before entering TNW

   Project waters are 1 (or less) river miles from TNW.
   Project waters are 1 (or less) river miles from RPW.
   Project waters are 1 (or less) aerial (straight) miles from TWN.
   Project waters are 1 (or less) aerial (straight) miles from RPW.
   Project waters cross or serve as a state boundary. ***Explain:***

   Identify flow route to TNW[5]: from wetlands 100-400 feet to Calera Creek, then 500-1500 feet to Pacific Ocean
   Tributary stream order, if known:

   b. **General Tributary Characteristics (check all that apply)::**

   Tributary is:

   ☐ Natural: (comment if needed)
   ☐ Artificial (man-made): ***Explain:***
   ☒ Manipulated (man-altered): ***Explain:*** channel realigned to the north of historic channel

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[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

Tribluary properties with respect to top of bank (*estimate*):

Average width: feet (measured from top of bank to top of bank)
Average depth: feet. (measured from OHWM to top of bank)
Average side slopes: Pick List

Primary tributary substrate composition (*check all that apply*):

- ☐ Silt:
- ☐ Sand:
- ☐ Clay:
- ☐ Cobbles:
- ☐ Gravel:
- ☐ Muck:
- ☐ Bedrock:
- ☐ Concrete:
- ☐ Vegetation (Type / % cover):
- ☐ Other (Explain):

Tributary condition/stability [e.g., highly eroding, sloughing banks]. ***Explain***: .

Presence of run/riffle/pool complexes. ***Explain***: .

Tributary geometry: Relatively Straight .

Tributary gradient (approximate average slope): %

c. Flow Information

Tributary provides for: Perennial flow
Estimate average number of flow events in review area/year: Pick List
Describe flow regime: perennial flow due in part to outflow from adjacent wastewater plant.
Other information on duration and volume: .
Surface flow is: Pick List. Characteristics: .
Subsurface flow: Pick List. ***Explain findings***: .
☐ Dye (or other) test performed:. .

Tributary has (check all that apply):
- ☒ Bed and banks
- ☒ OHWM[6] (check all indicators that apply):
  - ☐ clear, natural line impressed on the bank
  - ☐ changes in the character of soil
  - ☐ destruction of terrestrial vegetation
  - ☐ vegetation matted down, bent, or absent
  - ☐ leaf litter disturbed or washed away
  - ☐ multiple observed or predicted flow events
  - ☐ water staining
  - ☐ abrupt change in plant community. ***Explain***:
  - ☐ other (list):
  - ☐ the presence of litter and debris
  - ☐ shelving
  - ☐ the presence of wrack line
  - ☐ sediment sorting
  - ☐ scour
  - ☐ sediment deposition
- ☐ Discontinuous OHWM.[7] ***Explain***:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (***check all that apply***):
- ☐ High Tide Line indicated by:
  - ☐ oil or scum line along shore objects
  - ☐ fine shell or debris deposits (foreshore)
  - ☐ physical markings/characteristics
  - ☐ tidal gauges
  - ☐ other (***list***):

OR

- ☐ Mean High Water Mark indicated by:
  - ☐ survey to available datum
  - ☐ physical markings
  - ☐ vegetation lines/changes in vegetation types

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[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain: .

Identify specific pollutants, if known:

(iv) Biological Characteristics. Channel supports (*check all that apply*):

- ☒ Riparian corridor. Characteristics (type, average width):
- ☐ Wetland fringe. Characteristics:
- ☐ Habitat for:
  - ☒ Federally Listed species. ***Explain findings***: CA red legged frogs and San Francisco garter snakes
  - ☐ Fish/spawn areas. ***Explain findings***:
  - ☐ Other environmentally-sensitive species. ***Explain findings***:
  - ☐ Aquatic/wildlife diversity. ***Explain findings***:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties

Wetland size: 0.245 acres

Wetland type. ***Explain***:

Wetland quality. ***Explain***:

Project wetlands cross or serve as state boundaries. ***Explain***:

(b) General Flow Relationship with Non-TNW:

Flow is: Intermittent Flow Explain: seasonal wetlands primarily during wet winter season

Surface flow is: Pick List

Characteristics:

Subsurface flow: Pick List ***Explain findings***:

- ☐ Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☒ Not directly abutting
  - ☒ Discrete wetland hydrologic connection. ***Explain***: wetlands E, F, H, I, J directly upslope of creek
  - ☒ Ecological connection. ***Explain***: wetlands and creek both used by federally listed spp.
  - ☐ Separated by berm / barrier. ***Explain***:

(d) Proximity (Relationship) to TNW

Project wetlands are 1 (or less) river miles from TNW.

Project waters are: 1 (or less) aerial (straight) miles from TNW.

Flow is from: wetland to navigable waters

Estimate approximate location of wetland as within the: 500-year or greater floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). ***Explain***:

Identify specific pollutants, if known: ***Explain***:

(iii) Biological Characteristics. Wetland supports (*check all that apply*):

- ☐ Riparian buffer. Characteristics (type, average width):
- ☐ Vegetation type/percent cover. ***Explain***:
- ☒ Habitat for:
  - ☒ Federally Listed species. ***Explain findings***: CA red legged frogs and San Francisco garter snakes
  - ☐ Fish/spawn areas. ***Explain findings***:
  - ☐ Other environmentally-sensitive species. ***Explain findings***:
  - ☐ Aquatic/wildlife diversity. ***Explain findings***:

3. Characteristics of all wetlands adjacent to the tributary (if any)

(i) All wetland(s) being considered in the cumulative analysis: 12

(ii) Approximately (1.99) acres in total are being considered in the cumulative analysis.

(iii) **For each wetland associated with the reach or waterbody being analyzed in this form, specify the following:**

Number/Name[8]	Directly abuts (Yes/No)	Size
A, B, C, D, E, F, H, I, J	No	0.245 acres
south floodplain wetlands (3)	No	1.74 acres
	Pick	acres
	Pick	acres
	Pick	acres
	Pick	acres

Number/Name	Directly abuts (Yes/No)	Size
	Pick	acres
	Pick	acres
	Pick	acres
	Pick	acres
	Pick	acres
	Pick	acres

(iv) Summarize overall biological, chemical and physical functions being performed: Wetlands likely provide typical wetland functions (e.g. biogeochemical cycling, nutrient transformation, intercepting surface runoff and removing or retaining inorganic nutrients, and reducing suspended sediments) in area impacted by past quarry operation and therefore subject to increased erosion, soil and water contamination, and reduced infiltration/increased runoff. In addition, wetlands and creek provide aquatic habitat for federally listed species (California red-legged frog and potentially San Francisco garter snake).

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. ***Explain*** findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D

[8] In the Number/Name column, add the number and/or name that you have given the wetland being referred to in the table. Example, you are referring to a wetland on your wetland delineation map number 6, that you call wetland No.3 on a reach you refer to as Putah Creek. For this wetland you would add to the table in the Number/Name column, something like the following: (No. 3, Putah Ck., Map # 6).

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** *Explain* findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

3 **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** *Explain* findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

As stated above in Section III.B.3, the tributary and its adjacent wetlands likely provide value by performing a variety of functions: biogeochemical cycling (i.e. biologic, physical, and chemical transformations of various nutrients within the soils and water); flood desynchronization (i.e. providing for receiving, storing, and releasing of water); biodiversity (i.e. environmental variation which provides for diverse plant and animal habitat); intercepting surface runoff and removing or retaining nutrients and contaminants; reducing suspended sediments delivered to downstream waterways; and ground water replenishment. Of these functions, biodiversity is known to be provided by wetlands on the project site as listed species (CA red-legged frog) have been documented in Calera Creek and in 1 or more of the adjacent wetlands . Based on limited information, potential and observed functions and values provided by the tributary and its adjacent wetlands, are translated into increased food web production, flood retention, and improved water quality delivered to downstream waterways and consequently to the TNW. Therefore, it is likely that the channel in combination with all of its adjacent wetlands significantly affect the chemical, physical, and biological integrity of downstream TNWs. No specific studies have been completed to determine the magnitude of functions and values that are being performed.

The information above supports the presence of a significant nexus between the seasonal wetlands on-site and the RPW (Calera Creek) which is directly tributary to a TNW (Pacific Ocean). The seasonal wetlands are closeley adjacent (max 400 feet away) and upslope of Calera Creek and are connected to the RPW hydrologically (via overland sheet flow or shallow subsurface drainage) and/or ecologically (via the documented use of Calera Creek and 1 or more adjacent wetlands by federally listed California red-legged frogs) . Based on the limited information available, likely functions and values provided by the adjacent wetlands are translated to Calera Creek and thence the Pacific Ocean. The tributary in combination with all of its adjacent wetlands likely significantly affect the chemical, physical, and biological integrity of nearby TNW.

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

☐ 1. **TNWs and Adjacent Wetlands**. Check all that apply and provide size estimates in review area:

- ☐ TNWs: linear feet width (ft), and/or acres.
- ☐ Wetlands adjacent to TNWs: acres.

☐ 2. **RPWs that flow directly or indirectly into TNWs.**

- ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
- ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

  Provide estimates for jurisdictional waters in the review area (*check all that apply*)

  - ☐ Tributary waters: linear feet width (ft).
  - ☐ Other non-wetland waters: acres.

    Identify type(s) of waters: .

☐ 3. **Non-RPWs[9] that flow directly or indirectly into TNWs.**

- ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

  Provide estimates for jurisdictional waters within the review area (*check all that apply*):

  - ☐ Tributary waters: linear feet width (ft).
  - ☐ Other non-wetland waters: acres.

    Identify type(s) of waters: .

[9]See Footnote # 3.

☐ 4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**

☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in **Section III.D.2**, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in **Section III.B** and rationale in **Section III.D.2**, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

☒ 5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**

☒ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at **Section III.C**.

Provide acreage estimates for jurisdictional wetlands in the review area: 0.245 acres.

☐ 6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**

☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at **Section III.C**.

Provide estimates for jurisdictional wetlands in the review area: acres.

☐ 7. **Impoundments of jurisdictional waters.**[10]

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

☐ Demonstrate that impoundment was created from "waters of the U.S.," or

☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or

☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (*CHECK ALL THAT APPLY*):[11]

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.

☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.

☐ which are or could be used for industrial purposes by industries in interstate commerce.

☐ Interstate isolated waters. Explain: .

☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (***check all that apply***)

☐ Tributary waters: linear feet width (ft).

☐ Other non-wetland waters: acres.

Identify type(s) of waters: .

☐ Wetlands: acres.

[10] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

[11] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.

☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.

☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).

☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. ***Explain***: .

☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (***check all that apply***):

☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).

☐ Lakes/ponds: acres.

☐ Other non-wetland waters: acres. List type of aquatic resource: .

☐ Wetlands: acres.

☐

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Pacifica Quarry Reclamation wetland delineation report (Zentner and Zentner, March 2016).

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

☒ Office concurs with data sheets/delineation report. included with above report

☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☒ U.S. Geological Survey Hydrologic Atlas: .

☒ USGS NHD data.

☒ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24K Montara Mountain, CA.

☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .

☒ National wetlands inventory map(s). Cite name: web data.

☐ State/Local wetland inventory map(s): .

☒ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☐ Photographs: ☐ Aerial (Name & Date): .

☐ Other (Name & Date): .

☐ Previous determination(s). File no. and date of response letter: .

☐ Applicable/supporting case law: .

☐ Applicable/supporting scientific literature: .

☒ Other information (please specify): Pacifica Quarry Reclamation Project Biological Assessment (Zentner and Zentner May 2017).

☐

B. ADDITIONAL COMMENTS TO SUPPORT JD:

☐

Enclosure 3	NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL	
Applicant: Paul Heule, Preserve at Pacifica LLC	File Number: 2015-00286S	Date: 1-8-2018
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/cecw/pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Katerina Galacatos
South Branch Chief, Regulatory Division
San Francisco District, U.S. Army Corps of Engineers
1455 Market Street, 16th floor
San Francisco, CA 94103-1398
Phone: (415) 503-6778 Email: Katerina.galacatos@usace.army.mil

If you only have questions regarding the appeal process you may also contact:

Thomas J. Cavanaugh
Administrative Appeal Review Officer,
U.S. Army Corps of Engineers
South Pacific Division
1455 Market Street, 2052B
San Francisco, California 94103-1399
Phone: (415) 503-6574 Fax: (415) 503-6646
Email: thomas.j.cavanaugh@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

______________________ Signature of appellant or agent.	Date:	Telephone number:

Appendix I

ZENTNER and ZENTNER
Land Planning and Restoration

Pacifica Quarry
Reclamation Project
Historical and Cultural Resources Assessment

Summary

The Pacifica Quarry has been assessed for archaeological and cultural resources at numerous points over the past almost 40 years. Holman (2002) most recently assessed the Quarry property as part of the environmental review process for a previously proposed development project. They determined that the Quarry property has been significantly altered as a result of mining and other activities, which began more than two centuries ago.

Two pre-historic sites are located within the Quarry property on the eastern edge of the property near Highway 1. However, both sites are heavily disturbed and may represent more recent deposits; that is, the soils currently at these sites were excavated elsewhere and the soils deposited on the Quarry property, retaining the artifacts reflecting a pre-historic condition. In any case, the proposed reclamation work will not affect these resources as they are some distance from the reclamation project site. Holman also noted that the property's previous function as Rockaway Quarry was a significant part of Pacifica's history but that there are no remaining significant features of the Rockaway Quarry. In short, the proposed project will not affect any historical or cultural resources.

I. Introduction

A. Purpose

The reclamation of the Pacifica Quarry (the project) will be completed pursuant to the State Mining Reclamation Act (SMARA) of 1975, as amended, and the City of Pacifica Mining and Reclamation Ordinance. The project includes final grading, drainage, and revegetation measures to leave the Quarry in a condition that is safe, stable, and readily adaptable to alternate land uses as directed by SMARA.

The Pacifica Quarry has undergone a number of historical and cultural resource assessments. This report will provide a summary of these assessment's findings.

B. Location

The project is located in San Mateo County in the City of Pacifica approximately 10 miles southwest of San Francisco (**Figure 1**). The project is located within the Montara Mountain USGS 7.5 quadrangle.

The former Quarry (the project site) is a part of the approximately 87-acre Pacifica Quarry property. The Quarry property is comprised of two parcels: the western parcel holds the Quarry and the project site, while the Eastern Parcel, also known as the "Flats", was graded in the past for Quarry uses and other purposes (see below for more detail) but is not a part of the reclamation project. The two parcels are separated by a parcel owned by the City of Pacifica, which includes Calera Creek (repositioned from the interior of the Eastern Parcel in 2000) and a paved walking/biking trail.

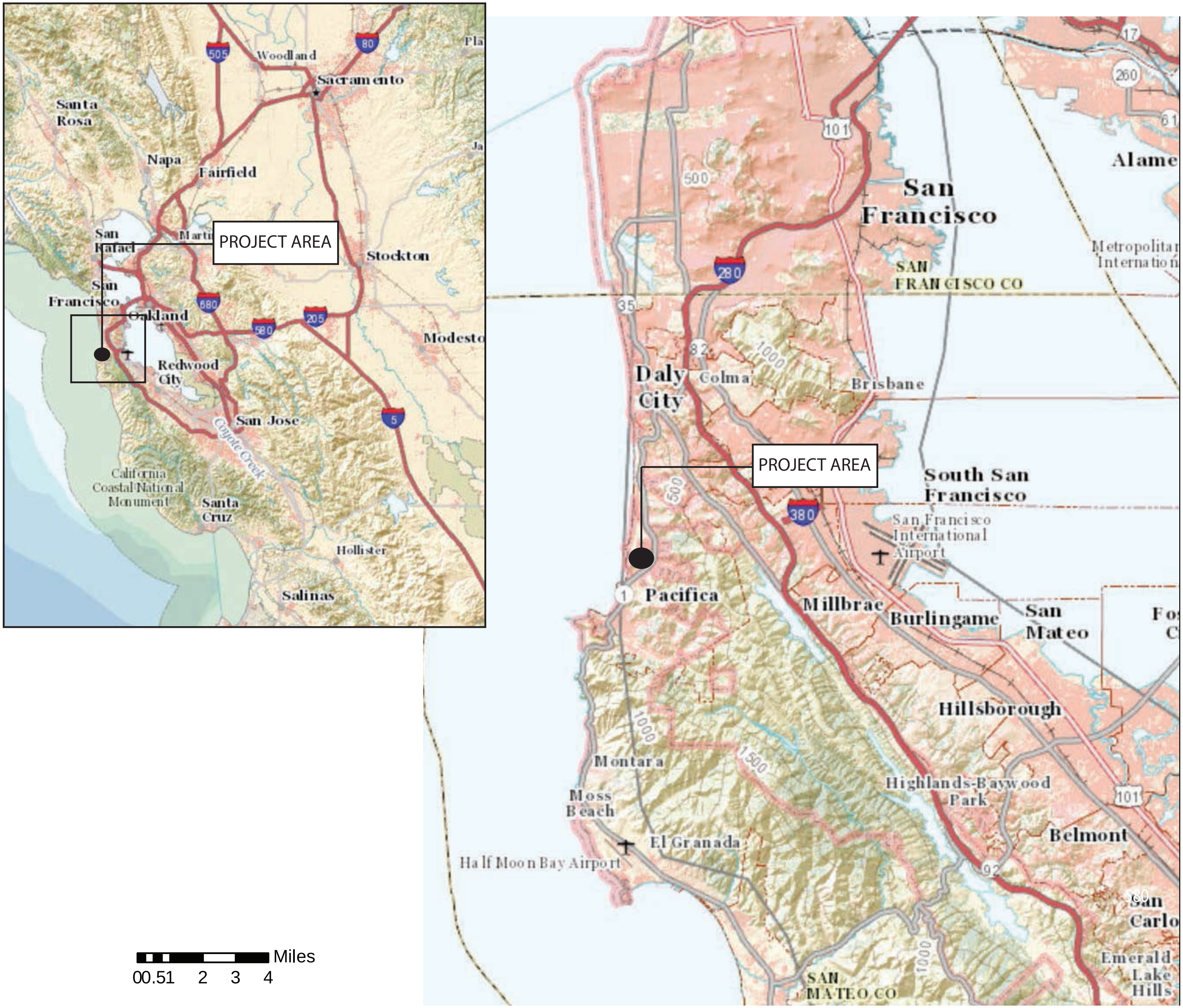
The project site is accessed from the northeastern end of San Marlo Way. Secondary access is across the Eastern Parcel by an access road that exits Highway One south-bound 0.4 miles past the Highways intersection with Reina Del Mar Avenue.

To the south, the project site is bordered by San Marlo Drive and the Rockaway Beach area which includes public beach access, retail shops, restaurants, and a hotel. The Pacific Ocean forms the western border of the property. Mori Point, part of the GGNRA, is located north of the project site. A city-owned parcel that contains a wastewater treatment facility is east of the site (**Figure 2**).

C. Site Description

The project site is a former mine dominated, by weedy, non-native plant species. For ease of discussion, the site includes the following locations: the Quarry Face (the scarp left by mining in the parcel center), the Quarry Pit (the bowl remaining in the bottom of the old quarry), the East Flank (the hillside comprised on old quarry debris on the east slope of the quarry), the Hilltop (the area located above the Quarry Face and East Flank), and the Southern Bluff, the old edge of the Quarry on the south (**Figure 3**).

The Quarry Face is predominately an exposed and crumbling rock slope with approximately 170 feet in elevation gain. The lower two thirds of the Face is steep, comprised of loose rock



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Land Planning and Restoration

95 Linden Street, Ste. 3, Oakland, CA 94607
Phone: 510.622.8110 ax: 510.622.8116

FIGURE 1
PROJECT VICINITY

REVISIONS:	BY:

PACIFICA QUARRY CULVERT
PACIFICA, SAN MATEO COUNTY

N

SOURCE:
ArcGIS Map

FILE:
D:\Graphics\PROJECTS\1000-1100\1023 Pacifica Quarry\Adobe

DATE: 4.17.15

PROJ #: 1023

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FIGURE 2
PROJECT
LOCATION

REVISIONS:	BY:

PACIFICA QUARRY
PACIFICA, SAN MATEO COUNTY

N

SOURCE:
Project files and Google Earth

FILE: D:\Graphic Designer\My Documents\PROJECTS\1000-1100\1023 Pacifica Quarry\Adobe\RECLAMATION PLAN\Project Location.11x17.2015.11.24

DATE:
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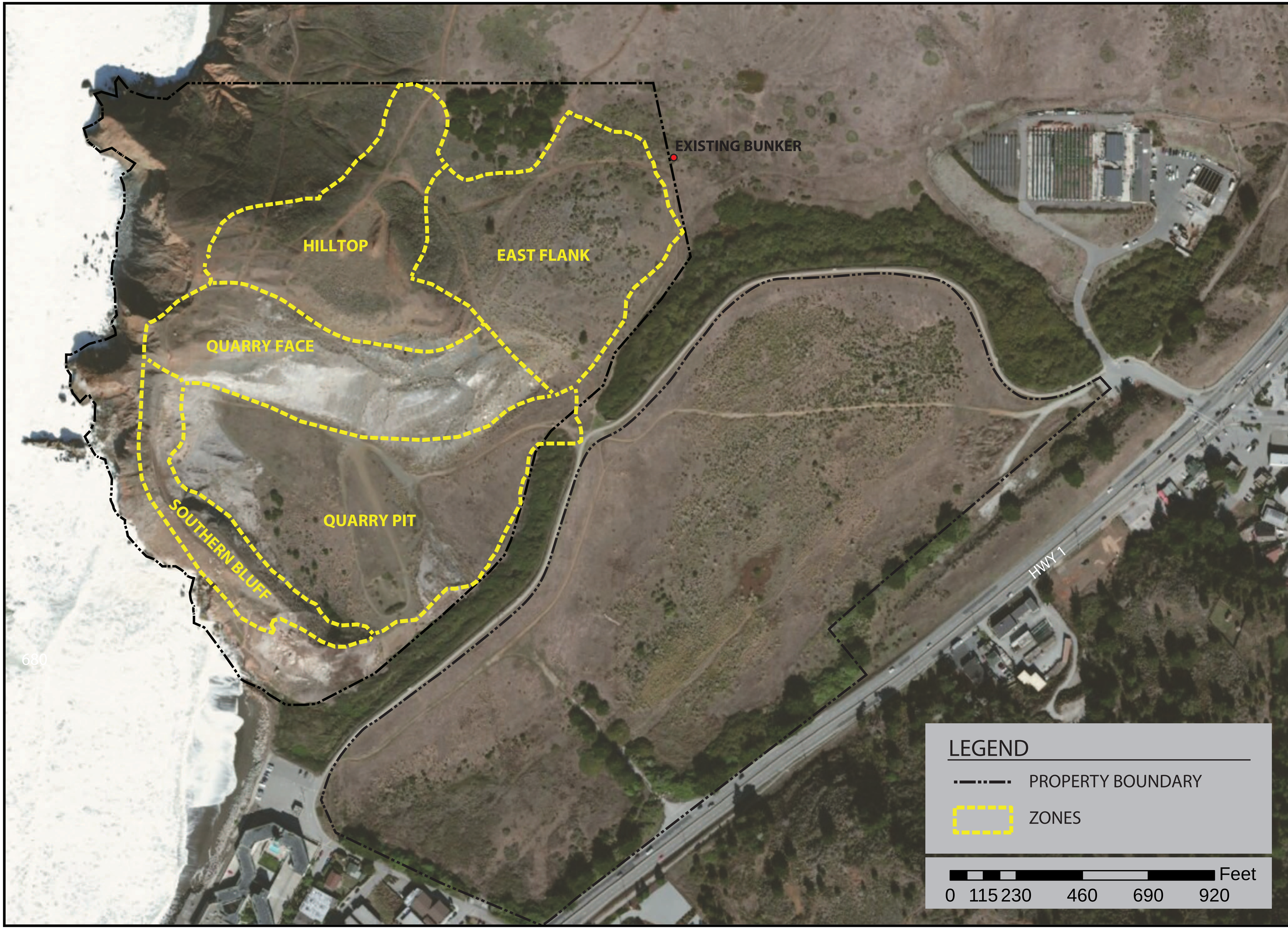

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FIGURE 3
SITE PLAN

REVISIONS:	BY:

PACIFICA QUARRY
PACIFICA, SAN MATEO COUNTY

SOURCE:
Project Files and Google Earth

FILE: D:\Graphic Designer\My Documents\PROJECTS\1000-1100\1023 Pacifica Quarry\Adobe\RECLAMATION PLAN\site plan2 01-25-16

DATE:
01/27/2016, 11:04 am

and soil, and is sparsely vegetated. Approximately 120 feet above the old quarry floor, two thirds of the way up the Face, an access road cuts horizontally across the Face. Above the road, the Face climbs another 40 feet at a slightly lesser incline. The access road and upper slope have moderate vegetation cover. Vegetation is predominately non-native and is dominated by pampas grass (*Cortaderia selloana*).

The Quarry Pit is predominately flat and vegetated with non-native species. Steep slopes, including the Face, surround the Pit to the north, west, and south. To the east, the Quarry Pit abuts the City-owned parcel and Calera Creek. An approximately 7,800 square foot, 10 foot deep depression is located near the eastern edge. North of the depression is an elevated, predominately exposed rock surface. Approximately 20 cypress (*Cupressus* spp.) trees are located along the southern border of the Quarry Pit. The Quarry Pit is dominated by non-native vegetation including teasel (*Dipsacus sativus*), pampas grass, and perennial pepperweed (*Lepidium latifolium*).

The East Flank is steeply sloped and is comprised predominately of exposed and unstable rock and gains approximately 220 feet in elevation. At the bottom of the East Flank an access road cuts across and up the slope. The road cuts north across the East Flank and then turns south and continues across the Face. The grade of the slope varies throughout the section with several small, relatively flat, plateaus. The section is scarcely vegetated; where vegetation is present, pampas grass is the predominate species.

The Hilltop is located above the Quarry Face and East Flank and south of Mori Point. The Hilltop is relative flat and smooth with two mounds protruding approximately 20 feet about the surface. In contrast with its adjacent landscapes, the surface of the Hilltop has soil and moderate vegetation cover. Pampas grass and coyote bush are the predominate species.

The Southern Bluff abuts the Pacific Ocean to the south, is steeply sloped, and is comprised of predominantly exposed and unstable rock slopes. The slopes are sparsely vegetated with pampas grass. The ridge has moderate vegetation cover comprised predominately of non-native species including fennel (*Foeniculum vulgare*) and mustard (*Brassica nigra*).

II. Project Description

The proposed Reclamation Plan provides for the grading, drainage and restoration of the Pacifica Quarry pursuant to State requirements for mine reclamation. The plan tiers off the approved 1996 Reclamation Plan, which also underwent State review.

The proposed reclamation plan will result in the cut of approximately 108,300 cubic yards (CY) or earth and fill of approximately 107,700 CY of earth. See Pacifica Quarry Reclamation Plan for additional project information.

III. Methods

Holman and Associates Archaeological Consultants (Holman) preformed a historical and cultural assessment of the Pacifica Quarry Property in 2002. Because the property has remained relatively untouched since this assessment, its conclusions remain applicable. The methods and results of the Holman assessment are discussed below.

The Holman cultural resources evaluation of the Quarry property began with a search of relevant records, maps, and archives. The records search was conducted for the Quarry property as a whole and found that the site had been surveyed for cultural resources numerous times previously (Desgrandchamp 1978, Flynn1978, Moratto 1974, Buss 1981, Melandry 1980, 1986, Holman 1987, O'Connor and Melandry 1988, Orlins and Schwaderer 1994).

Northwest Information Center (NWIC) records search showed at least nine reports of archaeological surveys that covered part of the Quarry or immediately adjacent lands. Two of these detected and recorded prehistoric archaeological sites within the Quarry Property: SMA-162 and SMA-268 (described in more detail below).

Holman (2002) also completed a records check that examined the National Register of Historic Places data, the California Register, California Historical Landmarks, California Points of historical Interest, the California Inventory of Historic Resources, and other historic maps and archives.

Additionally, Holman completed a "general surface survey" of the project site. Because of the heavily disturbed nature of the property, the reconnaissance survey focused on attempting to locate and examine undisturbed native soil. Holman concluded that the quarry itself and the immediately surrounding area have been obviously and completely altered. As well, the flats area south of Calera Creek, from the highway's berm to the Creek, appears to have been entirely altered. The Calera Creek riparian corridor had been recently relocated from the Eastern Parcel and restored (at the time of the Holman surveys) and the new creek bed excavated and reinforced in some areas. The western edge of the property, where the topsoil/subsoil/bedrock profile was exposed, and some of the east and west facing slopes were the only areas that contain native soils.

Additional archival research was undertaken using in-house resources and the Archives of the San Mateo County Historical Association (SMCHA). Historic maps from 1868 to 1959 were examined. Holman walked wide transects across the Eastern Parcel, the approximate northern property line walked near the crest of the ridge, contour transects walked on the hillsides, and the quarry was examined from afar. Prehistoric sites SMA-268 and SMA-162 were relocated.

IV. Results

A. Introduction

Despite a location that would generally support archaeological resources, Holman and the previous analyses found only two prehistoric sites, both located on the Eastern Parcel and both likely derivative of other locations. Additionally, although the Rockaway Quarry was an historically important feature to Pacifica and the region, little cultural evidence of this feature remains on-site, aside from the quarry pit itself. No sacred sites or other potentially significant historic resources were identified by the Holman (2002) or other analyses or was evident in the records of the Native American Heritage Commission, San Mateo County Historical Association, or Pacifica Historical Society.

B. Prehistoric Sites

As noted above, there are two prehistoric sites recorded within the Quarry property: SMA-162 and SMA-268. As the site is highly disturbed and has undergone numerous surveys in the past, additional prehistoric resources within the property are not likely.

Photo 2: View from the top of the Quarry looking northeast; Calera Creek looking upstream is on the left. The approximate locations of SMA-162 and SMA-268 are in the photo background. July 2015

1. SMA-162

SMA-162 is located in the man-made fill berm located on the west side of Highway 1 and south of Reina Del Mar Avenue (**Figure 4**) on the Eastern Parcel. Moratto (1974) first identified this site; due to its strange and diverse composition, Moratto determined that the site was not likely an in situ prehistoric site; that it did not have its original location or composition. In 1978, Desgrandchamp also located and recorded site SMA-162. Desgrandchamp researched Caltrans records and determined that items within the site are the "remains of one or more archaeological site originally located in Sharp Park Area" that had "been transported during road construction and stockpiled at Reina del Mar as fill material" (Desgrandchamp 1978a).

The project will not effect this prehistoric site as it is located on the Eastern Parcel, outside of the project boundary.

2. SMA-268

SMA-268, is located north of Calera Creek and west of Highway 1; it was formerly under the highway and western berm (Figure 4). It likely still extends under the highway berm. The site was first formally recorded in 1986 during a Caltrans survey, but has been known since at least

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FIGURE 4
PRE-HISTORIC CULTURAL RESOURCES

REVISIONS:	BY:

PACIFICA QUARRY
PACIFICA, SAN MATEO COUNTY

SOURCE:
Project Files and Google Earth

FILE: D:\Graphic Designer\My Documents\PROJECTS\1000-1100\1023 Pacifica Quarry\Adobe\RECLAMATION PLAN\Cultural Res fig 10-23-15

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1963. In 1963 a shell midden containing obsidian tools and projectile points, and human remains was reported removed when Highway 1 was expanded through the area.

In 1986, based on 1963 Caltrans as-built plans and recollections from the 1963 Caltrans project engineer and an archaeologist who worked in the area, SMA-268 was mapped. The map shows the site extending under the highway berm and the highway and including "three patches of midden" south of the creek (Melandry 1086). However, due to the difficulty in mapping the site boundary, the map is largely uncertain.

In 1993, SMA-268 was rerecorded by Orlins and Schwaderer who describe the site as a "habitation site: dark brown midden with many shell fragments, mammal bone, fire-affected rock" (Orlin and Shwaderer 1993). Orlins and Scwaderer conducted extended reconnaissance with a backhoe in September 1993 and described the site as entirely north of the creek and partially covered with up to 70 centimeters of fill.

Orlins and Schwaderer recommended that if SMA-268 falls within the water treatment plant and wetland restoration Area of Potential Effects (APE), that it be evaluated with reference to the National Register of Historic Places (NRHP). Additionally they recommended that the site be designated as an archaeological preservation zone (Orlin and Shwaderer). The site is within the APE of the water treatment facility and the wetland restoration area, but no NRHP eligibility study report was furnished and the site was impacted by the work along the creek.

The reclamation project will not work on the Eastern Parcel that contains SMA-268; accordingly, the project will not affect this site.

C. Historic

The Quarry was previously known as the Rockaway Quarry. In the 20th century, quarry operations at the site were a major industry in Pacifica. The Ocean Shore Railroad was connected to the Quarry in 1907 (Wagner 1974) when a spur was constructed into the property to facilitate the removal of large amounts of stone for building the railroad and in rebuilding the earthquake ravaged San Francisco. The Railroad brought prosperity to the quarry and in turn the quarry was integral to the development of various developments and historic districts in and around Pacifica (Holman 2002).

The eastern boundary of the property was home to the Ocean Shore Railroad route. However, the railroad was removed over 80 years ago and no remains of the railroad are visible within the Quarry property. The visible history of Rockaway Quarry is limited to the partially filled Quarry Pit, some nondescript concrete blocks, and the filled and graded flat south of the creek.

Although Rockaway Quarry is a significant part of Pacifica and the region's history, it does not appear that any significant features of that history remain intact or may be valuable for interpretative uses (Holman 2002).

The proposed project will not affect the site's historical significance. The project site has historically undergone such major alterations that features of historical significance have all but been eliminated from the site.

V. Conclusion

Holman (2002) assessed the Pacifica Quarry property for archaeological and cultural resources as part of the environmental review process for a previously proposed development project In addition; they reviewed and summarized a large number of previous studies of the site. They determined that the site has been significantly altered. However, two pre-historic sites are located within the Quarry property on the eastern edge of the Eastern Parcel near Highway 1. The proposed reclamation work will not affect these resources. Holman also noted that the property's previous function as Rockaway Quarry was a significant part of Pacifica's history but that there are no remaining significant features of the Rockaway Quarry. In short, the proposed project will not affect any historical or cultural resources.

VI. References

Desgrandchamp, C. 1978. Cultural Resources Survey 04-SMa-1., Proposed Operational and Safety Improvements to Route 1 in Pacifica, San Mateo County, P.M. 40.7/43.5 04210381841. Report on file, Northwest Information Center, California Historical Resources Information System, Sonoma State University; File Number S-3051.

Desgrandchamp, C. 1978. Archaeological Site Record for SMA-162. Report on file, Northwest Information Center, California Historical Resources Information System, Sonoma State University.

Holman and Associates (Holman). 2002. Archival Research, Field Reconnaissance, and Consultation for the former Rockaway Quarry. Report on file, City of Pacifica Planning and Economic Development Department.

Holman, M.P. 1987. Archaeological Literature Review for the Pacifica GPA. Report on file, Northwest Information Center, California Historical Resources Information System, Sonoma State University; File Number S-10486.

Melandry, M., and B. 1986. Compton. Archeological Site Record for SMA-268. Report on file, Northwest Information Center, California Historical Resources Information System, Sonoma State University.

Morratto, M.J. 1984. California Archaeology. Academic Press, New York. 1984.

Wagner, J.R. 1974. The Last Whistle [Ocean Shore Railroad]. 1974. Howell-North Books, Berkeley, CA.

ESA 50 YEARS 1969-2019

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memorandum

date	July 21, 2020
to	Gregory Sproull | Wetland Research Associates, Inc. (WRA)
from	Heidi Koenig, M.A., RPA | Environmental Science Associates (ESA)
subject	Records Search Results for Rockaway Quarry Reclamation Project

Purpose and Project Background

This memorandum provides the results of a cultural resources records search completed for the Rockaway Quarry Reclamation Project (Project). The Project is in San Mateo County in the City of Pacifica, approximately 10 miles southwest of San Francisco. The former quarry is part of the approximately 87-acre Pacific Quarry property (Project area), which includes two parcels: the Quarry Parcel, where the reclamation work will be completed; and the Eastern Parcel, also known as the "Flats," which is not part of the current reclamation Project work. The Project consists of final grading, drainage, and revegetation measures to leave the former quarry in a condition that is safe, stable, and readily adaptable to alternative land uses as directed by the State Mining Reclamation Act of 1975, as amended, and the City of Pacifica Mining Reclamation Ordinance.

ESA (Environmental Science Associates) completed the cultural resources record search in response to a request from the U.S. Army Corps of Engineers for information pertinent to the Rockaway Quarry Reclamation Project. ESA identified seven cultural resources studies completed in the vicinity of the Project area. The records search and the previous analyses found that the Project area contained two previously recorded prehistoric cultural resources, both in the Eastern Parcel: P-41-000162 (CA-SMA-162) and P-41-000264 (CA-SMA-268). Neither resource will be affected by the Project.

Zentner and Zentner (2016) completed a cultural resources assessment for the Project. The assessment included a review of a previous cultural resources study completed by Holman and Associates Archaeological Consultants (Holman) in 2002. Holman's work consisted of a records search at the Northwest Information Center (NWIC) of the California Historical Resources Information System and a surface survey of the Project area, with a focus on areas of native and undisturbed soil. Holman concluded that the quarry and immediately surrounding area have been altered, including the Calera Creek corridor. The western edge of the Quarry Parcel contained some areas of native, undisturbed soils.

Holman (and subsequently Zentner and Zentner [2016]) concluded that the Quarry Parcel had been significantly altered and did not have archaeological sensitivity, and that the Rockaway Quarry itself, although a significant part of Pacifica's history, did not maintain any significant features. Two prehistoric archaeological sites had been previously recorded in the Eastern Parcel: (P-41-000162 [CA-SMA-162] and P-41-000264 [CA-SMA-268]).

Holman (and subsequently Zentner and Zentner [2016]) concluded that neither of these resources would be impacted by the Project.

Records Search

Methods

Based on a request from the U.S. Army Corps of Engineers, (then) WRA Archaeologist Robin Hoffman submitted a records search request to the NWIC. The request included a review of the following documents:

- Resource database printout and resource record copies within the Project area
- Report database printout within the Project area
- Archaeological Determinations of Eligibility (ADOE) for San Mateo County
- Office of Historic Preservation Built Environment Resources Directory (BERD)
- California Inventory of Historic Resources (1976)

Results

WRA received the results of the records search from the NWIC on June 30, 2020 (File No. 19-2139). The results included: a database printout of reports completed in the Project area; the site records for two (2) prehistoric archaeological sites in the Project area; and the ADOE list for San Mateo County. The BERD and the California Inventory of Historic Resources did not have listing of cultural resources in the Project area.

Seven cultural resources studies have been completed in the Project area. These studies and the affiliated cultural resources identified in that project's study area are provided in **Table 1**.

Two previously recorded prehistoric cultural resources have been identified in the Project area, both in the Eastern Parcel: P-41-000162 (CA-SMA-162) and P-41-000264 (CA-SMA-268). **Attachment A** provides the site records for these resources.

P-41-000162 (CA-SMA-162)

The description of this resource in Zentner and Zentner (2016) is accurate. Archaeologist Michael Moratto originally recorded this resource in 1974 as a disturbed area of fill material with pockets of midden soil. Archaeologist Cindy Desgrandchamp (1978) further determined that the site materials had been imported from the Sharp Park area. The San Mateo County ADOE lists P-41-000162 with a status code of 6Y, which indicates that the site has been determined ineligible for the National Register of Historic Places by consensus through the Section 106 process (ADOE-41-86-001-000). **Attachment B** provides the San Mateo County ADOE. The boundaries of this resource are approximately 1,200 feet from the nearest Project ground disturbance as described in Zentner and Zentner (2016).

TABLE 1. CULTURAL RESOURCES STUDIES IN PROJECT AREA

Report No.	Year	Author(s)	Title	Affiliation	Resources Identified
S-003051	1978	Cindy Desgrandchamp	Cultural Resources Survey, 04-SMa-1, Proposed Operational and Safety Improvements to Route 1 in Pacifica, San Mateo County	California Department of Transportation	P-41-000162, -000163, -000264, -002209
S-004876	1971	Michael J. Moratto	Archaeological reconnaissance of the proposed freeway route 380 between the Coast Highway and Skyline Blvd	Adan Treganza Anthropology Museum	
S-004877	1974	Michael J. Moratto	Archaeological reconnaissance of proposed Route 380, between Hwy. 280 on the east and Hwy. 1 on the west	San Francisco State University	P-41-000103, -000104
S-008244	1986	Mara Melandry	Archaeological Survey Report, 4-SM-1 PM 42.0/R43.2, from Fassler Avenue to Westport Drive, in the City of Pacifica, San Mateo County	California Department of Transportation	P-41-000162, -000264, -001323, -001324, -001325, -001326, -002209
S-008244	1988	Denise O'Connor	Negative Archaeological Survey report, Addendum #1, Proposed new alignment of Highway 1	California Department of Transportation	
S-015828	1994	Robert I. Orlins and Rae Schwaderer	The Archaeological Survey and Extended Survey for the City of Pacifica Wastewater Treatment Project, San Mateo County	California Archaeological Consultants, Inc.	P-41-000264
S-025067	2002	Matthew R. Clark	Cultural Resource Evaluation of the Pacifica Village Center Project Area in the City of Pacifica, San Mateo County	Holman & Associates	P-41-000162, -000264

P-41-000264 (CA-SMA-268)

The description of this resource in Zentner and Zentner (2016) is accurate with some additional information. The resource was originally recorded in 1963 during the expansion of Highway 1. Shell midden, obsidian tools, and human remains were reportedly uncovered. Caltrans archaeologists mapped the resource area in 1986 (Melandry, 1986). In 1993, archaeologists reassessed and remapped the resource area in preparation for the Pacific Wastewater Treatment Project (Orlins and Schwaderer, 1993).

In 2008, archaeologists from Basin Research Associates (Basin) conducted a presence/absence coring program within the Caltrans right of way on the west side of Highway 1. The site record for that investigation provides a comprehensive map of the various recorded site boundaries (page 8 of 10). No cultural materials were identified during the Basin investigation. The boundaries of this resource are approximately 600 feet from the nearest Project ground disturbance as described in Zentner and Zentner (2016).

References

Desgrandchamp, C. 1978. *Cultural Resources Survey 04-SMa-1., Proposed Operational and Safety Improvements to Route 1 in Pacific, San Mateo County, P.M. 40.7/43.5 04210381841*. Report on file, Northwest Information Center, California Historical Resources Information System, Sonoma State University, File Number S-3051.

Holman and Associates (Holman). 2002. *Archival Research, Field Reconnaissance, and Consultation for the former Rockaway Quarry*. Report on file, City of Pacifica Planning and Economic Development Department.

Melandry, M., and B. 1986. Archaeological Site Record for SMA-268. Report on file, Northwest Information Center, California Historical Resources Information System, Sonoma State University.

Orlins and Schwaderer. 1993. Archaeological Site Record for SMA-268. Report on file, Northwest Information Center, California Historical Resources Information System, Sonoma State University.

Zentner and Zentner, Pacifica Quarry Reclamation Project, Historical and Cultural Resources Assessment. 2016.

Attachment A – Site Records

(448C)

ARCHAEOLOGICAL SITE INVENTORY RECORD

LABORATORY CODES: ( ) ( ) ( ) ( ) ( ) P-41-000162

FIELD #: DOT-04-SMa-1-2 STATE #: CA-SMA-162

MAP: USGS Montara Mt. ( ) COUNTY: San Mateo

CONTOUR (Highest: 75), (Lowest: 55), ($\bar{X}$: 60) FEET + msl

TOWNSHIP: NA RANGE: NA ___1/4 of ___1/4 of ___1/4 OF

SECTION #: NA (OR) LANDGRANT: San Pedro (Sanchez)

COORDINATES: 53 mm S, 45 mm E FROM NW CORNER of MAP

U.T.M.G. COORDINATES: 445250 mE/ 4162875 mN

___° ___' ___" WEST LONG., ___° ___' ___" NORTH LATITUDE

SITE LOCATION: Adjacent to southbound lanes of Rte. 1 through Vallemar 50 meters S of Rte. 1 intersection with Reina del Mar Ave. on W side of highway. On a small man-made knoll of fill materials.

SITE DESCRIPTION: Remains of one or more archaeological sites originally located in Sharp Park area. Remains consist of dark midden soils shell (Mytilus californianus, Balanus sp., Protothaca staminea) pocketed in shale fill material.

DIMENSIONS: 75 meters N - S X 50 meters E - W cf. PLAN

ESTIMATED AREA: 3250 square meters. DESCRIBE METHOD USED TO DETERMINE SITE EXTENT: Visual reconnaissance

DEPTH OF CULTURAL DEPOSIT (Maximum ___ cm), (Minimum ___ cm) ($\bar{X}$ ___ cm). DESCRIBE METHOD USED TO DETERMINE DEPTH:

Undeterminable

mjm 1975-01

S-8244

C-116

Page 2

CA-SmA-162

SITE #: DOT-04-SMa-J-2
FIELD #:

DOMINANT ON-SITE VEGETATION: Coastal scrub; annual grasses; Coyote bush

SURROUNDING VEGETATION: Coastal scrub; same

LOCAL FAUNA: Red-winged blackbirds, meadow larks, white crowned sparrow, bush rabbit, jack rabbit.

NEARES[illegible] WATER (Distance: 100 meters), (Direction: south)

(Nature of Water Source: spring)

SOIL OF SITE: Shale fill material with pockets of midden

SURROUNDING SOIL: Shale fill material

LOCAL ROCKS AND MINERALS: Shale

EROSION: Used by dirt bikes.

MODIFICATIONS: Has been transported from Sharp Park area during road construction & stockpiled at Reina del Mar as fill material.

PREVIOUS EXCAVATION (Name, date, published reference): None known.

SITE PLACEMENT RELATIVE TO TOPOGRAPHY: on so[illegible] slope of man-made knoll

SITE #: DOT-04-SMa-1-2
FIELD #:

EXPOSURE TO INSOLATION: all directions

EXPOSURE TO PREVAILING WIND: all directions

ARTIFACTS: NA

HOUSEPITS (Number NA) (Attach data regarding plan, dimensions, depth, and distribution of housepits.) BEDROCK MILLING STATIONS : (Number of outcrops: NA) (Total number of mortars NA , metates NA) (Attach separate Bedrock Milling Station Form.) OTHER FEATURES

NA

COMMENTS: Midden material is remains of one or more archaeological sites originally located in the Sharp Park area. Midden removed during construction of Rte. 1 through Sharp Park area & redeposited at present location as road fill for later highway projects.

APPARENT SIGNIFICANCE OF SITE :

NA

OWNER'S NAME AND ADDRESS: State of California

PHOTOGRAPHS: (Number 1 B/W, ___ Color, ___ Slides) (By C. S. Desgrandchamp) (Photos on file at ___) (Catalogue #s: ___)

RECORDER(S): C. S. Desgrandchamp

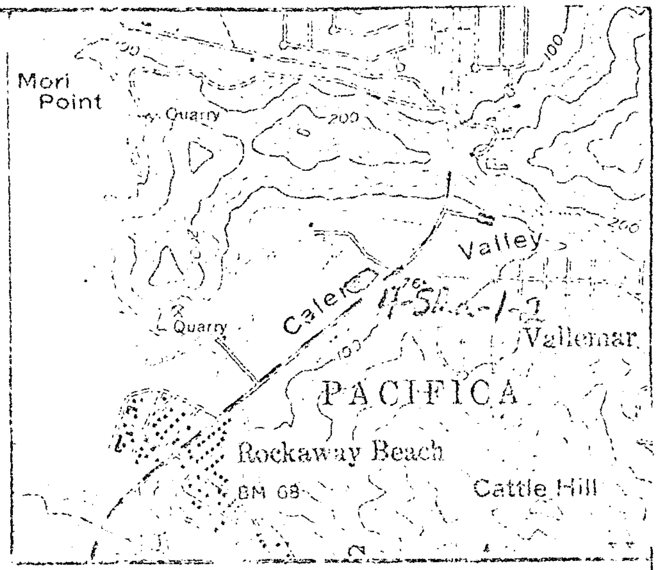
DATE 4/11/78 LIST OF ATTACHED DOCUMENTS:

Page 4

SITE # CA-SMA-162
FIELD # DOT-04-SMa-1-2

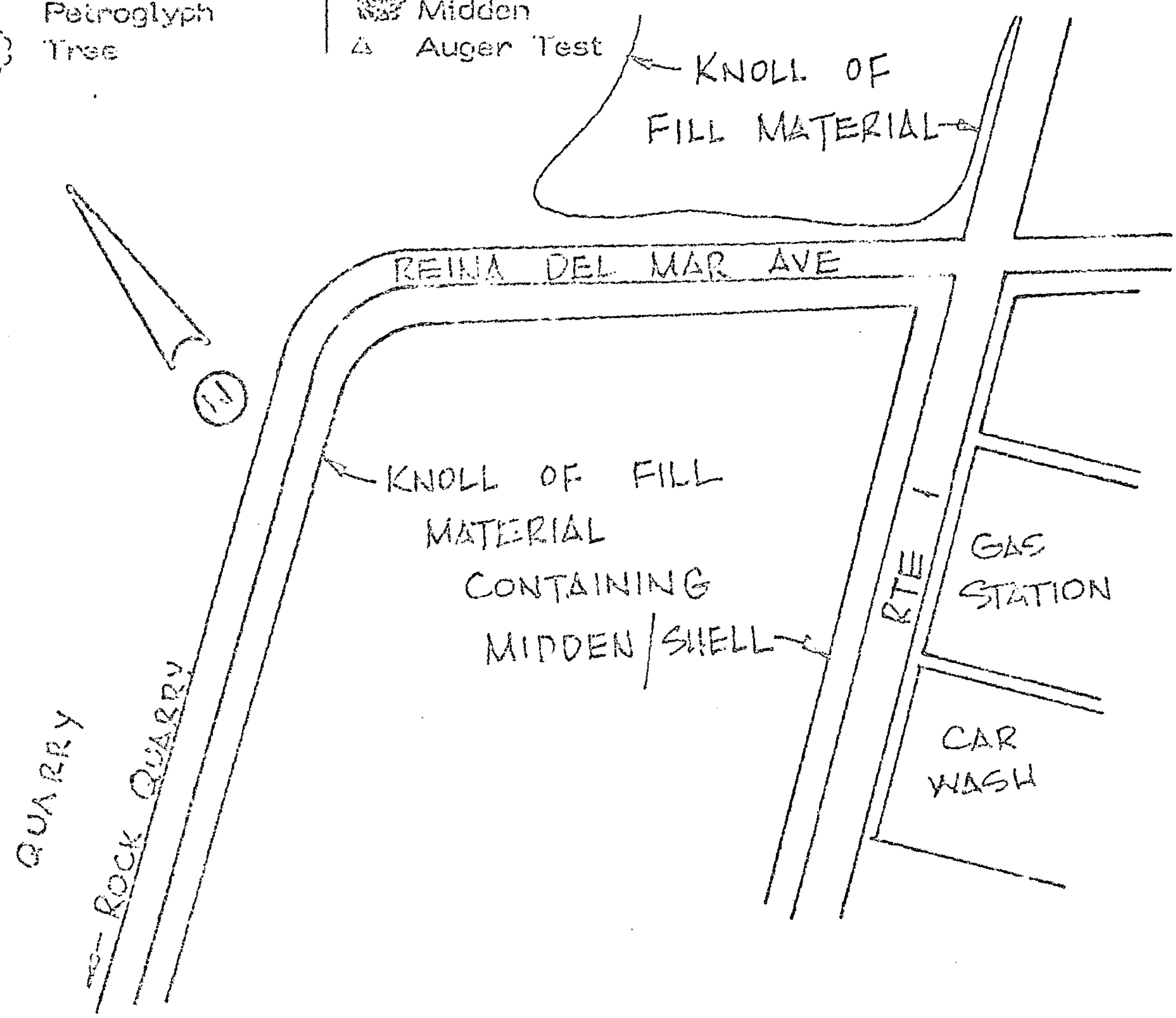
(edited by ______________)
(Statewide Survey entry_____)

PORTION OF THE USGS 7.5'
Montara Mountain
MAP SHOWING SITE LOCATION:



LEGEND

- Spring
- Intermittent Stream
- Perennial Stream
- Road
- Fence
- Stone Wall
- Bedrock Outcrop
- Milling Station
- House Pit
- Petroglyph
- Tree
- Sondage
- Midden
- Auger Test



SKETCH MAP OF SITE

SCALE: None DATE: 4/7/78 NOTES:

DRAWN BY C. S. Rosenthal [illegible] indicate magnetic north

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # P-41-000264
HRI#
Trinomial CA-SMa-268

 *Resource Name or # (Assigned by recorder)

***Recorded by:** Christopher Canzonieri, Basin Research Associates 1933 Davis Street, Suite 210 San Leandro CA 94577
***Date:** 2/4/09 ☐ Continuation ☒ Update

FIELD CORING PROGRAM

A presence/absence coring program was undertaken by Basin Research Associates on December 11, 2008 within the sidewalk and leading edge of the embankment area of the Caltrans right of way on the west side of Highway 1 to the immediate west of a paved pedestrian/bike path from Marina del Rey to a point approximately 350 feet north of the intersection of Marina del Rey and the highway [Fig. 1]. The objective of the program was to determine if cultural deposits associated with CA-SMA-268 were present within the project area most likely to be impacted by the proposed project; that is, areas with only a shallow fill cover adjacent to the base of the 30-foot high embankment constructed in the early 1960s for a freeway ramp. The boundary and integrity of the resource had not been clearly defined as highway construction in the early 1960s impacted the majority of the site and probably scattered any cultural materials outside of the original find location.

The core locations were selected by Dr. Colin I. Busby, Principal Investigator in consultation with the Project Archaeologist, Mr. Christopher Canzonieri (M.A.). A previous field review on August 25, 2008 with Mr. Stephen Bryne (Caltrans District 04 Archaeologist) had previously discussed potential core locations. The 12 core locations were placed to obtain a representative sample around the periphery of the embankment and to avoid damage to known underground utilities and other subsurface improvements within the proposed project area. Four of the bores were adjacent to the site boundary on file with CHRIS/NWIC, seven were within the recorded boundary and one was located outside of the boundary adjacent to the underground culvert for Calera Creek [Fig. 2].

A maximum depth of 12 feet below current surface was selected to allow for penetration of the fill at the periphery of the embankment into the native land surface. The review of the as-builts by Melandry (1986) suggested the possible placement of five to six feet of fill on the original land surface by the Ocean Shore Railroad Company at the turn of the century to form a track berm followed by minor fill for the original Coast Highway. Excavation for a culvert for Calera Creek in the early 1960s resulted in the discovery of buried archaeological materials at a shallow depth (?) after removing fill probably associated with the railroad and original highway. The location and surface materials associated with the resource were later recorded as CA-SMa-268 (see Melandry 1986). The selection of a 12-foot core depth appeared adequate to reach native soil and sample the cultural deposit.

RSI Drilling provided a Direct Push Rig (GeoProbe 6620DT tracked rig) and two operators. Mark Thomas & Company, Inc., provided traffic control for pedestrian and bike traffic. Each core location as it was completed was plotted on an aerial photograph and later surveyed in by Mark Thomas & Company, Inc. A photographic recorded was completed by Ms. Josie Twigg (Staff Archaeologist). Mr. Canzonieri directed the field operation. Ms. Maureen Zogg, Caltrans District 04 Archaeologist, observed the coring operations and field inspections.

Twelve 2.25-inch diameter core samples were obtained. Samples were encased in three 4-foot long PPT Macro Cores (plastic sample liners) and subject to a visual inspection for the presence of cultural materials (i.e., midden sediment, shell, etc.) as they were removed. Eleven of the 12 samples were bored to approximately 12 feet below the surface. Unexpected material (probable boulder or concrete) was encountered at approximately 3.5 feet below the surface for Bore 5 and the core was terminated. Each sample was marked, capped and transported to Basin Research Associates' laboratory for review.

The visual and mechanical inspection and recordation of each 4-foot core sample was completed December 15-16, 2008. Each sample tube was split and carefully inspected in natural light (overcast skies). Soil colors were determined using a Munsell® Soil Color Chart while texture was determined by hand using the parameters provided by the USDA field flow chart. Sediment grain size was recorded using a Sand-Gauge©[1]. Ms. Twigg assisted Mr. Canzonieri with the laboratory review [see Table 1].

Several of the samples contain mixed sediments from the upper levels at roughly 48-inches and 96-inches below surface. This is due to contamination when the first sleeve containing the sample liner is removed. Materials from the upper levels fall to the bottom of the bore and are compacted into the sample of the second and/or third sample liner when the probing resumes.

[1]. 2000 Munsell ® Soil Color Chart, Gretag Macbeth, New Windsor NY; 1984; Sand-Gauge W. F. McCollough; 2001-2003; USDA Soil Texturing Field Flow Chart, Midwest Geoscience Group (www.midwestgeo.com).

ANALYSIS

No prehistoric cultural materials were observed in the bores. A single clear bottle glass fragment was recovered from Bore 6 at a depth of 108-119 inches below the surface. Sediments from Bores 6, 7, and 12 were examined using a Nikon SMZ-Stereoscope with 10 x 21 optics as these samples had materials that resembled very small (4 mm diameter) shell fragments (Bore 6: 108-119 inches; Bore 7: 124 inches; Bore 12: 138-144 inches). Inspection determined that the materials in Bores 6 and 12 were weathered sedimentary rocks. The materials were also subjected to a 0.1 HCl solution test to confirm the presence of calcium carbonate. The materials were not affected though the surrounding sediments did react to the acid solution. This reaction is likely the result of minute organics and calcium carbonate trace elements in the samples. Bore 7 did have a very small shell fragment measuring approximately 4.38 mm in diameter present at 124 inches below the surface. A sample of the probable shell fragment dissolved completely in the 0.1 HCl acid solution. No other shell fragments were noted in any of the 12 cores.

Summary: No significant prehistoric cultural materials were observed in the bores suggesting the lack of buried archaeological resources between the existing ground surface and a depth 12 feet below the surface. It is probable that construction of Highway 1 and the surface preparation necessary for the fill placement for a planned but not yet constructed freeway ramp at the time of original construction destroyed any cultural materials associated with CA-SMa-268 within the footprint of construction. The original boundary at the time of discovery in 1963 may represent a portion of a larger site as the presence/absence testing completed by Orlins and Schwaderer (1994) appears to indicate cultural deposits to the west of the original discovery [Fig. 3]. The larger boundaries suggested by other researchers may be the result of archaeological materials spread over a wide area by highway construction and other improvement activities (e.g., waste water plant construction).

CA-SMa-268 has not been formally evaluated for either the National Register or California Register although Matthew Clark (2002) indicates that in spite of previous impacts including highway construction and a waste water control facility it is significant under CEQA and local (City of Pacifica) criteria.

TABLE 1
CORE SEDIMENT DESCRIPTIONS/OBSERVATIONS

Core #	Sediment Description/Observations	Comments
1	0-20" (10YR 3/2) Very dark grayish brown loosely compacted gravelly clay silt 20-45" (10YR 3/2) Very dark grayish brown compacted gravelly clay silt 45-67" (10YR 4/3) Fine to medium grained sand 67-84" (10YR 3/2) Very dark grayish brown loose gravely clay silt 84-87" (Gley 1 5GY) Greenish gray gravelly clay 87-104" (2.5Y 2.5/1) Black silty clay with low gravel content 104-144" (10Y 2.5/1) Black silty clay with almost no gravel	No cultural material observed
2	0-25" (10YR 3/2) Very dark grayish brown gravelly clay silt 25-58" (2.5Y 5/3) Light olive brown gravelly clay silt 58-62" (10YR 6/4) Light yellowish brown silty clay 62-66" (10YR 4/3) Brown fine to medium grained sand 66-76" (10YR 4/2) Dark grayish brown gravelly clay 76-84" (10YR 4/2) Dark grayish brown mottled with (10YR 2/1) black with some green gley 84-87" (Gley 1 5GY) Greenish gray gravelly clay 87-103" (2.5Y 2.5/1) Black mottled with orange and gray gravelly clay 103-110" (2.5Y 2.5/1) Black clay	No cultural material observed
3	0-20" (10YR 3/2) Very dark grayish brown loosely compacted gravelly clay 20-48" (2.5Y 5/3) Light olive brown gravelly clay 48-60" Void – no sediments present in this section 60-63" (2.5Y 5/3) Light olive brown gravelly clay 63-84" (10YR 4/3) Brown fine to medium grained sand 84-96" (2.5Y 4/3) Olive brown gravelly clay 96-107" (2.5Y 2.5/1) Black gravelly clay mottled with brown 107-118" (Gley 1 10Y 3/1) Very dark greenish gray gravelly clay mottled with reddish brown and black 118-144" (Gley 1 10Y 3/1) Very dark greenish gray clay	No cultural material observed

***Recorded by:** Christopher Canzonieri, Basin Research Associates 1933 Davis Street, Suite 210 San Leandro CA 94577
***Date:** 2/4/09 ☐ Continuation ☒ Update

TABLE 1, con't
CORE SEDIMENT DESCRIPTIONS/OBSERVATIONS

Core #	Sediment Description/Observations	Comments
4	0-7" (10YR 3/2) Very dark grayish brown gravelly clay 7-10"(2.5Y 2.5/1) Black asphalt and base rock 10-33" (2.5Y 6/1) Gray gravelly clay with angular granite fragments 33-78" (10YR 4/3) Brown fine to medium grained sand 48-55" Void – no sediments present in this section 78-84" (2.5Y 2.5/1) Black gravelly clay mottled with Gley 1 10Y 3/1 very dark greenish gray degrading sandstone fragments 84-88" (2.5Y 4/2)Grayish brown gravelly brown 88-90" (Gley 1 10Y 4/1) Dark greenish gray gravelly clay 90-103" (2.5Y 2.5/1) Black gravelly clay 103-110" (Gley 1 10Y 4/1) Dark greenish gray sandy clay 110-144" (Gley 1 10Y 4/1) Dark greenish gray clay with tan and gray mottles	No cultural material observed
5	0-16" (10YR 3/2) Very dark grayish brown loose gravely clay silt 16-29" (2.5 5/3) Light olive brown compacted gravelly clay mottled with black and tan 29-31" (2.5 5/3) Light olive brown loose gravelly clay 31-48" (10YR 5/6) Yellowish brown gravelly clay mottled with black toward the bottom	No cultural material observed Terminated at 3.5 feet DBS due to subsurface obstruction
6	0-15" (10YR 3/2) Very dark grayish brown loose gravely clay 15-26" (10YR 3/2) Very dark grayish brown gravelly clay 26-31" (2.5Y 6/4) Light yellowish brown gravelly clay 31-48" (2.5Y 5/6) Light olive brown gravelly clay mottled with black, gray , and orange 48-64" (2.5Y 2.5/1) Black asphalt 64-70" (2.5Y 5/1) Gray angular loose fill 70-78" (2.5Y 5/4) light olive brown gravelly clay 78-89" (10YR 4/4)Dark yellowish brown fine to medium grained sand 89-92" (2.5Y 5/4) Light olive brown gravelly clay 92-105" (2.5Y 2.5/1) Black gravelly clay mottled with Gley 1 10Y 4/1 dark greenish gray 105-108" (Gley 1 10Y 4/1) Dark greenish gray large chunks of sandstone 108-119" (2.5Y 2.5/1) Black clay with gravel and quartzite and clear bottle glass fragment. 119-144" (2.5Y 2.5/1) Black clay mottled with brown	No prehistoric cultural material observed. A clear bottle glass fragment measuring approximately 1-inch in length was recovered from the sample between 108-119 inches below the surface. Probable shell frag at 108-109" DBS
7	0-10" (10YR 3/2) Very dark grayish brown loose gravelly clay 10-20" (10YR 5/3) Light olive brown gravelly clay 20-26" (10YR 7/6) Yellow loose gravelly clay 26-48" (10YR 5/6) Yellowish brown gravelly clay 48-58" Void – no sediments present in this section 58-66" (10YR 4/4) Dark yellowish brown gravelly clay 66-70" (2.54Y 2.5/1) Black asphalt 70-80"(2.5Y 5/1) Gray sandy gravel 80-84" (2.5Y 4/2) Dark grayish brown sandy gravel 84-86" (2.5Y 5/4) Light olive brown fine to medium grained sand 86-144" (2.5Y 2.5/1) Black clay with low gravel content with one small shell fragment <5 mm at 124" (Note: no sediments present in core at 96-124")	No cultural material observed. Shell fragment noted at 124" DBS

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # P-41-000264
HRI#
Trinomial CA-SMa-268

 *Resource Name or # (Assigned by recorder)

*Recorded by: Christopher Canzonieri, Basin Research Associates 1933 Davis Street, Suite 210 San Leandro CA 94577
*Date: 2/4/09 ☐ Continuation ☒ Update

TABLE 1, con't
CORE SEDIMENT DESCRIPTIONS/OBSERVATIONS

Core #	Sediment Description/Observations	Comments
8	0-16" (10YR 3/2) Very dark grayish brown loose gravelly clay 16-20" (10YR 3/2) Very dark grayish brown gravelly clay 20-28" (10YR 5/8) Yellowish brown compacted gravelly clay 28-31" (10YR 3/2) Very dark grayish brown gravelly clay with numerous mottles 31-65" (10YR 5/6) Yellowish brown gravelly clay 40-61" Void no sediments 65-70" (2.5Y 5/4) Light olive brown clean clay with low gravel content 70-72" (2.5Y 2.5/1) Black asphalt 72-86" (2.5Y 5/1) Gray loose angular gravel fill 86-106" (2.5Y 3/3) Dark olive brown gravelly clay 96-104" Void – no sediments present in this section 106-122" (2.5Y 3/2) Very dark grayish brown gravelly clay 122-124" (2.5Y 3/1) Very dark gray fine to medium grain sand 124-144" (2.5Y 2.5/1) Black clay with mottles	No cultural material observed
9	0-17" (10YR 5/4) Yellowish brown loose gravelly clay 17-36" (10YR 5/4) Yellowish brown gravelly clay 36-48" (2.5YR 4/3) Olive brown gravelly clay 48-74" (2.5Y 5/6) Light olive brown gravelly clay mottled with orange and black 74-79" (2.5Y 2.5/1) Black sand with base rock 79-85" (2.5Y 4/4) Olive brown fine to medium sand with some fill 85-96" (2.5Y 4/2) Dark grayish brown gravelly clay 96-108" Void - no sediments present in this section 108-113" (2.5Y 4/3) Olive brown gravelly clay 113-131" (2.5Y 4/3) Olive brown clay less gravel then previous level 131-144" (2.5Y 2.5/1) Black clay	No cultural material observed
10	0-12" (10YR 5/4) Yellowish brown loose gravelly clay 12-21" (10YR 5/4) Yellowish brown gravelly clay 21-33" (2.5Y 5/6) Light olive brown gravelly clay 33-48" (2.5Y 2.5/1) Black gravelly sand and (2.5Y 5/1) gray rock 48-52" (2.5Y 2.5/1) Black fill with sand 25-69" (2.5Y 5/4) Light olive brown gravelly clay 69-92" (2.5Y 4/3) Olive brown fine to medium grained sand 92-106" (2.5Y 4/2) Dark grayish brown gravelly clay with trace amounts of sand 106-110" (2.5Y 4/2) Dark grayish brown weathered sand/mud/silt stone mixed with above material 110-118" (2.5Y 4/2) Dark grayish brown gravelly clay with high gravel content 118-144" (2.5Y 2.5/1) Black clay with low rock content and some organic matter	No cultural material observed
11	0-15" (10YR 5/4) Yellowish brown loose gravelly clay 15-24" (10YR 5/4) Yellowish brown gravelly clay 24-38" (2.5Y 5/6) Light olive brown gravelly clay 38-60" (2.5Y 2.5/1) Black gravelly sand and (2.5Y 5/1) gray rock 60-77" (2.5Y 5/4) Light olive brown gravelly clay very high gravel content 77-82" (2.5Y 5/4) Light olive brown gravelly clay lower gravel content then previous level 82-106" (10YR 5/6) Yellowish brown fine to medium grain sand 106-112" (2.5Y 4/4) Olive brown gravelly clay high rock content mottled with green and oranges 112-127" (Gley 1 5GY 5/1) Greenish gray weathered rock some similar soil to previous layer 127-132" (2.5Y 2.5/1) Black clay mixed with gravel from previous layer 132-144" (2.5Y 2.5/1) Black clay with few rocks	No cultural material observed

***Recorded by:** Christopher Canzonieri, Basin Research Associates 1933 Davis Street, Suite 210 San Leandro CA 94577
***Date:** 2/4/09 ☐ Continuation ☒ Update

TABLE 1, con't
CORE SEDIMENT DESCRIPTIONS/OBSERVATIONS

Core #	Sediment Description/Observations	Comments
12	0-12" (10YR 5/4) Yellowish brown loosely compacted gravelly clay 12-28" (10YR 5/4) Yellowish brown compacted gravelly clay 28-48" (2.5Y 5/6) Light olive brown gravelly clay 48-60" Void - no sediments present in this section 60-64" (2.5Y 2.5/1) Black gravelly sand and asphalt and (2.5Y 5/1) gray rock 64-108" (2.5Y 5/4) Light olive brown gravelly clay mottled with oranges, browns and tans, with a few pockets of tan sand 108-119" (2.5Y 5/3) Light olive brown clay silt mottled with brown, orange and (Gley 1 5GY 5/1) greenish gray 119-122" (Gley 1 5GY 5/1) Greenish gray clay and rock 122-125" (10YR 5/6) Yellowish brown fine to medium grain sand 125-135" (2.5Y 5/2) Grayish brown gravelly clay 135-138" (2.5Y 2.5/1) Black clay with some green decomposing rock 138-144" (2.5Y 2.5/1) Black clay with white flecks of rock	No cultural material observed

REFERENCES

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2002 Cultural Resource Evaluation of the Pacifica Village Center Project Area in the City of Pacifica, San Mateo County, California with Recommendations for Resource Management. MS on file, S-25067, CHRIS/NWIC, CSU Sonoma, Rohnert Park.

Desgrandchamp, Cindy (Caltrans, District 04)
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Melandry, Mara (Caltrans District 04)
1986 Archaeological Survey Report 4-SM-1 PM 42.0/R43.2 From Fassler Avenue to Westport Drive in the City of Pacifica, San Mateo County. 04215-112261. MS on file, S-8244, CHRIS/NWIC, CSU Sonoma, Rohnert Park.

Moratto, Michael (Department of Anthropology, San Francisco State University)
1974 Letter Report to Mr. [Bud] Morris [*sic*], Environmental Design Section, California Department of Transportation, San Francisco, CA. Regarding: Archaeological reconnaissance of proposed Route 380, between Hwy. 280 on the east and Hwy. 1 on the west. [near Pacifica, San Mateo County]. MS on file, S-4877, CHRIS/NWIC, CSU Sonoma, Rohnert

Orlins, Robert and Rae Schwaderer (California Archaeological Consultants) –
1994 The Archaeological Survey and Extended Survey for the City of Pacifica Wastewater Treatment Project, San Mateo County, California. MS on file, S-15828, CHRIS/NWIC, CSU Sonoma, Rohnert Park.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-41-000264
HRI#
Trinomial CA-SMa-268

Page 6 of 10 *Resource Name or # (Assigned by recorder)

*USGS: San Francisco South, CA 1995 and Montara Mt., CA 1997 ☐ Continuation ☒ Update

Figure 1: Site Location Map (USGS San Francisco South, CA 1995 and Montara Mt., CA 1997)

C.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # P-41-000264
HRI#
Trinomial CA-SMa-268

***Resource Name or #** (Assigned by recorder)

***Recorded by:** Christopher Canzonieri, Basin Research Associates 1933 Davis Street, Suite 210 San Leandro CA 94577
***Date:** 2/4/09 ☐ Continuation ☒ Update

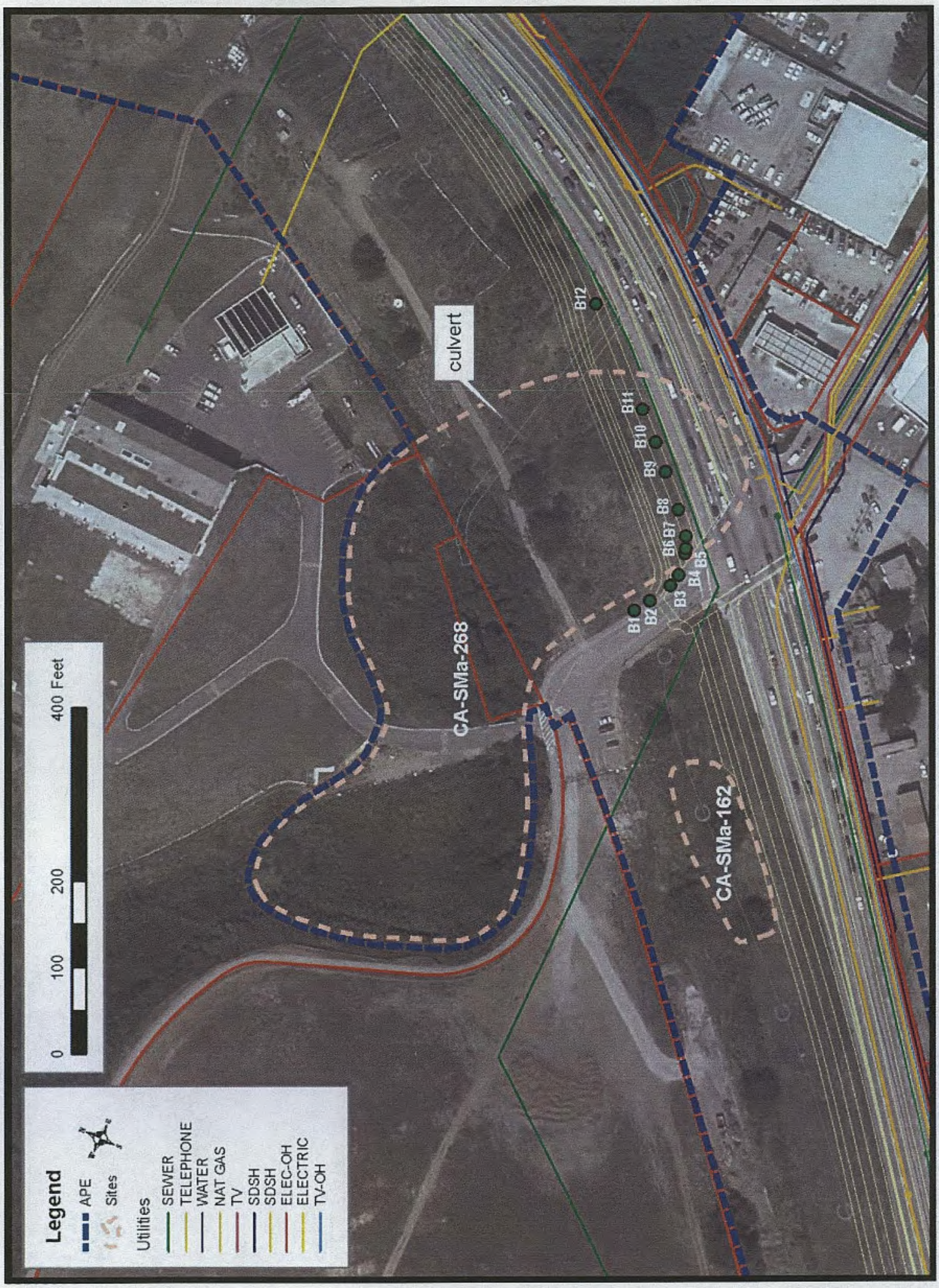


Figure 2: Bore Locations in the Vicinity of CA-SMa-268

C.

*Resource Name or # (Assigned by recorder)

*Recorded by: Christopher Canzonieri, Basin Research Associates 1933 Davis Street, Suite 210 San Leandro CA 94577
*Date: 2/4/09 ☐ Continuation ☒ Update

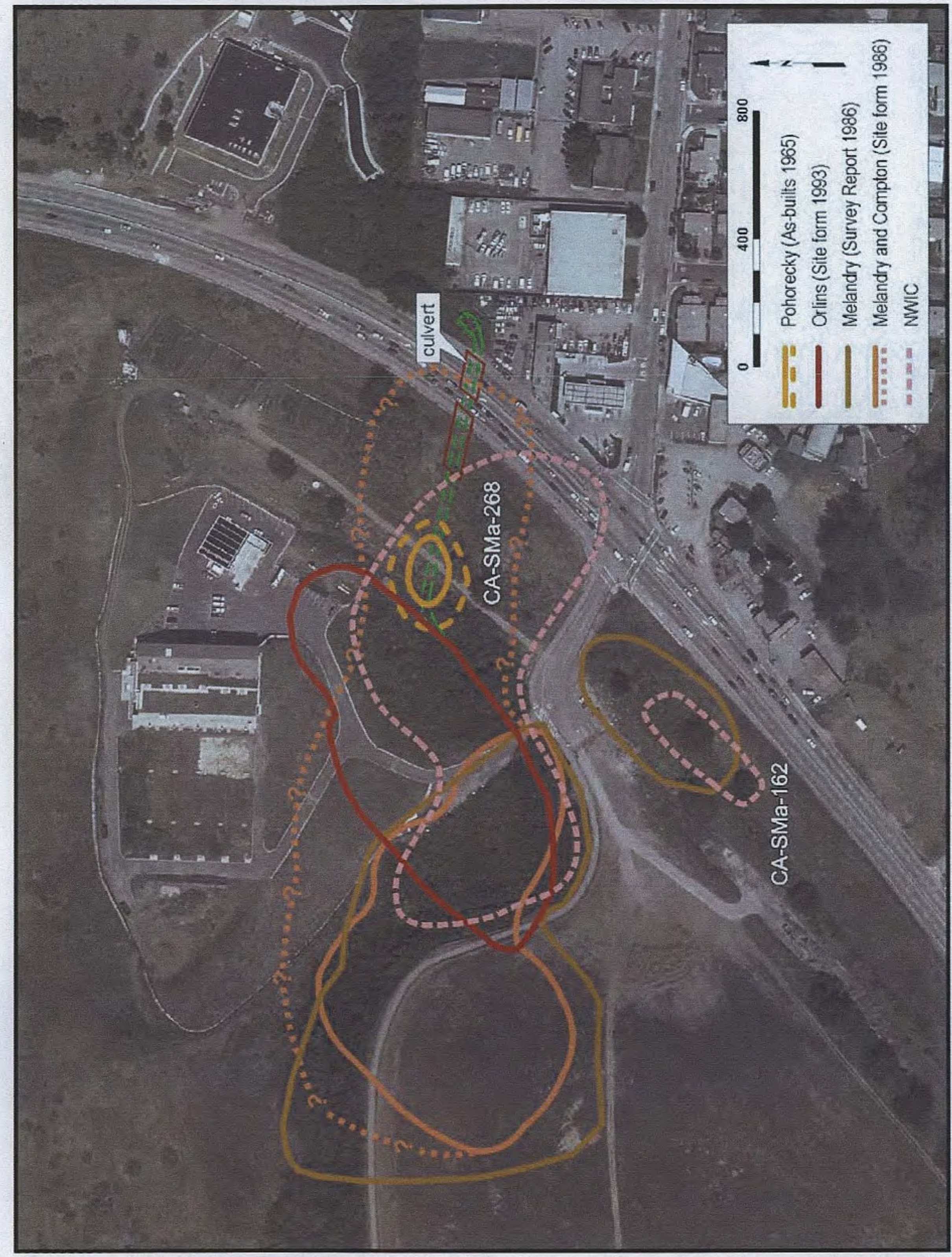


Figure 3: CA-SMa-162 and CA-SMa-268 - Various Versions

C.

*Resource Name or # (Assigned by recorder)

*Recorded by: Christopher Canzonieri, Basin Research Associates 1933 Davis Street, Suite 210 San Leandro CA 94577
*Date: 2/4/09 ☐ Continuation ☒ Update

Fig. 4: View North at Interesection of Reina del Mar Avenue and Highway 1

Fig. 5: View West of Core Area from East Side of Reina del Mar Avenue and Highway 1

c.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # P-41-000264
HRI#
Trinomial CA-SMa-268

 ***Resource Name or #** (Assigned by recorder)

***Recorded by:** Christopher Canzonieri, Basin Research Associates 1933 Davis Street, Suite 210 San Leandro CA 94577
***Date:** 2/4/09 ☐ Continuation ☒ Update

Fig. 6: Bore No. 7 – View of Split Core by Depth

Fig. 7: Bore No. 11 – View of Split Core by Depth

C.

P-41-000264

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD

Permanent Trinomial: CA-SMA-268 Supplement [X]

Temporary Number:

Agency Designation:

1. County: San Mateo

2. USGS Quad: Montara Mountain (7.5') 1956 (15') Photorevised 1980

3. UTM Coordinates: Zone 10 / 545200 Easting / 4162980 Northing ( )

4. Township 4S Range 6W ; Unsection land grant ¼ of ¼ of ¼ of ¼ of Section Base (Mer.) ( )

5. Map Coordinates: 50 mmS 47 mmN (from NW corner of map) 6. Elevation 50

7. Location: On north side of Calera Creek approximately 200 feet west of Route 1, the Coast Highway, in the community of Vallemar, City of Pacifica. Access road through gate opposite intersection of Reina Del Mar with Highway 1. ( )

8. Prehistoric X Historic Protohistoric 9. Site Description: Habitation Site: Dark brown midden with many shell fragments, mammal bone, fire-affected rock. ( )

10. Area: 60 m(length) x 30 m(width) 1600 m^2. Method of Determination: Pace & Map Scale ( )

11. Depth: 110 cm Method of Determination: Backhoe test trench ( )

12. Features: None noted ( )

13. Artifacts: Chert debitage ( )

14. Non-Artifactual Constitutients: Mammal bone, shell, fire-affected rock. ( )

15. Date Recorded: Sept. 27, 1993 16. Recorded By: Robert Orlins & Rae Schwaderer ( )

17. Affiliation and Address: California Archaeological Consultants, Inc., Woodland, CA ( )

b.

P-41-000264

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Permanent Trinomial: CA-SMA-268 2 | 94 Mo. Yr.

ARCHEOLOGICAL SITE RECORD

Other Designations:

18. Human Remains: None noted ( )

19. Site Disturbances: Parts of site covered with up to 70 cm of fill and overburden. ( )

20. Nearest Water (type, distance and direction): On bank of Calera Creek ( )

21. Vegetation Community (site vicinity): Grassland with ruderal forbs and coastal riparian Plant List ( )

22. Vegetation (on site): Same ( )

23. Site Soil: Dark brown friable silt loam midden ( )

24. Surrounding Soil: Light brown loam ( )

25. Geology: Franciscan ( )

26. Landform: Alluvial valley ( )

27. Slope: Flat ( ) 28. Exposure: Hills protect fr. north wind ( )

29. Landowner(s) (and/or tenants) and Address: Don Brandow, Pacifica; City of Pacifica, Caltrans; Quarry Products Inc., Pacifica ( )

30. Remarks: ( )

31. References: Orlins & Schwaderer (1994) The Archaeological Survey and Extended Survey for the City of Pacifica Wastewater Treatment Project, San Mateo County, California ( )

32. Name of Project: Pacifica Wastewater Treatment Project: Archaeological Assessment ( )

33. Type of Investigation: Survey & Extended Survey ( )

34. Site Accession Number: Curated At: ( )

35. Photos: ( )

P-41-000264

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE LOCATION MAP

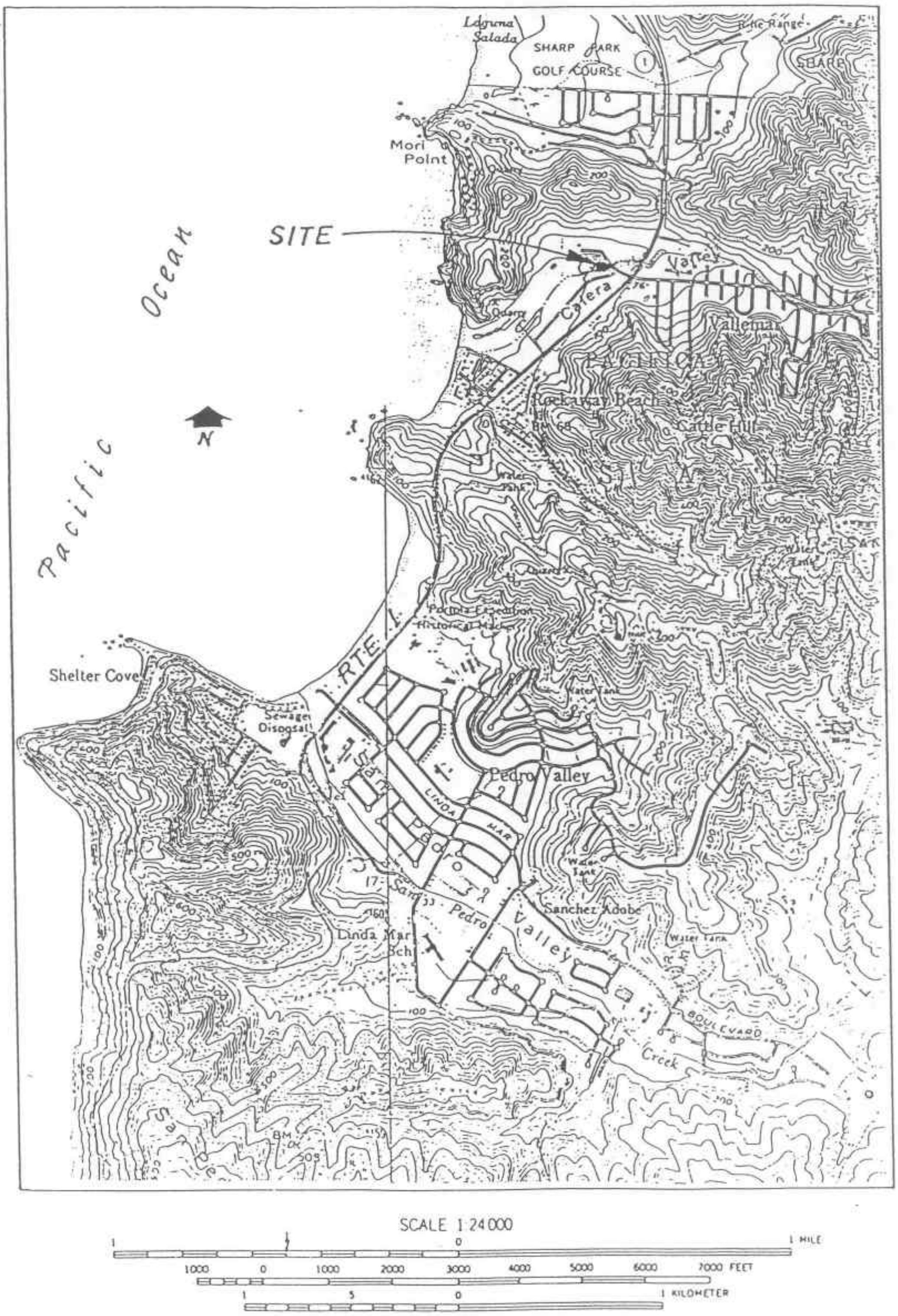
Page 3 of 4.

Permanent Trinomial: CA-SMA-268 / 2 (mo.) 94 (yr.)

Temporary Number:

Agency Designation:

USGS MONTARA MOUNTAIN 7.5'



6.

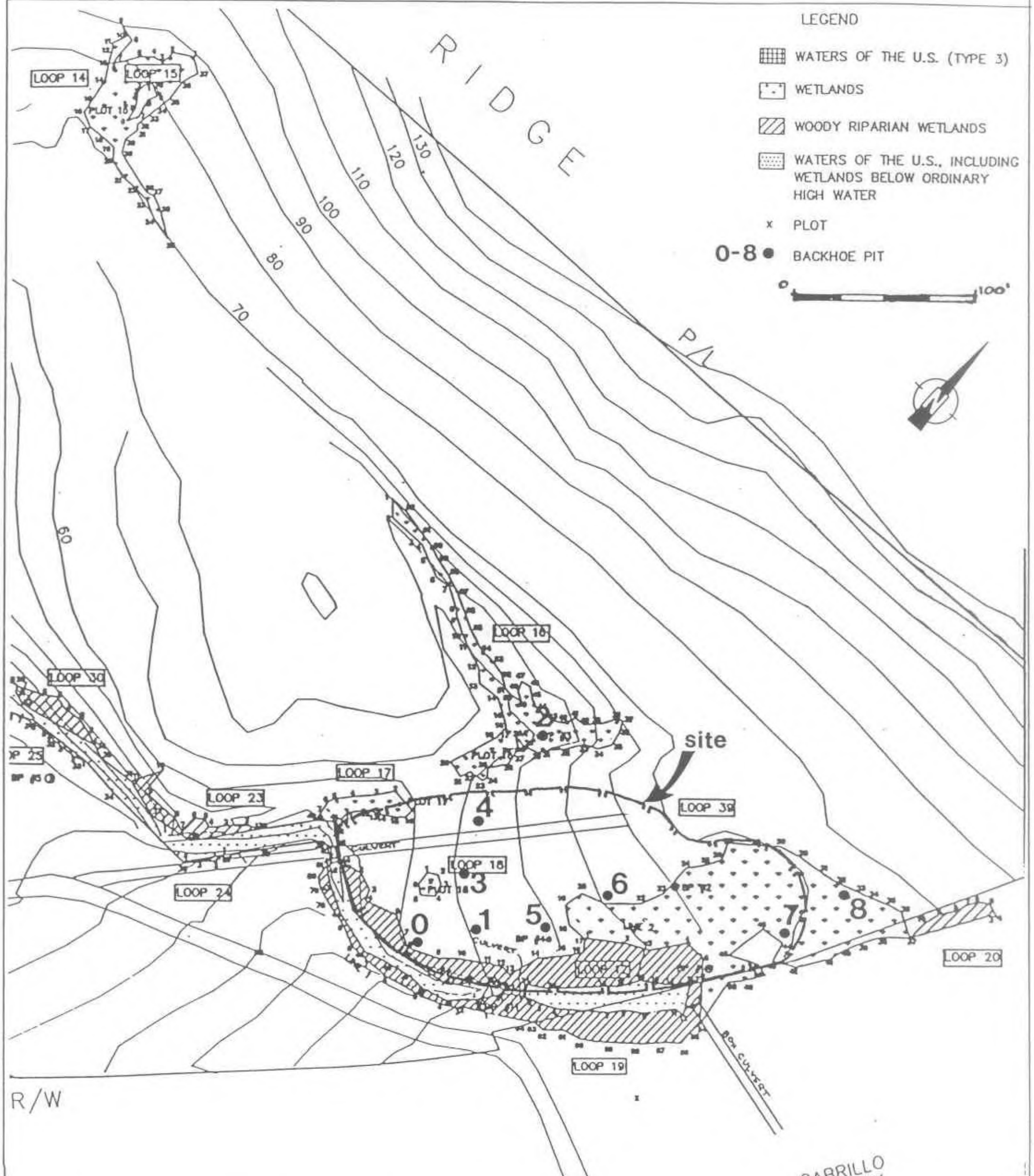
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
ARCHEOLOGICAL SITE MAP

Page 4 of 4.

Permanent Trinomial: CA-SMA-268 / 2 mo. 94 yr.

Temporary Number:

Agency Designation:



b.

RECEIVED 2 3 JUN 1986

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
ARCHEOLOGICAL SITE RECORD

P-41-000264
Permanent Trinomial: CA-SMA-268 Supplement [ ]

Temporary Number:

Agency Designation: 4-SM-1-Fassler

Page 1 of 3.

1. County: San Mateo

2. USGS Quad: Montara Mountain (448C) (7.5') 1956 (15') Photorevised 1980 ( )

3. UTM Coordinates: Zone 10 /545200 Easting /4162900 Northing ( )
(545200E, 4162980N) (545400E, 4163000N)

4. Township T.4S Range R.6W ; N/A 1/4 of 1/4 of 1/4 of 1/4 of Section Base (Mer.) ( )

5. Map Coordinates: 50 mmS 47 mmE (from NW corner of map) 6. Elevation 50 feet

7. Location: Visible portion of site is located on north side of Calera Creek approximately 140 feet west of Route 1, the Coast Highway, in the the community of Vallemar, City of Pacifica. Site boundaries difficult to determine due to highway fill, pavement, dumping, and disturbance from nearby quarry operations. Site map shows extent of visible archeological remains. ( )

8. Prehistoric x Historic Protohistoric

9. Site Description: Site consists of dark brown friable middle with many shell fragments; probably a habitation site. ( )

10. Area: Unknown m(length)x Unknown m(width) m^2. Method of Determination: ( )

11. Depth: 70 cm. Method of Determination: Examination of creek bank where midden layer is clearly visible. ( )

12. Features: None noted ( )

13. Artifacts: Possible pestle; obsidian projectile point ( )

14. Non-artifactual Constitutients: shell; bone fragments ( )

15. Date Recorded: 5/30/1986 16. Recorded By: M. Melandry and B. Compton ( )

17. Affiliation and Address: Environmental Analysis, Caltrans District 4, Box 7310, San Francisco, CA 94120 ( )

18. Human Remains: None noted; however, according to newspaper articles in the Pacifica Tribune, burials were uncovered during construction of Route 1 in 1963. ( )

S-8244
S-15828 a.

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
ARCHEOLOGICAL SITE RECORD

Permanent Trinomial: /
mo. yr.
Temporary Number:

Agency Designation: 4-SM-1-Fassler

19. Site Integrity: Until at least 1982, there was a horse stable on a portion of the site, which could account partially for the extremely dark and friable soils found in the visible portion of the site. Concrete and sawed lumber are found two feet beneath the site's surface (noted in creek bank), indicating redeposit at least in this area. In addition, an unknown portion of the site cannot be seen since it is covered by fill and Route 1. Finally, the operators of the nearby quarry stated that they have been dumping in the site area for several years and this prevented determination of site boundaries. See site map.
( )

20. Nearest Water (type, distance and direction): Calera Creek, an intermittent drainage, flows S/W through site. ( )

21. Largest Body of Water within 1 km (type, distance and direction): N/A ( )

22. Vegetation Community (site vicinity): [Plant List (X)] ( )
Grasslands with some coyote brush and poison hemlock

23. Vegetation Community (on site): [Plant List (X)] ( )
Ruderal vegetation on disturbed ground, dominated by opportunistic weedy species

References for above: V. Lewis, Caltrans District 4 biologist ( )

24. Site Soil: Dark friable midden ( )

25. Surrounding Soil: light brown;gravel ( )

26. Geology: Recent alluvial deposition ( )

27. Landform: Valley with hills on north and south ( )

28. Slope: Flat ( )

29. Exposure: Protected from wind bhy hills; open to sun ( )

30. Landowner(s) (and/or tenants) and Address: Portion: Caltrans District 4, San Francisco ; Quarry Products, Inc., Pacifica ( )

31. Remarks: Site boundaries could not be determined due to disturbance, embankment fills, pavement, and dense vegetation; extent of visible archaeological remains shown on site map. Site is thought to extend under fill and to east because of information contained in 1963 newspaper articles, which state that when Caltrans was improving Route 1 in the 1960s, archaeological remains were uncovered.
( )

32. References: Pacifica Tribune of August 14 and 21, 1963; personal communication from D. Cassinelli, resident engineer for construction of Route 1 in 1963; personal communication from Dr. Z. Pohorecky, professor of archaeology at the University of Saskatchewan; Archaeological Survey Report, 4-SM-1, PM 42.0/R43.2, by Mara Melandry, Caltrans District 4. ( )

33. Name of Project: Improvements to Route 1 in Rockaway Beach and Vallemar, proposed by the California Department of Transportation District 4.

34. Type of Investigation: Surface survey ( )

35. Site Accession Number: Curated At: Caltrans District 4 ( )

36. Photos: 6 color slides Taken By: R. Fitzgerald ( )

37. Photo Accession Number: On File At: Caltrans District 4, San Francisco ( )

a.

Ca-SMa-268

P-41-000264

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
ARCHEOLOGICAL SITE RECORD
Continuation Sheet

Permanent Trinomial: /
mo. yr.
Temporary Number:

Agency Designation:4-SM-1-Fassler

Item No. 22

plant list: coyote brush (_Baccharis pilularis_); poisun hemlock (_Conium maculatum_); various seasonal grasses.

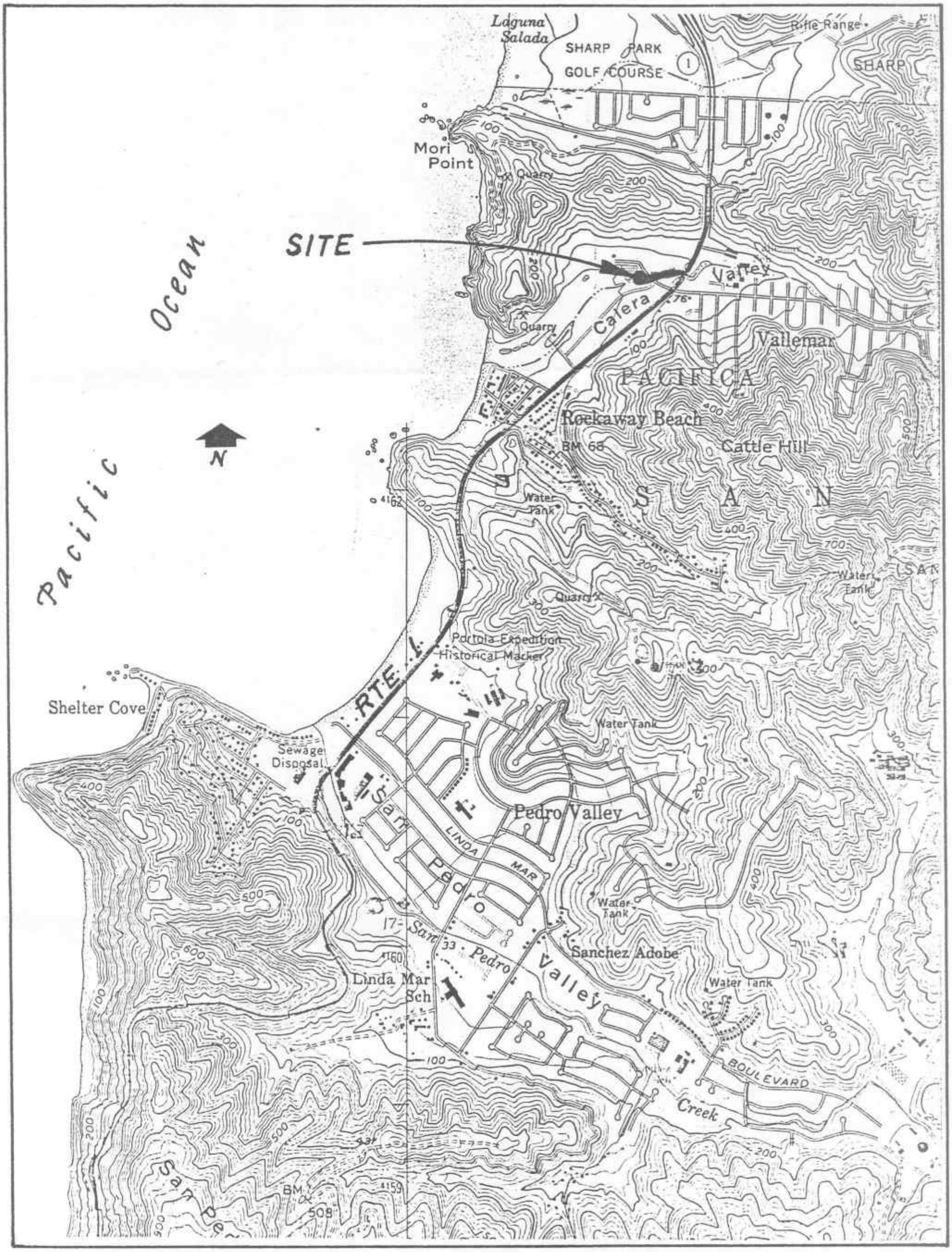
Item No. 23

plant list: poison hemlock (_Conium maculatum_); mustards(_Brassica_ sp), and bristly ox-tongue (_Picris echnoides_).

a.

Ca-SMa-268

P-41-000264

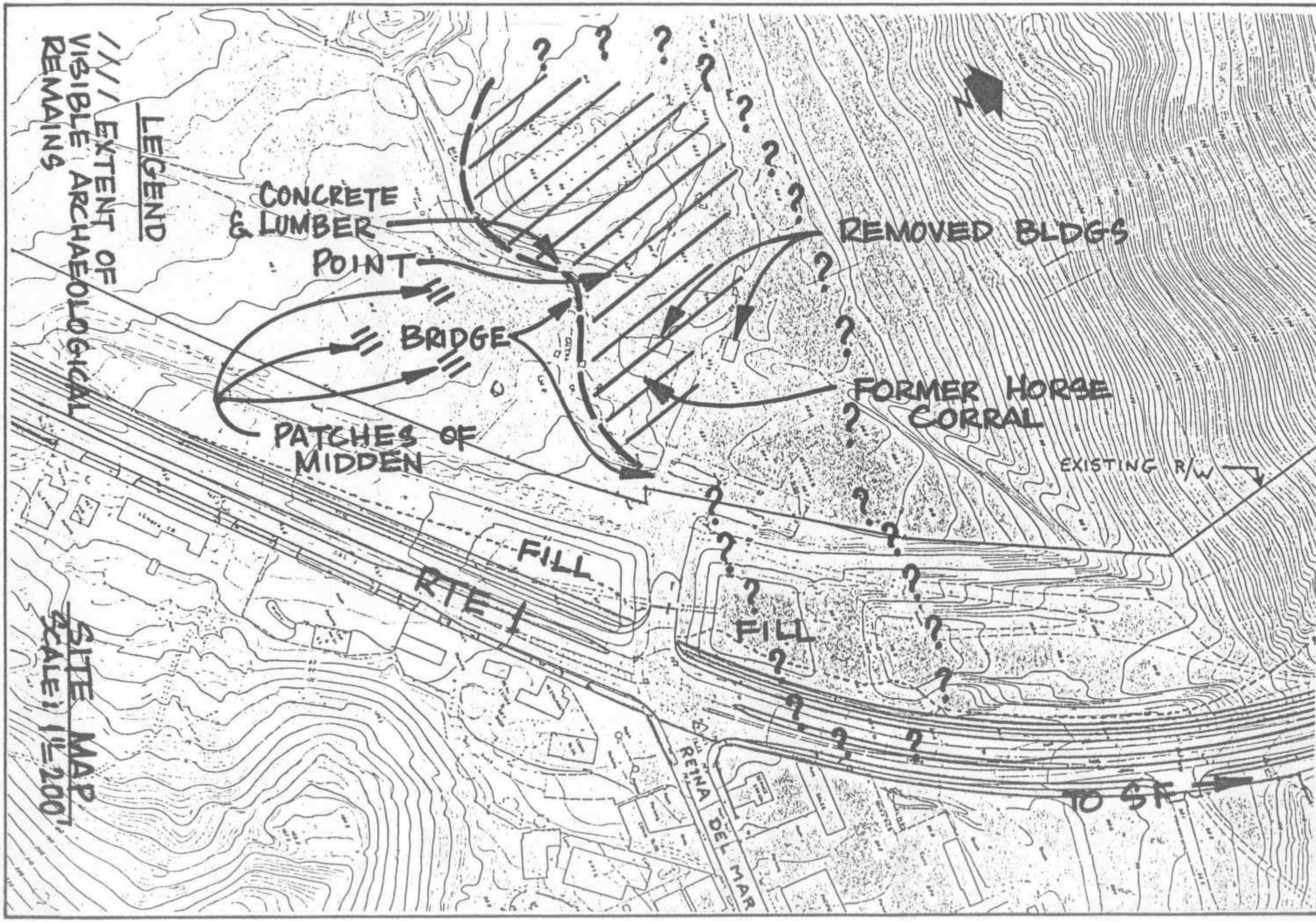


SITE LOCATION MAP

Portion of Montara Mountain USGS
Scale: 1" = 2000'

5/86

a



Ca-SMa-268
P-41-000264

Attachment B – San Mateo County ADOE

SITE-NUMBER.	PRIMARY-NUM	NRS	EVL-DATE	PROGRAM REF.......	EVAL	OTHER NAMES AND NUMBERS...
SMA-000151	41-000001	1S	02/23/78	78000771	KPNP	U.C. ARCHAEOLOGICAL RESEARCH FACILITY NO. SMA-151 UC-ARF 61,62,63
SMA-000162	41-000162	6Y	10/30/86	ADOE-41-86-001-000	RJPR	DOT-04-SMA-1-2
		6Y	10/30/86	FHWA860919A	RJPR	
SMA-000232	41-000230	6Y	07/17/95	ADOE-41-95-002-000	SGPR	82-9A
		6Y	07/17/95	FHWA950714X	SGPR	
SMA-000233	41-000231	6Y	07/17/95	ADOE-41-95-003-000	SGPR	
		6Y	07/17/95	FHWA950714X	SGPR	
SMA-000299	41-000409	6Y	12/27/95	ADOE-41-95-001-000	GRPR	
		6Y	12/27/95	UMTA900828A	GRPR	
SMA-000336H	41-000316	6Y	04/04/94	ADOE-41-94-003-000	GRPR	
		6Y	04/04/94	GSA940322A	GRPR	
SMA-000337H	41-000279	6Y	04/04/94	ADOE-41-94-001-000	GRPR	
		6Y	04/04/94	GSA940322A	GRPR	
SMA-000338H	41-000280	6Y	04/04/94	ADOE-41-94-002-000	GRPR	
		6Y	04/04/94	GSA940322A	GRPR	
SMA-000353H	41-002147	6Y	08/06/07	FTA040913A	CFPR	PN-1
SMA-000378H	41-002160	6Y	08/06/07	FTA040913A	CFPR	FT-2
SMA-00353HH		6Y	08/06/07	FTA040913A	CFPR	
SMA-00378HH		6Y	08/06/07	FTA040913A	CFPR	
SMA-Z00003	41-000257	6Y2	04/20/10	FCC100311B	JSPR	PREHISTORIC LITHIC SCATTER, S-022606

Appendix J

PREPARED FOR:

THE PRESERVE AT PACIFICA, LLC
231 W. FULTON STREET
GRAND RAPIDS, MICHIGAN 49503

PREPARED BY:

GEOCON CONSULTANTS, INC.
6671 BRISA STREET
LIVERMORE, CALIFORNIA 94550

GEOCON PROJECT NO. E8867-04-03

DECEMBER 2018

GEOCON
CONSULTANTS, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. E8867-04-03
December 10, 2018

The Preserve at Pacifica, LLC
231 W. Fulton Street
Grand Rapids, Michigan 49503

Attention: Mr. Paul C. Heule

Subject: ROCKAWAY QUARRY
PACIFICA, CALIFORNIA
GEOTECHNICAL INVESTIGATION FOR QUARRY RECLAMATION

Dear Mr. Heule:

In accordance with your authorization, we have performed a geotechnical investigation for the subject project in Pacifica, California. Our investigation was performed to observe the soil and geologic conditions that may impact the reclamation of Rockaway Quarry as presently planned. The accompanying report presents the results of our investigation and conclusions and recommendations pertaining to the geotechnical aspects of the reclamation. The findings of this study indicate the site is suitable for reclamation as planned provided the recommendations of this report are implemented during design and construction. Additional geotechnical studies will be required as plans emerge for the various areas of redevelopment at the site.

If you have any questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Sincerely,

GEOCON CONSULTANTS, INC.

DRAFT DRAFT

Shane Rodacker, PE, GE	John Pfeiffer, PG, CEG
Senior Engineer	Senior Geologist

(1/e-mail) Addressee
(1/e-mail) Walsh Engineering
Attention: Mr. Matt Walsh

TABLE OF CONTENTS

GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of a geotechnical investigation for the proposed reclamation of Rockaway Quarry in Pacifica, California (see Vicinity Map, Figure 1). The purpose of this investigation was to evaluate the subsurface soil and geologic conditions in the areas of planned reclamation grading and provide conclusions and recommendations pertaining to the geotechnical and geologic aspects of the reclamation, based on the conditions encountered during our study.

This report is specific to the current December 2018 reclamation plan by Walsh Engineering (2018 Reclamation Plan) and supersedes our 2015 report that was prepared for a different plan. The current grading plans have been prepared at 200-scale. We understand the plans and accompanying reports will be submitted to the City of Pacifica for a “completeness review” and more-detailed, 40-scale grading plans will ultimately be prepared in advance of proposed grading associated with the 2018 Reclamation Plan. The recommendations in this report are based on the 200-scale grading plans and, therefore, should be considered conceptual but suitable for project planning purposes. The recommendations provided herein should be revisited once 40-scale grading plans are available. Additional or supplemental recommendations may be provided at that time. In particular, we should collaborate with the civil engineer to develop updated keyway, benching and subdrain details for the planned grading.

The scope of this investigation included field exploration, laboratory testing, engineering analysis and the preparation of this report. Our initial field exploration was performed from August 24 through 26, 2015 and included the excavation of 21 exploratory test pits to maximum depths of approximately 21 feet at the site. We subsequently performed six cone penetrometer tests (CPTs) to depths of approximately 51 feet or less on October 13, 2018 to evaluate liquefaction potential in the southeastern portion of the site. The locations of our test pits and CPTs are depicted on the Geologic Map, Figure 2. A detailed discussion of our field investigation, test pit logs and CPT profiles are presented in Appendix A.

Laboratory tests were performed on selected soil samples obtained during the investigation to evaluate pertinent physical properties. Appendix B presents the laboratory test results in tabular and graphic format. Recommended grading specifications for the planned reclamation grading are presented in Appendix C. Figures 3 and 4 present the grading and drainage plans proposed for the quarry reclamation, respectively. Geologic cross-sections that are based on civil cross-sections from the Walsh Engineering reclamation plan are presented as Figures 5 through 8.

The recommendations presented herein are based on analysis of the data obtained during the investigation and our experience with similar soil and geologic conditions. References reviewed to prepare this report are provided in the *List of References* section.

If project details vary significantly from those described herein, Geocon should be contacted to determine the necessity for review and possible revision of this report.

2. SITE AND PROJECT DESCRIPTION

The project site is comprised of approximately 87 acres generally located west of the Pacific Coast Highway (California SR 1) in Rockaway Beach. The site is divided into two parcels that are separated by Calera Creek. The eastern parcel is approximately 39 acres of relatively level terrain that slopes gradually to the southwest and is bordered by the City of Pacifica Wastewater Treatment Plant to the north and the Rockaway Beach district of Pacifica to the south. West of Calera Creek is an approximately 48-acre parcel that includes the formerly-mined hillside that was the source of aggregate (limestone) for Rockaway Quarry. Historic mining operations at the quarry have resulted in various areas of undocumented fill and over-steepened cut slopes in the western parcel. It should be noted that, subsequent to the cessation of mining activity in the late 1980s, the City of Pacifica relocated Calera Creek approximately 300+ feet westward to its current location.

Various areas of the site have historically carried common names in prior reclamation plans and associated geotechnical studies. These areas are distinguishable on Figures 3 and 4 and include the following:

<u>Quarry Pit</u>

This area is the southeast-facing bowl to the west of Calera Creek and is essentially the remnant bottom of the former quarry. The Quarry Pit has two tiers – a western tier with surface elevations on the order of 40 to 50 feet MSL and a lower eastern tier with surface elevations on the order of 32 to 38 feet MSL.

<u>Quarry Face</u>

This south-facing cut slope was created by limestone mining operations in the quarry and extends from the Quarry Pit approximately 200 feet upslope to the Hilltop area.

<u>East Flank</u>

This east- to southeast-facing slope area is located between Calera Creek and the Hilltop area.

<u>Hilltop</u>

The Hilltop is a relatively flat area atop the Quarry Face and East Flank areas. The Hilltop is characterized by three notable promontories that remain from past quarry operations. Ground surface elevations in this area range from approximately 240 feet to 280 feet MSL.

<u>Southern Bluff</u>

The Southern Bluff is a prominent northwest-southeast trending ridgeline that separates the Quarry Pit from the Pacific Ocean. The Southern Bluff ridgeline is up to approximately 70 feet above the adjacent Quarry Pit. The Southern Bluff transitions (slopes downward) to the Quarry Pit and Calera Creek at its southeastern end and meets the Quarry Face at its northwestern end.

<u>Eastern Parcel</u>

The 39-acre Eastern Parcel is generally located east and south of Calera Creek, and bound by SR 1 and the Rockaway Beach district of Pacifica on its southeastern and southwestern sides, respectively. The Eastern Parcel is relatively flat with ground surface elevations of approximately 65 feet MSL at the northeastern margin to approximately 20 feet MSL at the extreme southwestern corner.

Earthwork for the current quarry reclamation grading plan will require approximately 1.2 million cubic yards of imported fill materials. Grading will generally consist of deep fills to in-fill the Quarry Pit, comparatively minor fills throughout a portion of the Eastern Parcel, and cuts to layback existing slopes below the Hilltop. Grading will also be required for a new multi-use trail that will access the Hilltop via the East Flank. The proposed reclamation plan grading is presented on Figure 3. Grading details are discussed below and depicted on the civil cross-sections used as the basis for our Geologic Cross-Sections A through I presented on Figures 5 through 8.

Maximum fill thickness on the order of 90 to 100 feet will be required to bring the Quarry Pit up to proposed grades. Grading of the Quarry Pit will result in a tall fill slope facing Calera Creek. The fill slope will be up to 130 feet high with inclinations of 2:1 (horizontal:vertical) or flatter. The slope configuration will be steepest at the northern end (above the existing Calera Creek crossing) and transition to a 4:1 fill slope over an approximately 50-foot-high 2:1 fill slope at the southwestern end where the fills meet the Southern Bluff. Finished ground surface elevations of 150 feet MSL are planned where the Quarry Pit fill meets the Quarry Face. The top of the Quarry Pit fill will slope gradually from north to south and transition to the fill slope that descends to Calera Creek, or meet the Southern Bluff along the southwestern margin of the pit.

Reclamation grading will include the placement of approximately 10 to 12 feet of fill or less across the southern portion of the Eastern Parcel. The fills will raise grade in this area in preparation for anticipated sea level rise. The area will be generally sheet graded to finished surface elevations ranging from approximately 28 feet MSL at the southwestern corner to a high of 57 feet MSL near the Calera Creek crossing.

Cuts below the Hilltop will form new east- and south-facing cut slopes with inclinations of 2:1 or flatter. Terrace benches for maintenance and drainage are proposed in the cut slopes. Two of the Hilltop promontories described above will be removed.

Several multi-use trails are proposed. One trail will begin at the existing approach at SR 1 (approximately 500 feet northeast of San Marlo Way) and extend to the existing Calera Creek crossing that connects the eastern and western parcels that comprise the site. This trail segment will be constructed at the northeastern margin of the fills planned for the Eastern Parcel, as described above. We understand the portion of the Eastern Parcel north of this trail will be used for wetlands mitigation.

Two new multi-use trails are proposed on benches in the slope face that will result from filling the Quarry Pit. The trails will be generally parallel to Calera Creek and extend from above the existing creek crossing southwest to the Southern Bluff. The upper of the two trails will continue on the inside of the Southern Bluff to the western limit of the Quarry Pit.

A new multi-use trail will be constructed to access the Hilltop. The trail will originate near the existing creek crossing and traverse the lower portion of the East Flank. The trail will turn westward at the northern end of the East Flank and wind upslope to the Hilltop. Minor cuts and fill slopes up to approximately 15 to 20 feet in maximum height will be required to establish proposed grades along the trail.

Drainage improvements associated with the reclamation plan grading include new concrete v-ditches along the multi-use trails and slope benches discussed above. New underground storm drain is proposed along the multi-use trail that accesses the Hilltop, and at the southern margin of the Quarry Pit fill. The proposed reclamation drainage improvements are shown on Figure 4.

3. GEOLOGIC SETTING AND FAULTING

3.1 Regional Geology

Pacifica is located within the Coast Ranges Geomorphic Province of California, on the west side of the San Francisco Peninsula. The Coast Ranges are a series of northwest trending mountains and valleys that extend along much of California's coast and inland to the Central Valley and Klamath Mountains. Topography within the Coast Ranges is controlled by the predominant geological structural trends that generally consist of northwest trending synclines, anticlines and faulted blocks. The dominant structure is a result of both active northwest trending strike-slip faulting, associated with the San Andreas Fault system, and east-west compression within the province.

The San Andreas Fault (SAF) is a major right-lateral strike-slip fault that extends from the Gulf of California in Mexico to Cape Mendocino in northern California. The SAF forms a portion of the boundary between two tectonic plates on the surface of the earth. To the west of the SAF is the Pacific Plate, which moves north relative to the North American Plate, located east of the fault. In the San Francisco Bay Area, movement across this plate boundary is concentrated on the SAF and also distributed, to a lesser extent, across a number of other faults including the Hayward, Calaveras and Rodgers Creek faults, among others. Together, these faults are referred to as the SAF system.

Basement rock west of the SAF is generally granitic, while to the east it consists of a chaotic mixture of highly deformed marine sedimentary, submarine volcanic and metamorphic rocks of the Franciscan Complex. Both are typically Jurassic to Cretaceous in age (205 to 65 million years old). Overlying the basement rocks are Cretaceous (about 140 to 65 million years old) marine, as well as Tertiary (about 65 to 1.6 million years old) marine and non-marine sedimentary rocks with some continental volcanic rock. These Cretaceous and Tertiary rocks have typically been extensively folded and faulted largely as a result of movement along the SAF system, which has been ongoing for about the last 25 million years, and regional compression during the last about 4 million years. The inland valleys, as well as the structural depression within which San Francisco Bay is located, are filled with unconsolidated to semi-consolidated deposits of Quaternary age (about the last 1.6 million years). Continental deposits (alluvium) consist of unconsolidated to semi-consolidated sand, silt, clay and gravel, while the bay deposits typically consist of soft organic-rich silt and clay (bay mud) or sand.

Based on geologic mapping by the United States Geological Survey (USGS), the site is generally mapped as limestone and greenstone of the Franciscan Complex to the west of Calera Creek with Quaternary age alluvium and terrace deposits to the east of the creek. The mapping (published in 1994) depicts areas of fill in the East Flank area and along the present alignment of Calera Creek, which was realigned subsequent to the USGS mapping.

3.2 Faulting and Seismicity

Geologists and seismologists recognize the San Francisco Bay Area as one of the most active seismic regions in the United States. The significant earthquakes that occur in the Bay Area are associated with crustal movements along well-defined active fault zones that generally trend in a northwesterly direction.

The site and the entire San Francisco Bay Area are seismically dominated by the presence of the active San Andreas Fault System. In the theory of plate tectonics, the San Andreas Fault System is a transform fault that forms the boundary between the northward moving Pacific Plate (west of the fault) and the southward moving North American Plate (east of the fault). In the Bay Area, the movement is distributed across a complex system of strike-slip, right lateral parallel and subparallel faults, which include the San Andreas, Hayward and Calaveras faults, among others.

The table below presents approximate distances to active faults in the site vicinity based on mapping by the California Geological Survey (CGS), as presented in an online fault database maintained by Caltrans. Site coordinates are 37.6137° N; 122.4932° W. Known active faults with 30 miles of the site are summarized in Table 3.2.

TABLE 3.2
REGIONAL FAULT SUMMARY

Fault Name	Distance to Site (miles)	Maximum Earthquake Magnitude, M_w
San Andreas (Peninsula)	2 ½	8.0
San Gregorio	3	7.4
San Andreas (North Coast)	15 ¼	8.0
Hayward (North)	21 ¼	7.3
Hayward (South)	22	7.3
Monte Vista – Shannon	22 ¼	6.4
Silver Creek	26 ¾	6.9
Contra Costa Shear Zone	29 ½	6.5
Calaveras (North of Calaveras Reservoir)	29 ½	6.9

The San Andreas Fault and numerous other faults in the Bay Area (San Gregorio, Hayward, etc.) are sources of potential ground motion. However, earthquakes that might occur on other faults within northern California are also potential generators of significant ground motion at the site.

3.3 Surface Fault Rupture

The site is not within a currently established State of California Earthquake Fault Zone for surface fault rupture hazards. In addition, web-based mapping by the USGS indicates that no Quaternary age faults are present at the site. No active faults with the potential for surface fault rupture are known to pass directly beneath the site. Therefore, the potential for surface rupture due to faulting occurring beneath the site is considered low.

3.4 Liquefaction

The site is not located within a State of California Seismic Hazard Zone for liquefaction. Liquefaction is a phenomenon in which saturated cohesionless soils are subject to a temporary loss of shear strength due to pore pressure buildup under the cyclic shear stresses associated with intense earthquakes. Primary factors that trigger liquefaction are: moderate to strong ground shaking (seismic source), relatively clean, loose granular soils (primarily poorly graded sands and silty sands), and saturated soil conditions (shallow groundwater). Due to the increasing overburden pressure with depth, liquefaction of granular soils is generally limited to the upper 50 feet of a soil profile.

Web-based mapping by the USGS indicates the majority of the Eastern Parcel possesses a “high” susceptibility to liquefaction. We recently performed an evaluation of liquefaction potential in the southern portion of the Eastern Parcel using in-situ measurements obtained from our CPT soundings. The results of that evaluation are presented under separate cover.

3.5 Landslides

Our field exploration identified landslides at the site. As shown on the Geologic Map (Figure 2), landslides are present to the north of the East Flank area, just outside the limits of the planned new roadway to access the

Hilltop area. In addition, landslide deposits were observed below dumped fill materials in our Test Pit TP15. The landslide deposits observed in TP15 are likely associated with the eroded scarp immediately west of the mapped limits of dumped fill materials. Where not removed by cuts to attain design grades, landslide deposits will require remedial grading in the form of removal and recompaction. Additional discussion on landslide deposits is provided below in Section 4. The estimated limits of remedial grading for the landslide deposits encountered in TP15 are depicted on Geologic Cross-Sections H (see Figure 8). Remedial grading may also be required for the landslides north of the East Flank area.

3.6 Seacliff Retreat

A prior reclamation plan (Malcolm Carpenter Associates, 1996) indicated the local bluffs that overlook the Pacific Ocean are highly stable cliffs with erosion rates less than ½ foot per year. We have reviewed selected aerial photographs and observed the cliffs during our field exploration. We generally concur with the previously reported erosion rates and further opine that erosion rates in slopes or bluffs comprised of limestone will very likely be less than ½ foot per year.

It should be noted that a relatively shallow mantle of dumped fills is present on the outside (oceanside) face of the Southern Bluff. These materials are significantly more susceptible to erosion and show evidence of sloughing. However, the sloughing and erosion of these dumped fills appears to be of little consequence due to their shallow thickness and the absence of improvements that would derive support in the dumped fill materials.

4. SITE GEOLOGY AND GROUNDWATER CONDITIONS

4.1 Fill (Qf)

Fill material is present in the Quarry Pit, Eastern Parcel, East Flank, and on the Southern Bluff. Fill materials in the Quarry Pit and Eastern Parcel appear to have been placed and graded, but documentation of fill placement, quality, or compaction was not available during this investigation. Dumped fill, unconsolidated material associated with the former quarry operations, has been dumped or pushed down existing slopes in the East Flank and Southern Bluff areas, and is discussed separately in Section 4.2.

Existing fills in the Quarry Pit are on the order of 20+ feet thick over limestone bedrock and consists variously of loose to medium dense silty sandy gravel, clayey gravel, and gravel with sand, cobbles, boulders up to approximately 2 feet maximum dimension, and asphalt fragments. In the eastern tier of the Quarry Pit, fill is on the order of 11 feet thick.

Based on our exploratory test pits in the area, fills in the Eastern Parcel are at least 6 feet thick and extend to depths of 15 feet or more in some locations. As encountered in our test pits, the fills consisted of silty sands and clays with variable amounts of gravel and clayey to gravelly sands. Various debris were observed in the fills and included wire, fabric, asphalt fragments, and concrete chunks up to approximately 2½ feet in maximum dimension.

Geotechnical documentation of prior grading activities was not provided. As such, fill materials at the site may contain constituents that differ from those described above and/or deleterious materials. Additional areas of fill may be present. Remedial grading of the fills will be required in areas to receive structural loads or settlement-sensitive improvements; specific recommendations will be provided in future geotechnical investigations specific to planned development(s).

4.2 Dumped Fill (Qdf)

Dumped fill is considered herein to be material that was pushed or dumped down slopes at the site as waste material during former mining operations. Dumped fill is present as relatively thin cover (approximately 5 feet or less) over limestone bedrock along the top of the Southern Bluff and down much of the Southern Bluff's southwest (ocean-facing) slope, where it actively sloughs into the ocean. At the east end of the Quarry Face, dumped fill forms a ramp consisting of loose limestone gravel, cobbles, and boulders. Dumped fill on the East Flank consists variously of loose to medium dense silty sandy gravel, silty gravel, gravelly sand, and silty clay, with trace cobbles, boulders, and chunks of asphalt. Fill thicknesses in our test pits on the East Flank ranged from approximately 5 to 17 ½ feet. Where supporting settlement-sensitive improvements in the East Flank, the dumped fill will require remedial grading in the form of removal and recompaction.

4.3 Alluvium (Qa)

Alluvium was encountered below the fills that mantle the Eastern Parcel. As observed in our test pits, the alluvium consisted of silty to sandy lean to fat clays. Prior studies by others included soil borings that extended to maximum depths of approximately 40 feet and reported predominantly fine-grained soils (silts and clays) with some occurrences of dense to very dense sands and gravel. USGS mapping indicates the alluvial deposits are susceptible to liquefaction.

4.4 Landslide Deposits (Qls)

Landslide deposits are present on the north-central boundary of the site and below some of the dumped fills in the East Flank. We observed two coalesced debris flow-type landslides along the north site boundary (Test Pits TP17 and TP18). These landslide deposits are on the order of 6 to 8 feet thick and consist of silty clay overlying residual soil of generally similar composition.

We observed landslide deposits in the upper portion of the East Flank (Test Pit TP15) at a depth of approximately 5 to 9½ feet, underlying the dumped fill material and overlying residual soil. This landslide deposit consisted of brown sandy clay with gravel-sized clasts of brown siltstone. Test Pit TP15 was located approximately 50 feet downslope from an eroded and vegetated landslide scarp (see Geologic Map, Figure 2).

4.5 Franciscan Complex – Calera Limestone (fl)

Limestone at the site is identified in geologic references as the mid-Cretaceous age Calera Limestone. It is prominent south of the shear zone at the site, in the Quarry Face, the west end of the Quarry Pit, and the Southern Bluff, as a strong, light gray to dark gray layered rock with bedding on the order of 4 to 12 inches thick. The bedding orientation varies but generally dips to the north-northwest at inclinations of approximately 24 to 83 degrees below horizontal. It is intensely to moderately fractured but maintains relatively steep (even overhanging) slopes, owing to rough and calcite-cemented discontinuities. The existing approximately 1:1 (horizontal to vertical) limestone slopes in the Quarry Face and Southern Bluff appear to be performing well, exhibiting surficial raveling as would be anticipated, but not showing evidence of deep-seated instability.

In the central portion of the Quarry Pit (Test Pit TP11), limestone bedrock at the former quarry floor is present beneath approximately 20 feet of fill material, at an elevation of approximately 28 feet MSL. In the eastern tier of the Quarry Pit, we encountered limestone bedrock in Test Pit TP8 beneath approximately 11 feet of fill, at an approximate elevation of 22 feet MSL. Limestone blocks and fragments are also present within the shear zone along with other materials.

4.6 Franciscan Complex – Greenstone (fg)

Franciscan Complex greenstone in the region is described in published geologic references as altered mafic (dark) volcanic rock composed mostly of coarse pyroclastic deposits, but also some small intrusions (dikes) and flows. Geologic mapping by Kaldeveer and Associates (1983, included within the 1996 reclamation plan) depicts greenstone at the site within the limestone on the northeast side of the Southern Bluff, above the limestone in the western and upper portions of the Quarry Face, and extending northward from the shear zone. Our field observations of greenstone were generally consistent with Kaldeveer's 1983 map for the Southern Bluff and Quarry Face. We observed, however, that the slope and Hilltop area above the shear zone consist of brown, thinly to moderately-bedded siltstone with some interbedded chert. The siltstone in the Hilltop area is highly to moderately weathered and pervasively fractured, with varied bedding orientations. We interpret, based on observations elsewhere in the area (e.g. coastal bluffs near the northwest corner of the site) that greenstone in the region also includes some interbedded/associated sedimentary materials such as siltstone and sandstone. Therefore, the greenstone designation is retained for underlying geology of the northern portion of the site.

4.7 Shear Zone

A shear zone extends in an east-west trend across the site midway up the Quarry Face between approximate elevations of 170 and 200 feet MSL. The shear zone generally separates the Calera Limestone to the south and Franciscan greenstone and associated deposits to the north. The shear zone ranges from approximately 30 to 150 feet wide across the mid-slope bench and is approximately 400 feet wide at the west end where it meets the Pacific Ocean. The eastern visible extent of the shear zone is between the Quarry Face and East Flank, where bedrock disappears beneath dumped fill material. Materials within the shear zone include a disrupted mixture of limestone blocks and highly sheared shale and greenstone (mélange). Inactive faults bound the southern and northern edges of the shear zone at the interfaces with adjacent formational materials.

4.8 Groundwater

Groundwater was not encountered in any of our test pits to the maximum depth explored. Groundwater depths were estimated to be 9 to 12 feet below existing grade in our recent CPTs in the Eastern Parcel. Actual groundwater levels will fluctuate seasonally and with variations in rainfall, temperature and other factors and may be higher than observed during our study.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 General

5.1.1 It is our opinion that neither soil nor geologic conditions were encountered during the investigation that would preclude the reclamation of Rockaway Quarry as presently planned provided the recommendations presented herein are followed and implemented during design and construction.

5.1.2 Key geotechnical constraints to the reclamation are the presence of undocumented fill materials and landslide deposits. Remedial grading will be performed to mitigate these constraints where necessary.

5.1.3 All references to relative compaction and optimum moisture content in this report are based on the latest edition of ASTM D 1557. Engineered fill materials should be moisture conditioned to above optimum moisture content where predominantly fine-grained (silts and clays) and near optimum where sands and gravels.

5.1.4 Earthwork contractors should be aware that excavations in formational materials, especially limestone, will encounter difficult digging conditions and special excavation techniques may be required. An evaluation of rippability was beyond the scope of this study.

5.1.5 Rockaway Quarry is one of the oldest quarries in California and aggregate mining occurred over many decades with little or no available records. As such, unknown underground improvements and areas of undocumented fill (not discussed herein) may be present. If encountered, supplemental recommendations will be provided during reclamation grading operations.

5.1.6 More than 20 feet of fill exists at the floor of the Quarry Pit. Given the presence of these fills and the planned thickness of new fills for the 2018 Reclamation Plan (up to approximately 100 feet), settlement should be anticipated in the Quarry Pit due to compression within the existing and new fill materials. The design of any improvements in the Quarry Pit area should consider the potential for future settlements.

5.1.7 Any changes in the reclamation plan grading, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.

5.2 Soil and Excavation Characteristics

5.2.1 Based on the soils conditions encountered in our test pits, the onsite fill materials can be excavated with moderate effort using conventional excavation equipment. We do anticipate excavations in these materials will generate significant quantities of oversize material (greater than 12 inches in nominal dimension). In addition, the artificial fills that are present at the site are undocumented and may contain constituents not reported herein.

5.2.2 It is the responsibility of the contractor to ensure that all excavations are performed in accordance with applicable Occupational Safety and Health Administration (OSHA) rules and regulations to maintain safety and maintain the stability of adjacent existing improvements.

5.3 Materials for Fill

5.3.1 Excavated soils generated from cut operations at the site are geotechnically-suitable for use as engineered fill in structural areas provided they do not contain deleterious matter, organic material, or cementations larger than 24 inches in maximum dimension.

5.3.2 Import material should be well-graded with a very low to moderate expansion potential (Expansion Index less than 90), a Plasticity Index less than 20, be free of organic material and construction debris, and not contain rock larger than 6 inches in greatest dimension.

5.3.3 Materials used as engineered fill within 15 feet of slope faces (measured horizontally from the slope face) inclined at 3:1 or steeper should possess a minimum internal angle of friction (Ø) of 30° and cohesion of at least 200 pounds per square foot (psf) under drained conditions when tested in accordance with ASTM D 3080 or similar geotechnical laboratory test for shear strength.

5.3.4 Environmental characteristics and corrosion potential of import soil materials may also be considered. Proposed import materials should be sampled, tested, and approved by Geocon prior to its transportation to the site.

5.4 Grading

5.4.1 All earthwork should be observed and all fills tested for recommended compaction and moisture content by representatives of Geocon.

5.4.2 A preconstruction conference should be held at the site prior to the beginning of grading operations with the owner, contractor, civil engineer and geotechnical engineer in attendance. Special soil handling requirements can be discussed at that time.

5.4.3 All dumped fills and landslide deposits should be removed to expose competent formational materials in areas to receive fills or settlement-sensitive improvements. After removals and where formational materials are exposed at grade, the exposed ground surface scarified to depth of approximately 1 foot and recompacted to at least 90% relative compaction at appropriate moisture content.

5.4.4 After removal of unsuitable materials is performed, the site should then be brought to final grades with structural fill compacted in layers. In general soils, soils derived from cuts in formational materials are suitable for re-use as fill if free of vegetation, debris or other deleterious materials. All structural fill should be placed in layers no thicker than will allow for adequate bonding and compaction (typically 8 to 12 inches with heavy duty grading equipment). Fill soils should be compacted to at least 90% relative compaction at appropriate moisture content. Where fills will be more than 10 feet below proposed grade, the materials should be compacted to at least 95% relative compaction.

5.4.5 Oversize material (defined has material greater than 12 inches in nominal dimension) may be generated during excavations in formational materials or encountered in dumped fills at the site. Placement of oversize material within fills should be conducted in accordance with the recommendations in Appendix C. Grading operations on the site should be scheduled and staged such that oversize materials are placed in designated rock disposal areas and/or deeper fills.

5.4.6 If grading commences in winter or spring, or in periods of precipitation, excavated and in-place soils may be, or become, wet. Earthwork contractors should be aware of moisture sensitivity of fine-grained soils and potential compaction/workability difficulties. The most effective site preparation alternatives will depend on site conditions prior to and during grading operations; we should evaluate site conditions at those times and provide supplemental recommendations, if necessary.

5.4.7 The remedial grading, keyway and benching recommendations herein are general in nature and may be used for planning purposes. The actual depth and extent of remedial grading will be determined in the field during earthwork operations. In addition, supplemental field exploration and testing may be performed to evaluate the competency and extent of existing fills, particularly those in the Eastern Parcel. Updated remedial grading recommendations may be provided as a result of additional exploration and testing.

5.5 Earthwork Grading Factors

5.5.1 Estimates of embankment shrink-swell factors are based on our experience with similar materials and information included in past studies by others at the site. It should be emphasized that variations in natural soil density, as well as in compacted fill, render estimated shrink-swell estimates to be very approximate. As an example, the contractor can compact fills to 90% relative compaction or higher. Thus, the contractor has at least a 10% range of control over the fill volume. Considering the above discussion, the following earthwork factors may be used as a basis for estimating how much the on-site soils may shrink or swell when removed from their existing state and placed as compacted fill.

TABLE 5.5
EARTHWORK GRADING FACTORS

Geologic Unit	Approximate Shrink-Swell Factors
Fill	0 to 5 percent Shrinkage
Dumped Fill	5 to 15 Percent Shrinkage
Franciscan Greenstone	5 to 15 Percent Bulk
Calera Limestone	15 to 25 Percent Bulk

5.6 Slopes

5.6.1 Reclamation grading will result in cut slopes with maximum inclinations of 2:1 (horizontal:vertical) or flatter. Cut slope heights will be on the order of 70 feet or less below the Hilltop (see Geologic Cross-Sections A, B and C, Figure 5 and 6). Maximum fill slope heights of approximately 130 feet are proposed at the southeastern margin of the Quarry Pit. It is our opinion that slopes constructed as recommended herein should possess adequate factor of safety against global (deep-seated) instability.

5.6.2 Cut slopes excavated in Franciscan greenstone may expose materials that are susceptible to surficial slope instabilities. The potential for surficial instability is typically a function of weathering, fracturing and bedding orientations – all of which can be variable. Surficial slope instabilities can manifest in raveling, shallow slumps and other features that require ongoing maintenance. In extreme cases, surficial slumps can progress and lead to more significant slope failures. Although not expected, cut slopes in Franciscan Formation should be observed by our representatives during grading to evaluate the potential for surficial instability and remedial measures may be recommended at that time.

5.6.3 Benches with paved drainage ditches should be provided in the 2:1 cut slopes below the Hilltop. The current Reclamation Grading Plan generally incorporates our recommendations for bench spacing.

5.6.4 The use of cohesionless soils in the outer portion of fill slopes should be avoided. Fill slopes should be overbuilt a horizontal distance of two feet and cut back to finished grade or compacted by backrolling with a loaded sheepsfoot roller at vertical intervals not to exceed 4 feet and should be track-walked at the completion of each slope such that the fill soils are uniformly compacted to at least 90 percent relative compaction at appropriate moisture content.

5.6.5 Keyways will generally be required at the toe of the fill slopes proposed at the southeastern margin of the Quarry Pit and near the toe of embankment fills for the new multi-use trail in the East Flank. The general remedial grading concepts for these areas are depicted on geologic cross-sections in Figures 5 through 8. A typical keyway detail is presented as Figure 9. Approximate anticipated keyway locations are shown on the Reclamation Grading Plan, Figure 3. Keyway details will be refined in during the preparation of 40-scale grading plans.

5.6.6 Slopes should be landscaped with drought-tolerant vegetation, having variable root depths and requiring minimal landscape irrigation. In addition, all slopes should be drained and properly maintained to reduce erosion.

5.6.7 The disturbance and/or loosening of the surficial soils, as might result from root growth, soil expansion, or excavation for irrigation lines and slope planting, may also be a significant contributing factor to surficial instability. We recommend that, to the maximum extent practical: (a) disturbed/loosened surficial soils be either removed or properly recompacted, (b) irrigation systems be periodically inspected and maintained to eliminate leaks and excessive irrigation, and (c) surface drains on and adjacent to slopes be periodically maintained to preclude ponding or erosion. It should be noted that although the incorporation of the above recommendations should reduce the potential for surficial slope instability, it will not eliminate the possibility.

5.7 Subdrains

5.7.1 The planned reclamation grading will require the installation of subdrains. Subdrains will generally be required at the heel of keyways and at the heel of major benches in fill slope areas. In addition, subdrains are recommended at the existing Quarry Pit bottom and should be placed prior to any fill operations.

5.7.2 Conceptual subdrain locations are shown on the geologic cross-sections in Figures 5 through 8. Subdrain locations and other details will be formalized with the preparation of 40-scale grading plans. Subdrains should outlet to facilities deemed suitable by the civil engineer.

5.8 Surface Drainage

5.8.1 Proper surface drainage is critical to the future performance of the project. Uncontrolled infiltration of irrigation excess and storm runoff into the soils can adversely affect the performance of slopes. Saturation of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change to important engineering properties. Proper drainage should be maintained at all times. Drainage should not be allowed to flow uncontrolled over any descending slope.

6. FURTHER GEOTECHNICAL SERVICES

6.1 Testing and Observation Services

6.1.1 The recommendations provided in this report are based on the assumption that we will continue as Geotechnical Engineer of Record and provide geotechnical testing and observation services during earthwork operations at the site. It is important to maintain continuity of geotechnical interpretation and confirm that field conditions encountered are similar to those anticipated during design. If we are not retained for these services, we cannot assume any responsibility for others interpretation of our recommendations, and therefore the future performance of the project.

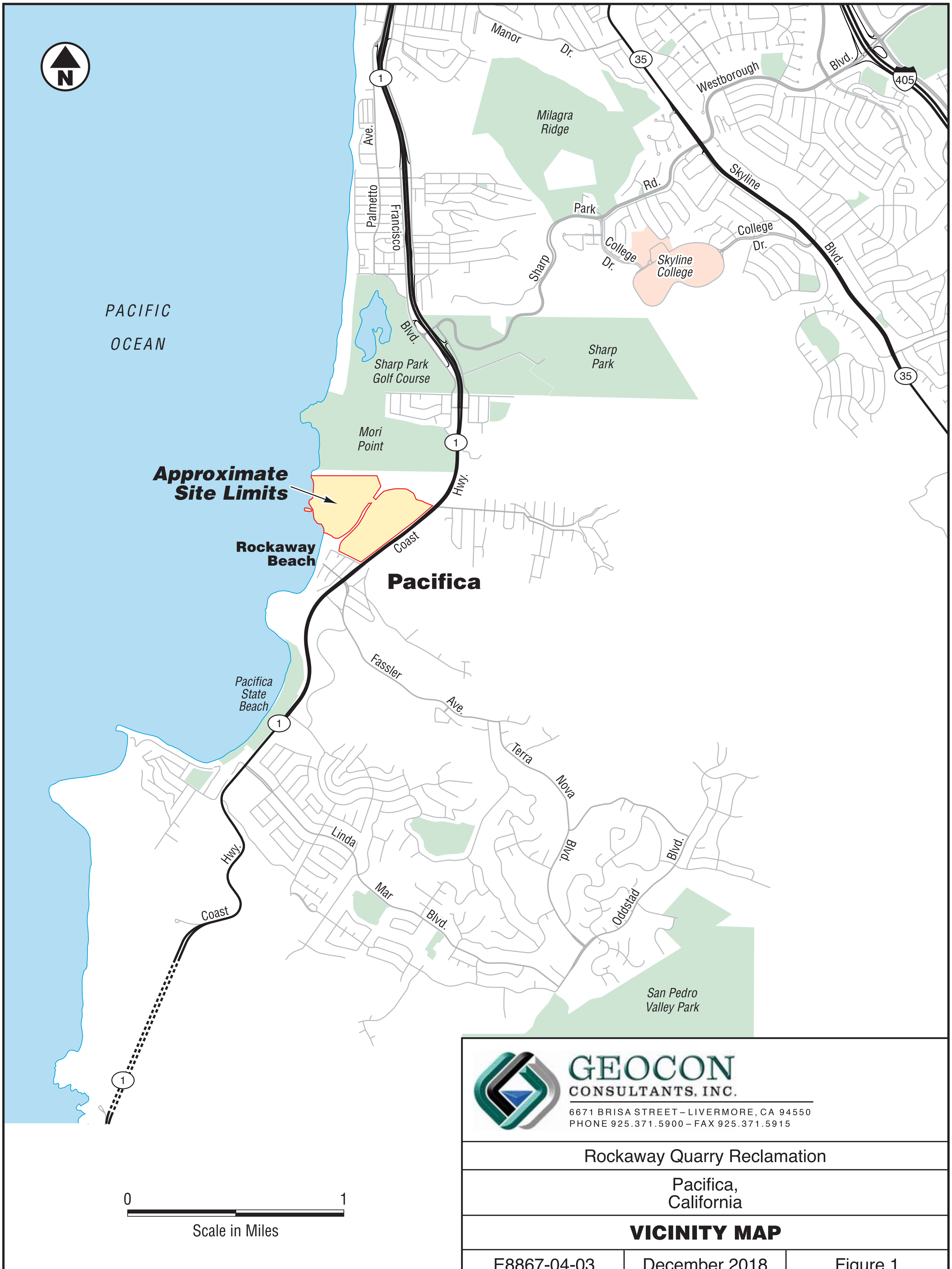
LIMITATIONS AND UNIFORMITY OF CONDITIONS

The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon Consultants, Inc. should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the geotechnical scope of services provided by Geocon Consultants, Inc.

This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices used in the site area at this time. No warranty is provided, express or implied.



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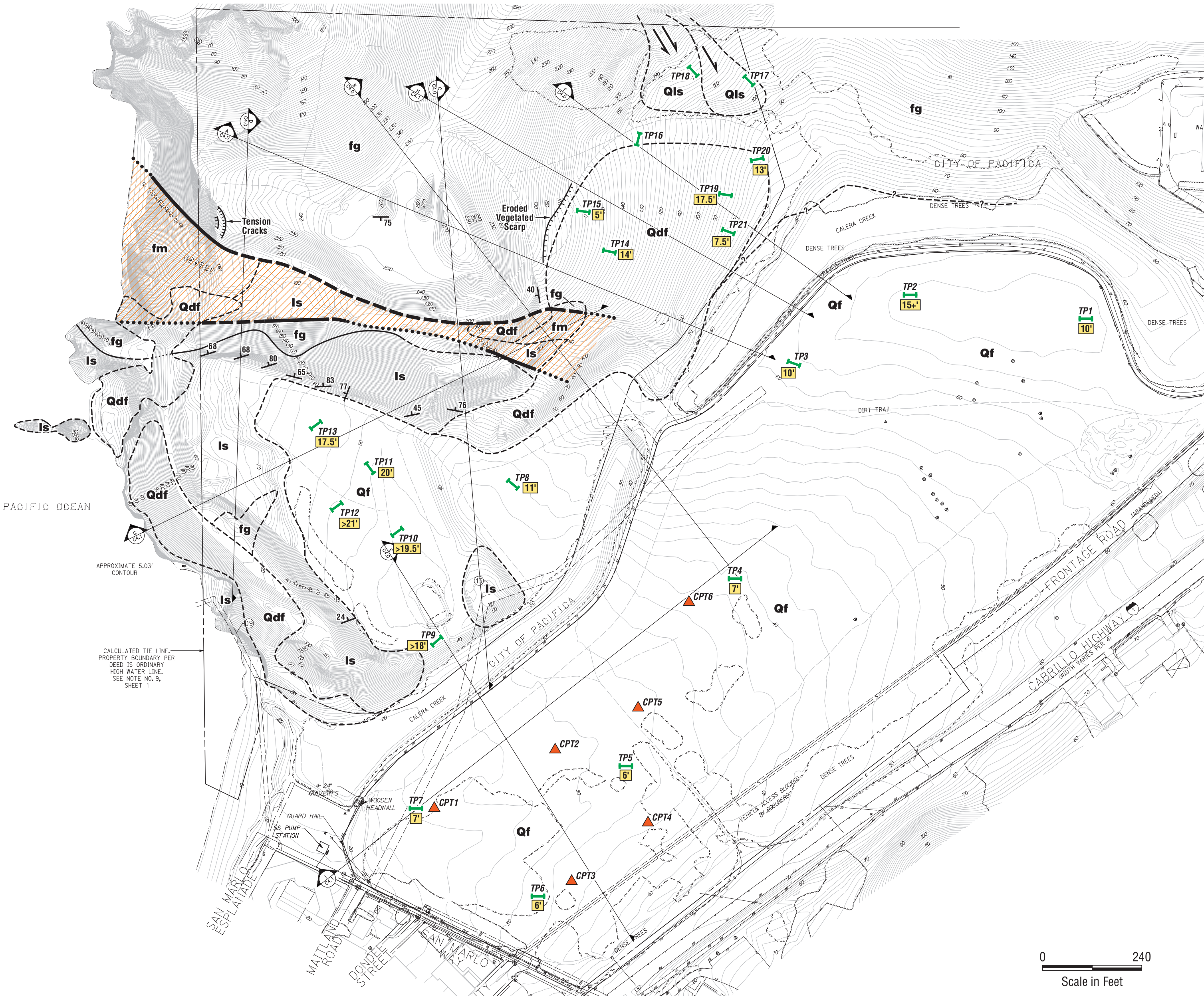
Rockaway Quarry Reclamation

Pacifica,
California

VICINITY MAP

E8867-04-03	December 2018	Figure 1



LEGEND:

- Approximate Location of Civil/Geologic Cross-Section
- CPT1 Approximate CPT Location
- TP1 Approximate Test Pit Location
- 10' Approximate Depth of Fill
- Geologic Contact (dashed where approximate; dotted where covered)
- Fault
- Shear Zone
- Landslide
- 75 Strike and Dip of Bedding
- **Qf** Fill
- **Qdf** Dumped Fill
- **Qls** Landslide Deposit

Franciscan Complex

- **fm** melange: highly sheared mixture of shale, greenstone and limestone
- **fg** greenstone: altered mafic volcanic with associated siltstone
- **ls** Calera Limestone: light to dark gray, moderately bedded

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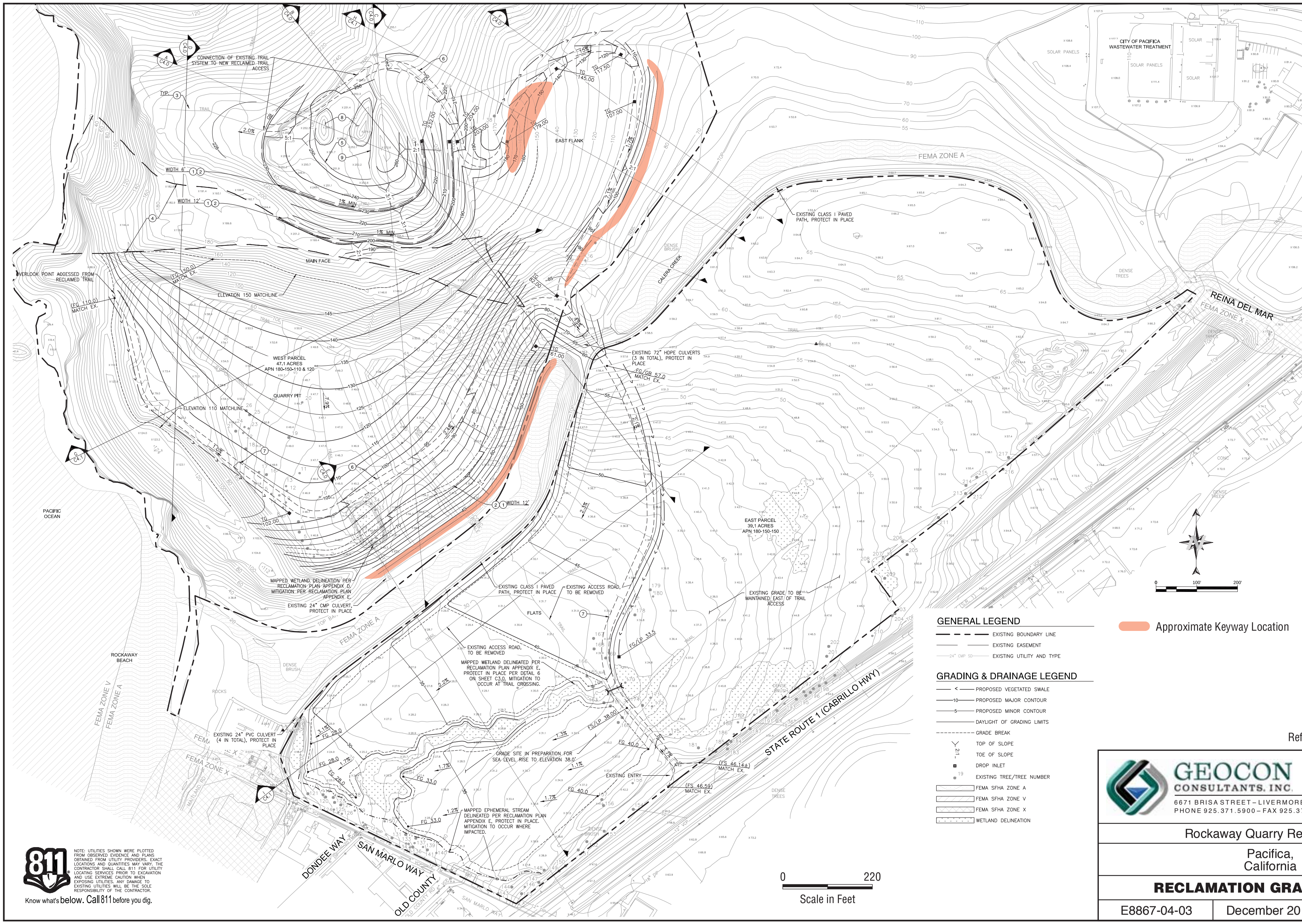
GEOLOGIC MAP

E8867-04-03	Decdember 2018	Figure 2



811 Know what's below. Call 811 before you dig.

NOTE: UTILITIES SHOWN WERE PLOTTED FROM OBSERVED EVIDENCE AND PLANS OBTAINED FROM UTILITY PROVIDERS. EXACT LOCATIONS AND QUANTITIES MAY VARY. THE CONTRACTOR SHALL CALL 811 FOR UTILITY LOCATING SERVICES PRIOR TO EXCAVATION AND USE EXTREME CAUTION WHEN EXPOSING UTILITIES. ANY DAMAGE TO EXISTING UTILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

0 220
Scale in Feet

GENERAL LEGEND

- EXISTING BOUNDARY LINE
- EXISTING EASEMENT
- EXISTING UTILITY AND TYPE

GRADING & DRAINAGE LEGEND

- PROPOSED VEGETATED SWALE
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- DAYLIGHT OF GRADING LIMITS
- GRADE BREAK
- TOP OF SLOPE
- TOE OF SLOPE
- DROP INLET
- EXISTING TREE/TREE NUMBER
- FEMA SFHA ZONE A
- FEMA SFHA ZONE V
- FEMA SFHA ZONE X
- WETLAND DELINEATION

Approximate Keyway Location

Ref: Walsh Engineering, 11/13/18

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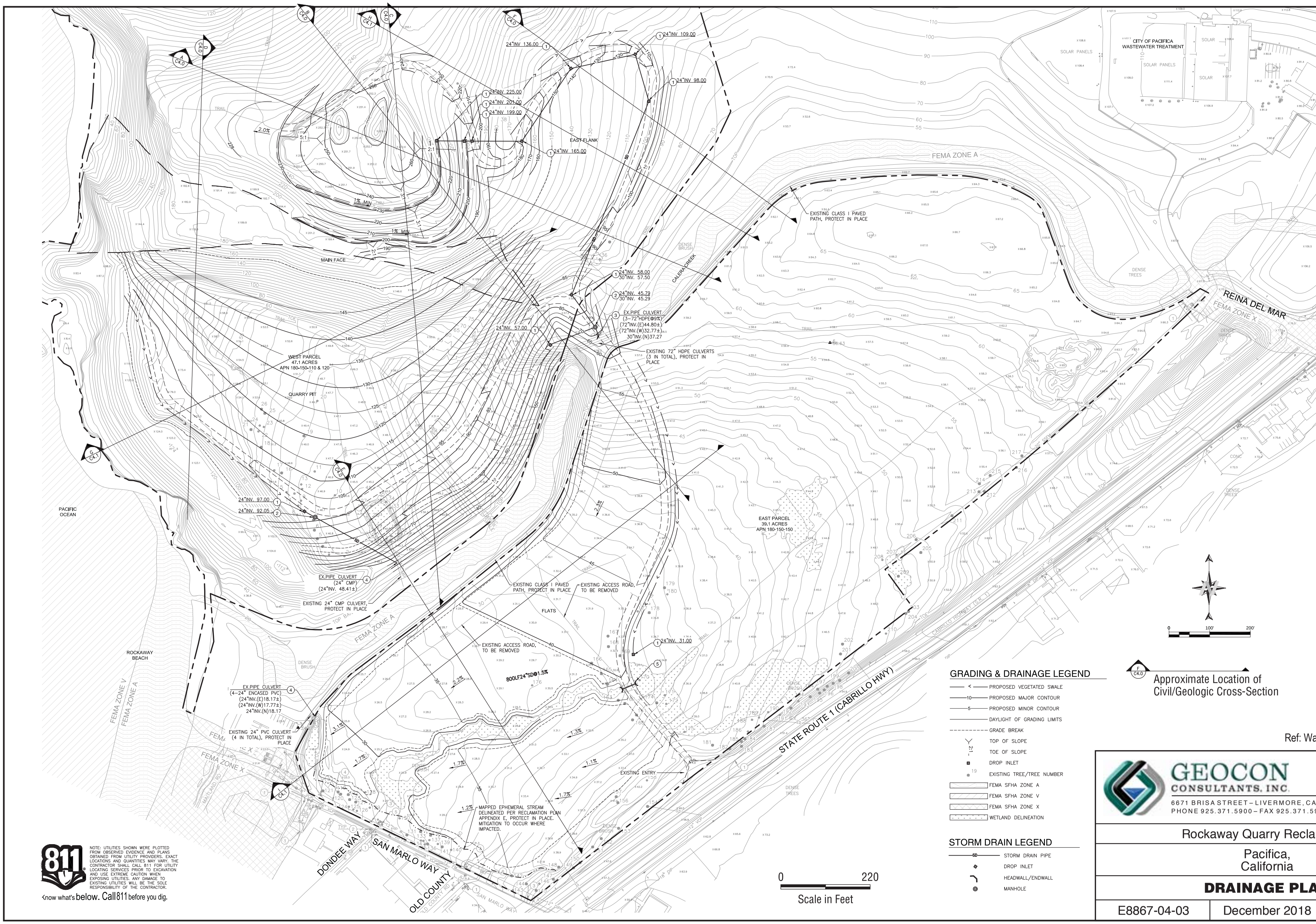
RECLAMATION GRADING PLAN

E8867-04-03	December 2018	Figure 3



NOTE: UTILITIES SHOWN WERE PLOTTED FROM OBSERVED EVIDENCE AND PLANS OBTAINED FROM UTILITY PROVIDERS. EXACT LOCATIONS AND QUANTITIES MAY VARY. THE CONTRACTOR SHALL CALL 811 FOR UTILITY LOCATING SERVICES PRIOR TO EXCAVATION AND USE EXTREME CAUTION WHEN EXPOSING UTILITIES. ANY DAMAGE TO EXISTING UTILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

811 Know what's below. Call 811 before you dig.

0 220
Scale in Feet

GRADING & DRAINAGE LEGEND

- PROPOSED VEGETATED SWALE
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- DAYLIGHT OF GRADING LIMITS
- GRADE BREAK
- TOP OF SLOPE
- TOE OF SLOPE
- DROP INLET
- EXISTING TREE/TREE NUMBER
- FEMA SFHA ZONE A
- FEMA SFHA ZONE V
- FEMA SFHA ZONE X
- WETLAND DELINEATION

STORM DRAIN LEGEND

- STORM DRAIN PIPE
- DROP INLET
- HEADWALL/ENDWALL
- MANHOLE

Approximate Location of Civil/Geologic Cross-Section

Ref: Walsh Engineering, 11/13/18

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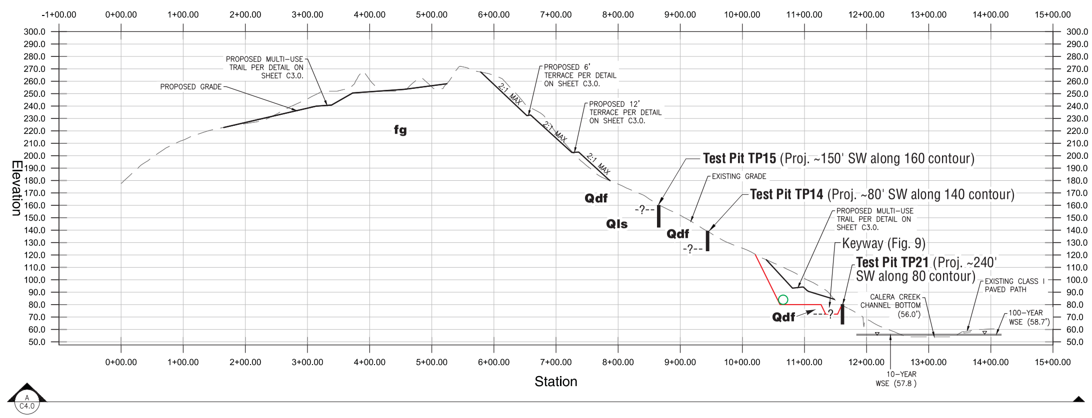
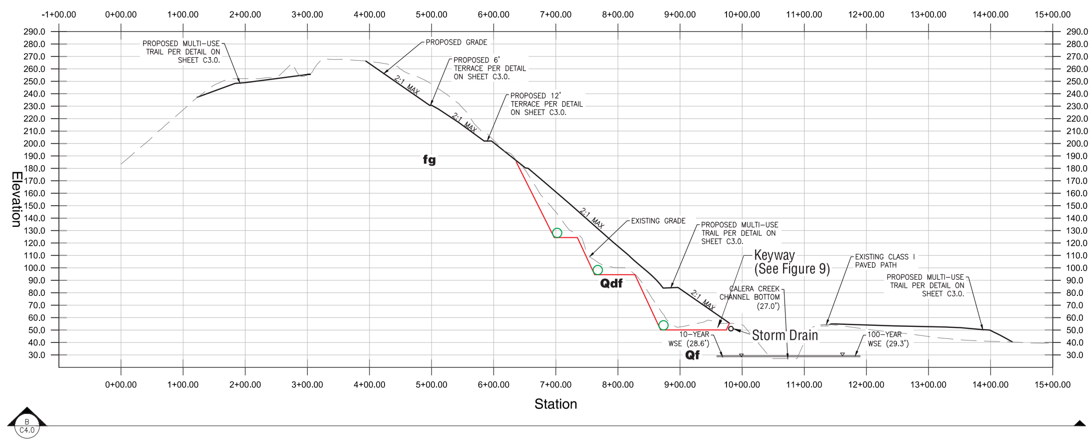
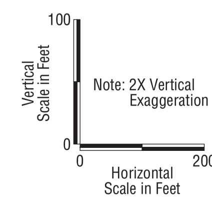
DRAINAGE PLAN

E8867-04-03	December 2018	Figure 4







LEGEND:

▌	Approximate Test Pit Location (projected where noted)
--?--	Geologic Contact (queried where uncertain)
red line	Estimated Limit of Remedial Grading
○	Approximate Subdrain Location

Qf Fill
Qdf Dumped Fill
Qls Landslide Deposit

Franciscan Complex
fm melange
fg greenstone
ls Calera Limestone

Ref: Walsh Engineering, 11/13/18

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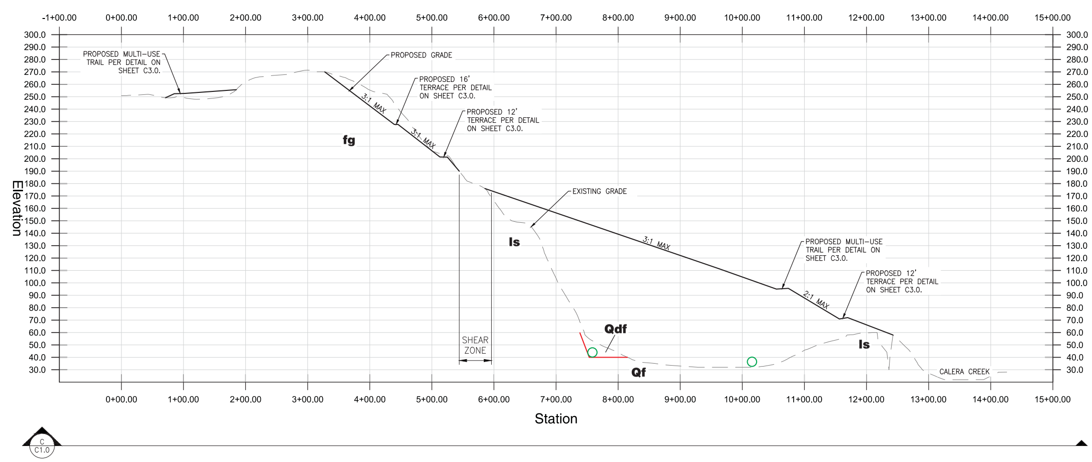
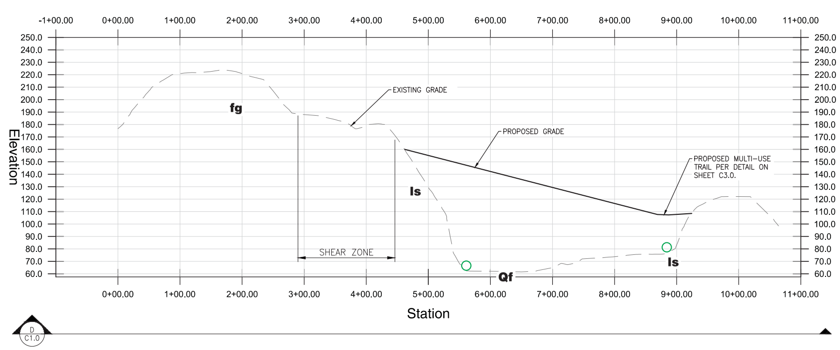
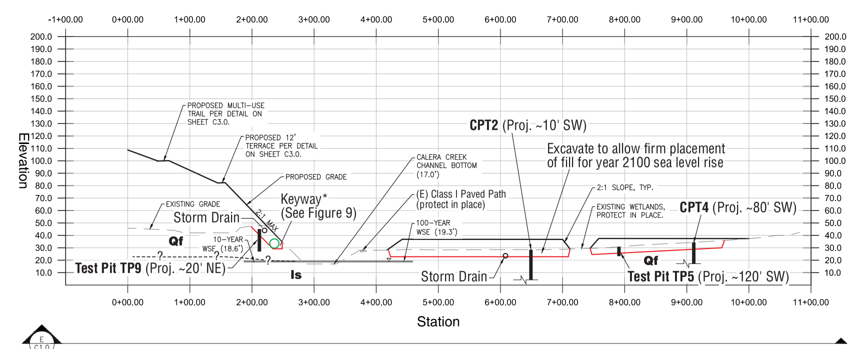
GEOLOGIC CROSS-SECTIONS A AND B

E8867-04-03	December 2018	Figure 5







* Final depth and configuration of keyway to be determined by Geocon during grading

LEGEND:

❙	Approximate Test Pit Location (projected where noted)
--?--	Geologic Contact (queried where uncertain)
red line	Estimated Limit of Remedial Grading
○	Approximate Subdrain Location

Qf	Fill
Qdf	Dumped Fill
Qls	Landslide Deposit
	Franciscan Complex
fm	melange
fg	greenstone
ls	Calera Limestone

Vertical Scale in Feet: 0 – 100

Horizontal Scale in Feet: 0 – 200

Note: 2X Vertical Exaggeration

Ref: Walsh Engineering, 11/13/18

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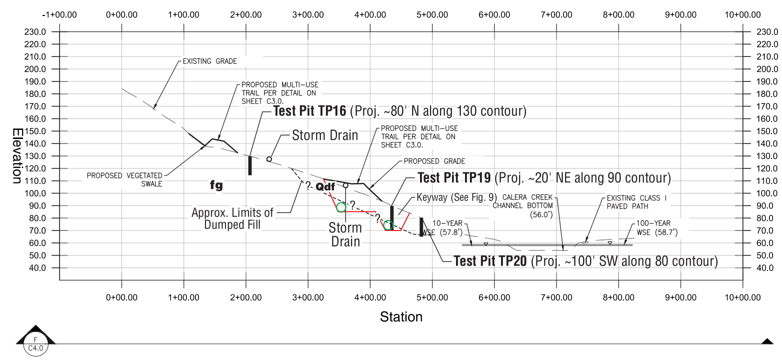
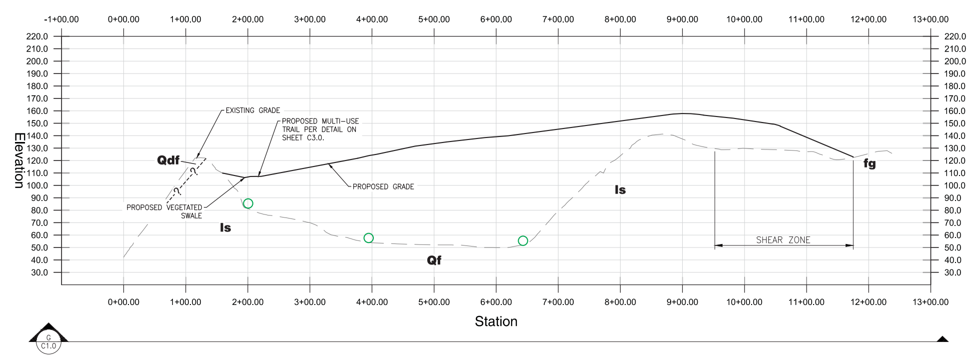
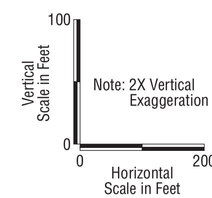
GEOLOGIC CROSS-SECTIONS C, D, AND E

E8867-04-03 | December 2018 | Figure 6







LEGEND:

| Approximate Test Pit Location (projected where noted)

--?-- Geologic Contact (queried where uncertain)

Estimated Limit of Remedial Grading

○ Approximate Subdrain Location

Qf Fill
Qdf Dumped Fill
Qls Landslide Deposit

Franciscan Complex
fm melange
fg greenstone
ls Calera Limestone

Ref: Walsh Engineering, 11/13/18

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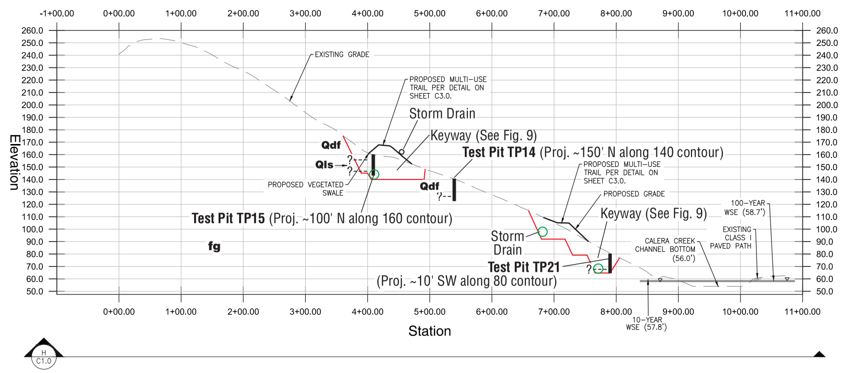
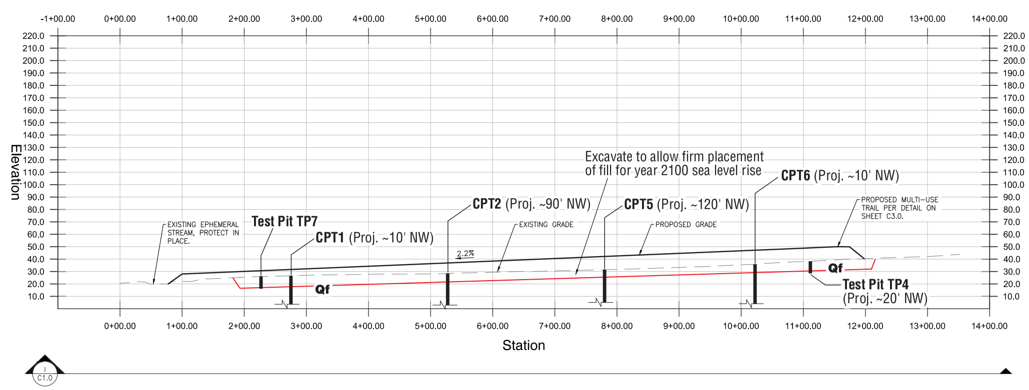
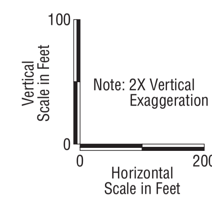
GEOLOGIC CROSS-SECTIONS F AND G

E8867-04-03 | December 2018 | Figure 7







LEGEND:

I	Approximate Test Pit Location (projected where noted)
--?--	Geologic Contact (queried where uncertain)
—	Estimated Limit of Remedial Grading
○	Approximate Subdrain Location

Qf	Fill
Qdf	Dumped Fill
Qls	Landslide Deposit
	Franciscan Complex
fm	melange
fg	greenstone
ls	Calera Limestone

Ref: Walsh Engineering, 11/13/18

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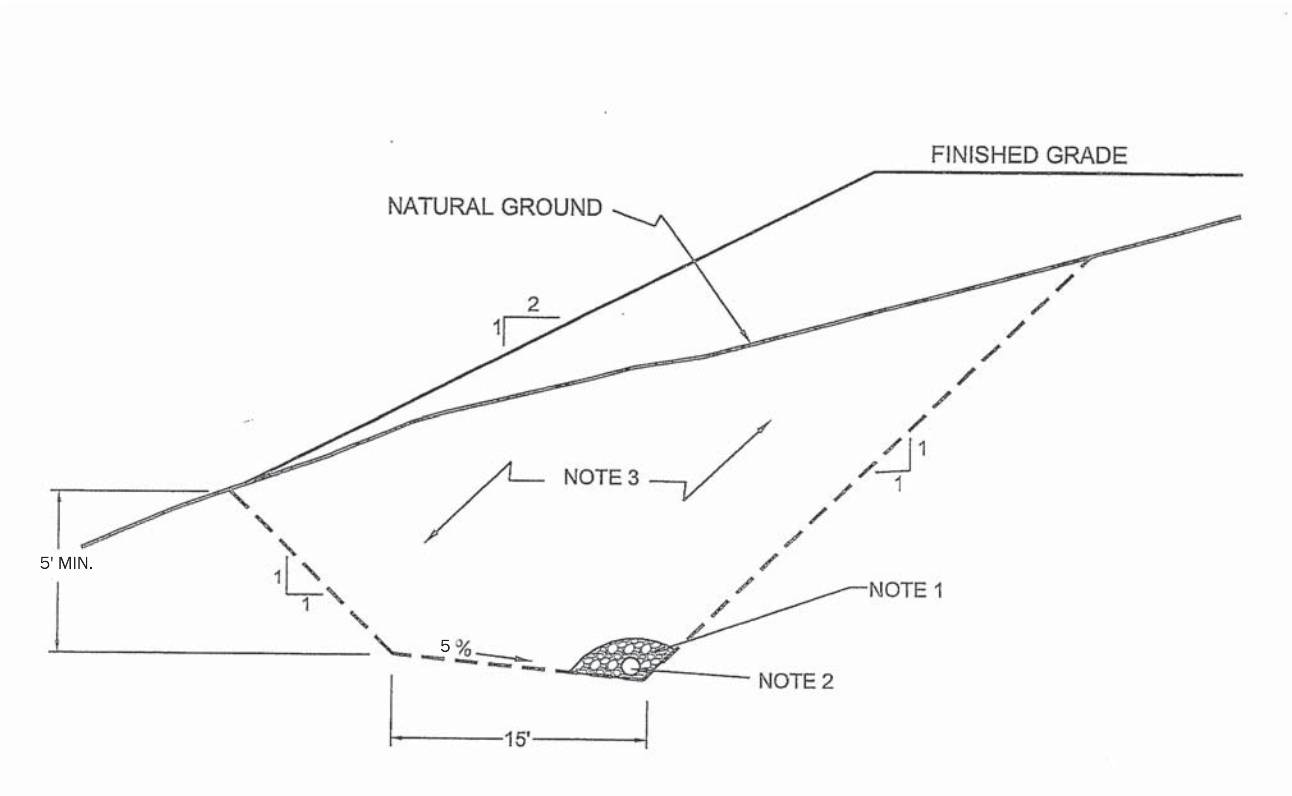
Rockaway Quarry Reclamation

Pacifica, California

GEOLOGIC CROSS-SECTIONS H AND I

E8867-04-03	December 2018	Figure 8



NOTES:

1. 9 CUBIC FEET/FOOT OF OPEN-GRADED GRAVEL SURROUNDED BY MIRAFI 140n OR EQUIVALENT FILTER FABRIC.

2. 6-INCH DIAMETER SCHEDULE 40 PVC PERFORATED PIPE, SLOPING 1% MINIMUM TO SUITABLE TIGHT LINE OUTLET.

3. PROPERLY COMPACTED FILL WITH MINIMUM SHEAR STRENGTH SPECIFIED BY GEOTECHNICAL CONSULTANT.

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TYPICAL KEYWAY DETAIL

Rockway Quarry Reclamation

Pacifica, California

Project No. E8867-04-03 DECEMBER 2018 **FIGURE 9**

APPENDIX A

APPENDIX A
FIELD EXPLORATION

Fieldwork for our investigation included a site visit, subsurface exploration, and soil sampling. The locations of the exploratory test pits and CPTs are shown on the Geologic Map, Figure 2. Logs of our exploratory test pits and CPT profiles are presented in figures following the text in this appendix. Explorations were located in the field by pacing from existing reference points or using hand-held GPS equipment. Therefore, actual exploration locations may deviate slightly.

Our initial subsurface exploration was performed on August 24 through 26, 2015 and included the excavation of exploratory test pits at selected locations throughout the site. Test pits were excavated at 21 locations with a track-mounted Caterpillar 321D excavator equipped with a 36-inch bucket; representative bulk soil samples were obtained for further examination and laboratory testing. Test pit depths ranged from 7 to 21 feet below the existing ground surface. Upon completion, the test pits were backfilled with tamped lifts of excavation spoils.

Subsurface conditions encountered in the exploratory borings were visually examined, classified and logged in general accordance with the American Society for Testing and Materials (ASTM) Practice for Description and Identification of Soils (Visual-Manual Procedure D2488). This system uses the Unified Soil Classification System (USCS) for soil designations. The logs depict soil and geologic conditions encountered and depths at which samples were obtained. The logs also include our interpretation of the conditions between sampling intervals. Therefore, the logs contain both observed and interpreted data. We determined the lines designating the interface between soil materials on the logs using visual observations, drill rig penetration rates, excavation characteristics and other factors. The transition between materials may be abrupt or gradual. Where applicable, the field logs were revised based on subsequent laboratory testing.

Our field exploration also included the advancement of six CPT soundings to maximum depths of approximately 51 feet below the existing ground surface utilizing a truck-mounted CPT rig with a down- pressure capacity of approximately 20 tons. The CPTs were performed on October 13, 2018 by Middle Earth Geo Testing of Fremont, California using an integrated electronic cone system. The cone has a tip area of 10 square centimeters, a friction sleeve area of 150 square centimeters, and a ratio of friction sleeve area to tip end area equal to 0.85. The cone bearing (Q_C) and sleeve friction (F_S) were measured and recorded during tests at approximately 2-inch depth intervals. The CPT data consisting of cone bearing, sleeve friction, friction ratio and equivalent standard penetration blow counts (N) versus penetration depth below the existing ground surface for each location has been recorded and is presented in this appendix.

UNIFIED SOIL CLASSIFICATION

MAJOR DIVISIONS				TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO.4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO.4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS WITH OR WITHOUT GRAVEL
			SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
	HIGHLY ORGANIC SOILS		PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

BORING/TRENCH LOG LEGEND

- No Recovery
- Shelby Tube Sample
- Bulk Sample
- SPT Sample
- Modified California Sample
- Groundwater Level (At Completion)
- Groundwater Level (Seepage)

PENETRATION RESISTANCE

SAND AND GRAVEL			SILT AND CLAY			
RELATIVE DENSITY	BLOWS PER FOOT (SPT)*	BLOWS PER FOOT (MOD-CAL)*	CONSISTENCY	BLOWS PER FOOT (SPT)*	BLOWS PER FOOT (MOD-CAL)*	COMPRESSIVE STRENGTH (tsf)
VERY LOOSE	0 - 4	0 - 6	VERY SOFT	0 - 2	0 - 3	0 - 0.25
LOOSE	5 - 10	7 - 16	SOFT	3 - 4	4 - 6	0.25 - 0.50
MEDIUM DENSE	11 - 30	17 - 48	MEDIUM STIFF	5 - 8	7 - 13	0.50 - 1.0
DENSE	31 - 50	49 - 79	STIFF	9 - 15	14 - 24	1.0 - 2.0
VERY DENSE	OVER 50	OVER 79	VERY STIFF	16 - 30	25 - 48	2.0 - 4.0
			HARD	OVER 30	OVER 48	OVER 4.0

*NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE LAST 12 INCHES OF AN 18-INCH DRIVE

MOISTURE DESCRIPTIONS

FIELD TEST	APPROX. DEGREE OF SATURATION, S (%)	DESCRIPTION
NO INDICATION OF MOISTURE; DRY TO THE TOUCH	S<25	DRY
SLIGHT INDICATION OF MOISTURE	25≤S<50	DAMP
INDICATION OF MOISTURE; NO VISIBLE WATER	50≤S<75	MOIST
MINOR VISIBLE FREE WATER	75≤S<100	WET
VISIBLE FREE WATER	100	SATURATED

QUANTITY DESCRIPTIONS

APPROX. ESTIMATED PERCENT	DESCRIPTION
<5%	TRACE
5 - 10%	FEW
11 - 25%	LITTLE
26 - 50%	SOME
>50%	MOSTLY

GRAVEL/COBBLE/BOULDER DESCRIPTIONS

CRITERIA	DESCRIPTION
PASS THROUGH A 3-INCH SIEVE AND BE RETAINED ON A NO. 4 SIEVE (#4 TO 3")	GRAVEL
PASS A 12-INCH SQUARE OPENING AND BE RETAINED ON A 3-INCH SIEVE (3"-12")	COBBLE
WILL NOT PASS A 12-INCH SQUARE OPENING (>12")	BOULDER

BEDDING SPACING DESCRIPTIONS

THICKNESS/SPACING	DESCRIPTOR
GREATER THAN 10 FEET	MASSIVE
3 TO 10 FEET	VERY THICKLY BEDDED
1 TO 3 FEET	THICKLY BEDDED
3 ⅝-INCH TO 1 FOOT	MODERATELY BEDDED
1 ¼-INCH TO 3 ⅝-INCH	THINLY BEDDED
⅜-INCH TO 1 ¼-INCH	VERY THINLY BEDDED
LESS THAN ⅜-INCH	LAMINATED

STRUCTURE DESCRIPTIONS

CRITERIA	DESCRIPTION
ALTERNATING LAYERS OF VARYING MATERIAL OR COLOR WITH LAYERS AT LEAST ¼-INCH THICK	STRATIFIED
ALTERNATING LAYERS OF VARYING MATERIAL OR COLOR WITH LAYERS LESS THAN ¼-INCH THICK	LAMINATED
BREAKS ALONG DEFINITE PLANES OF FRACTURE WITH LITTLE RESISTANCE TO FRACTURING	FISSURED
FRACTURE PLANES APPEAR POLISHED OR GLOSSY, SOMETIMES STRIATED	SLICKENSIDED
COHESIVE SOIL THAT CAN BE BROKEN DOWN INTO SMALLER ANGULAR LUMPS WHICH RESIST FURTHER BREAKDOWN	BLOCKY
INCLUSION OF SMALL POCKETS OF DIFFERENT SOIL, SUCH AS SMALL LENSES OF SAND SCATTERED THROUGH A MASS OF CLAY	LENSED
SAME COLOR AND MATERIAL THROUGHOUT	HOMOGENOUS

CEMENTATION/INDURATION DESCRIPTIONS

FIELD TEST	DESCRIPTION
CRUMBLES OR BREAKS WITH HANDLING OR LITTLE FINGER PRESSURE	WEAKLY CEMENTED/INDURATED
CRUMBLES OR BREAKS WITH CONSIDERABLE FINGER PRESSURE	MODERATELY CEMENTED/INDURATED
WILL NOT CRUMBLE OR BREAK WITH FINGER PRESSURE	STRONGLY CEMENTED/INDURATED

IGNEOUS/METAMORPHIC ROCK STRENGTH DESCRIPTIONS

FIELD TEST	DESCRIPTION
MATERIAL CRUMBLES WITH BARE HAND	WEAK
MATERIAL CRUMBLES UNDER BLOWS FROM GEOLOGY HAMMER	MODERATELY WEAK
⅛-INCH INDENTATIONS WITH SHARP END FROM GEOLOGY HAMMER	MODERATELY STRONG
HAND-HELD SPECIMEN CAN BE BROKEN WITH **ONE** BLOW FROM GEOLOGY HAMMER	STRONG
HAND-HELD SPECIMEN CAN BE BROKEN WITH **COUPLE** BLOWS FROM GEOLOGY HAMMER	VERY STRONG
HAND-HELD SPECIMEN CAN BE BROKEN WITH **MANY** BLOWS FROM GEOLOGY HAMMER	EXTREMELY STRONG

IGNEOUS/METAMORPHIC ROCK WEATHERING DESCRIPTIONS

DEGREE OF DECOMPOSITION	FIELD RECOGNITION	ENGINEERING PROPERTIES
SOIL	DISCOLORED, CHANGED TO SOIL, FABRIC DESTROYED	EASY TO DIG
COMPLETELY WEATHERED	DISCOLORED, CHANGED TO SOIL, FABRIC MAINLY PRESERVED	EXCAVATED BY HAND OR RIPPING (Saprolite)
HIGHLY WEATHERED	DISCOLORED, HIGHLY FRACTURED, FABRIC ALTERED AROUND FRACTURES	EXCAVATED BY HAND OR RIPPING, WITH SLIGHT DIFFICULTY
MODERATELY WEATHERED	DISCOLORED, FRACTURES, INTACT ROCK-NOTICEABLY WEAKER THAN FRESH ROCK	EXCAVATED WITH DIFFICULTY WITHOUT EXPLOSIVES
SLIGHTLY WEATHERED	MAY BE DISCOLORED, SOME FRACTURES, INTACT ROCK-NOT NOTICEABLY WEAKER THAN FRESH ROCK	REQUIRES EXPLOSIVES FOR EXCAVATION, WITH PERMEABLE JOINTS AND FRACTURES
FRESH	NO DISCOLORATION, OR LOSS OF STRENGTH	REQUIRES EXPLOSIVES

IGNEOUS/METAMORPHIC ROCK JOINT/FRACTURE DESCRIPTIONS

FIELD TEST	DESCRIPTION
NO OBSERVED FRACTURES	UNFRACTURED/UNJOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT 1 TO 3 FOOT INTERVALS	SLIGHTLY FRACTURED/JOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT 4-INCH TO 1 FOOT INTERVALS	MODERATELY FRACTURED/JOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT 1-INCH TO 4-INCH INTERVALS WITH SCATTERED FRAGMENTED INTERVALS	INTENSELY FRACTURED/JOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT LESS THAN 1-INCH INTERVALS; MOSTLY RECOVERED AS CHIPS AND FRAGMENTS	VERY INTENSELY FRACTURED/JOINTED

GEOCON
CONSULTANTS, INC.
6671 BRISA STREET – LIVERMORE, CA 94550
PHONE 925.371.5900 – FAX 925.371.5915

Rockaway Quarry

Pacifica, California

KEY TO LOGS

E8867-04-02 | October 2015 | Figure A1

PROJECT NO. **E8867-04-02** PROJECT NAME: **Rockaway Quarry**

TEST PIT TP1

ELEV. (MSL.) ______ DATE COMPLETED **8/24/2015**

ENG./GEO. **SR** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ______

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				ML	FILL Medium-stiff to stiff, dry to humid, light-brown, (f) Sandy SILT with artificial 3 inch minus gravels, trace clay			
1	TP1-1-3							
2								
3								
4								
5					-old cable wire, north end of trench -medium-stiff			
6								
7								
8	TP1-8			CL	Soft, moist, medium to dark-brown CLAY			
9								
10	TP1-10			CH	ALLUVIUM Soft to medium-stiff, black fat CLAY with trace (f) SAND and thread-sized rootlets			
11								
12					END OF TEST PIT AT 12 FEET NO FREE WATER ENCOUNTERED BACKFILLED IN LIFTS WITH TAMPED SPOILS			

Figure A2, Log of Test Pit TP1, page 1 of 1

GEOCON TEST PIT LOG E8867-04-02 ROCKAWAY QUARRY TEST PIT.GPJ 10/21/15

GEOCON

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. **E8867-04-02** PROJECT NAME: **Rockaway Quarry**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP2 ELEV. (MSL.) ______ DATE COMPLETED 8/24/2015 ENG./GEO. SR OPERATOR Geocon EQUIPMENT CAT 321D w/ 36" bucket HAMMER TYPE ______	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				ML	FILL Medium-stiff to stiff, dry to humid, light-brown, (f) Sandy SILT with 1 inch rock in upper 3 feet			
1								
2								
3								
4								
5	TP2-5			CL	Medium-stiff, moist, medium-brown and orange, CLAY with angular gravel; moderate plasticity			
6								
7								
8					-asphalt layer in the trench wall			
9								
10	TP2-10				-stiff, moist, dark-gray, sandy to gravelly			
11								
12					-varicolored sand-clay-gravel mixtures			
13								
14								
15					-asphalt and concrete chunks			
					END OF TEST PIT AT 15 FEET NO FREE WATER ENCOUNTERED BACKFILLED IN LIFTS WITH TAMPED SPOILS			

Figure A3, Log of Test Pit TP2, page 1 of 1

GEOCON TEST PIT LOG E8867-04-02 ROCKAWAY QUARRY TEST PIT.GPJ 10/21/15

GEOCON

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

TEST PIT TP3

ELEV. (MSL.)		DATE COMPLETED	8/24/2015
ENG./GEO.	SR	OPERATOR	Geocon
EQUIPMENT	CAT 321D w/ 36" bucket	HAMMER TYPE	

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SC	FILL Medium dense, dry to humid, varicolored, Clayey Gravelly SAND with concrete chunks in upper 3 feet			
1								
2								
3	TP3-3-4							
4								
5					-stiff, moist, more clayey			
6								
7								
8								
9								
10				CL	ALLUVIUM Soft to medium-stiff, brown (f) Sandy CLAY with trace organics			
11	TP3-11							
12								
13								
14	TP3-14				-with lenses of (f) medium-gray sand below 13 feet -TP3-14 sample is sand only			
15					END OF TEST PIT AT 15 FEET NO FREE WATER ENCOUNTERED BACKFILLED IN LIFTS WITH TAMPED SPOILS			

Figure A4, Log of Test Pit TP3, page 1 of 1

GEOCON

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. **E8867-04-02** PROJECT NAME: **Rockaway Quarry**

TEST PIT TP4

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	FILL Estimated loose, dry, brown, Silty SAND with fine gravel			
1								
2					- becomes damp, trace clay			
3					- wire in fill			
4	TP4-4			CL-ML	- concrete slab chunk, approximately 30", filter fabric, asphalt Moist, brown, Silty CLAY, trace sand, no roots			
5				SM	Damp, dark grey-brown, damp, Silty SAND, fine to coarse angular sand, trace fine gravel, trace clay (resembles asphalt, but no odor and friables)			
6								
7	TP4-7			CL-ML	ALLUVIUM/RESIDUAL SOIL Moist, drak grey-brown, Silty CLAY, few red-brown root traces, trace fine to medium-grained sand			
8								

ELEV. (MSL.) ____ DATE COMPLETED **8/25/2015**

ENG./GEO. **JP** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ____

TEST PIT TERMINATED AT 8 FEET
GROUNDWATER NOT ENCOUNTERED
BACKFILLED IN LIFTS WITH TAMPED SPOILS

Figure A5, Log of Test Pit TP4, page 1 of 1

GEOCON

SAMPLE SYMBOLS
... SAMPLING UNSUCCESSFUL
... DISTURBED OR BAG SAMPLE
... STANDARD PENETRATION TEST
... CHUNK SAMPLE
... DRIVE SAMPLE (UNDISTURBED)
... WATER TABLE OR SEEPAGE

TEST PIT TP5

ELEV. (MSL.)		DATE COMPLETED	**8/24/2015**
ENG./GEO.	**SR**	OPERATOR	**Geocon**
EQUIPMENT	**CAT 321D w/ 36" bucket**	HAMMER TYPE	

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				ML	FILL Stiff to hard, dry, light-brown, Sandy SILT with (f) angular gravel			
1								
2	TP5-2							
3								
4								
5								
6	TP5-6			CL	ALLUVIUM Medium-stiff, moist, black CLAY with roots of approximately 1 inch and seams/mottles of dark red clay -pinholing throughout			
7								

END OF TEST PIT AT 7 FEET
NO FREE WATER ENCOUNTERED
BACKFILLED IN LIFTS WITH TAMPED SPOILS

Figure A6, Log of Test Pit TP5, page 1 of 1

GEOCON

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. **E8867-04-02** PROJECT NAME: **Rockaway Quarry**

TEST PIT TP6

ELEV. (MSL.) ____ DATE COMPLETED **8/24/2015**

ENG./GEO. **SR** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ____

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL	FILL Stiff, humid, reddish-brown gravelly CLAY -dark gray at 1 foot -frequent occurences of asphalt in upper 5 to 6 feet			
1								
2								
3								
4								
5								
6	TP6-6			SC	ALLUVIUM Medium dense, humid to moist, dark-gray to black, Clayey Sand			
7	TP6-7-8							
8					-moist, orange-brown mottles, with (f) angular gravels			
9								
10					END OF TEST PIT AT 10 FEET NO FREE WATER ENCOUNTERED BACKFILLED IN LIFTS WITH TAMPED SPOILS			

Figure A7, Log of Test Pit TP6, page 1 of 1

GEOCON TEST PIT LOG E8867-04-02 ROCKAWAY QUARRY TEST PIT.GPJ 10/21/15

GEOCON

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

PROJECT NO. **E8867-04-02** PROJECT NAME: **Rockaway Quarry**

TEST PIT TP7

ELEV. (MSL.) ____ DATE COMPLETED **8/24/2015**

ENG./GEO. **SR** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ____

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				ML	FILL Stiff to hard, dry to humid, light to medium-brown, Sandy SILT with clay			
1								
2								
3					-more clayey			
4	TP7-4							
5								
6					-approximately 1 foot thick zone of 3 inch minus angular gravel			
7	TP7-7			CL	ALLUVIUM Medium-stiff, moist, black (f) Sandy CLAY			
8								

END OF TEST PIT AT 8½ FEET
NO FREE WATER ENCOUNTERED
BACKFILLED IN LIFTS WITH TAMPED SPOILS

Figure A8, Log of Test Pit TP7, page 1 of 1

GEOCON TEST PIT LOG E8867-04-02 ROCKAWAY QUARRY TEST PIT.GPJ 10/21/15

GEOCON

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL
... STANDARD PENETRATION TEST
... DRIVE SAMPLE (UNDISTURBED)
... DISTURBED OR BAG SAMPLE
... CHUNK SAMPLE
... WATER TABLE OR SEEPAGE

TEST PIT TP8

ELEV. (MSL.)		DATE COMPLETED	8/25/2015
ENG./GEO.	JP	OPERATOR	Geocon
EQUIPMENT	CAT 321D w/ 36" bucket	HAMMER TYPE	

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				GM	FILL Dry to damp, brown, Silty GRAVEL with sand, trace clay, few cobble (24" max), average gravel approximately 2"			
1								
2								
3								
4								
5					- caving from 5' to 8'			
6	TP8-6							
7	TP8-7-11				- becomes moist, dark brown-grey			
8								
9								
10					- becomes dark brown - refusal on limestone bedrock			
11					TEST PIT TERMINATED AT 11 FEET GROUNDWATER NOT ENCOUNTERED BACKFILLED IN LIFTS WITH TAMPED SPOILS			

Figure A9, Log of Test Pit TP8, page 1 of 1

GEOCON TEST PIT LOG E8867-04-02 ROCKAWAY QUARRY TEST PIT 8.25.2015.GPJ 10/21/15

GEOCON

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

PROJECT NO. **E8867-04-02** PROJECT NAME: **Rockaway Quarry**

TEST PIT TP9

ELEV. (MSL.) ____________ DATE COMPLETED **8/25/2015**

ENG./GEO. **JP** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ____________

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	TP9-0			GM	FILL Estimated medium dense, dry, brown, Silty Sandy GRAVEL, fine to coarse sand, fine to coarse sub-angular gravel, trace cobble (10")			
1								
2								
3					- becomes damp below 3'			
4								
5	TP9-5-11							
6								
7								
8								
9								
10								
11								
12	TP9-12			GC	Moist, dark brown-grey, Clayey GRAVEL			
13								
14								
15								
16								
17								
18					- limit of reach at 18'			

TEST PIT TERMINATED AT 18 FEET
GROUNDWATER NOT ENCOUNTERED
BACKFILLED IN LIFTS WITH TAMPED SPOILS

Figure A10, Log of Test Pit TP9, page 1 of 1

GEOCON TEST PIT LOG E8867-04-02 ROCKAWAY QUARRY TEST PIT 8.25.2015.GPJ 10/21/15

GEOCON

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL
... DISTURBED OR BAG SAMPLE
... STANDARD PENETRATION TEST
... CHUNK SAMPLE
... DRIVE SAMPLE (UNDISTURBED)
... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. **E8867-04-02** PROJECT NAME: **Rockaway Quarry**

TEST PIT TP10

ELEV. (MSL.) ____ DATE COMPLETED **8/25/2015**

ENG./GEO. **JP** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ____

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				GM	FILL Estimated loose to medium dense, dry to damp, green-brown, Silty Sandy GRAVEL, fine to coarse sand, fine to coarse gravel, trace cobbles (8")			
1								
2	TP10-2							
3				GM/GC	Moist, multicolor: brown, gray, green, Silty to Clayey GRAVEL			
4								
5								
6								
7								
8					- trace asphalt pieces			
9								
10								
11								
12					- trace wet soil at 12'			
13								
14	TP10-14							
15								
16								
17					- becomes very moist to wet			
18								
19					- limit of reach			

TEST PIT TERMINATED AT 19½ FEET
GROUNDWATER NOT ENCOUNTERED
BACKFILLED IN LIFTS WITH TAMPED SPOILS

Figure A11, Log of Test Pit TP10, page 1 of 1

GEOCON

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

TEST PIT TP11

ELEV. (MSL.)		DATE COMPLETED	8/25/2015
ENG./GEO.	JP	OPERATOR	Geocon
EQUIPMENT	CAT 321D w/ 36" bucket	HAMMER TYPE	

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				GM	FILL Estimated medium dense, dry, green-brown, brown, red-brown, Silty Sandy GRAVEL, trace cobble (10"), trace asphalt (6"), trace to little clay			
1								
2								
3					- becomes damp 3' to 7'			
4	TP11-4-18							
5								
6								
7								
8					- becomes moist to very moist			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20					Hard, limestone cobbles and bedrock			
21					TEST PIT TERMINATED AT 21 FEET GROUNDWATER NOT ENCOUNTERED BACKFILLED IN LIFTS WITH TAMPED SPOILS			

Figure A12, Log of Test Pit TP11, page 1 of 1

GEOCON

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

TEST PIT TP12

ELEV. (MSL.)		DATE COMPLETED	8/25/2015
ENG./GEO.	JP	OPERATOR	Geocon
EQUIPMENT	CAT 321D w/ 36" bucket	HAMMER TYPE	

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				GM	FILL Estimated loose to medium dense, dry to damp, multicolored, Silty Sandy GRAVEL, fine to coarse-grained sand, fine to coarse sub-angular to angular gravel (average medium gravel), trace cobble "greenstone" (metavolcanic) (13" max), trace asphalt			
1								
2								
3	TP12-3							
4								
5								
6								
7								
8	TP12-8							
9								
10								
11								
12								
13								
14	TP12-14							
15								
16								
17								
18					- increasing proportion limestone and metavolcanic gravel and cobbles (24" max)			
19								
20								
21					TEST PIT TERMINATED AT 21 FEET GROUNDWATER NOT ENCOUNTERED BACKFILLED IN LIFTS WITH TAMPED SPOILS			

Figure A13, Log of Test Pit TP12, page 1 of 1

GEOCON

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

TEST PIT TP13

ELEV. (MSL.) ____ DATE COMPLETED **8/25/2015**

ENG./GEO. **JP** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ____

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				GM	FILL Estimated loose, dry, brown/green-brown/red-brown, Silty Sandy GRAVEL, trace cobble (10" max), trace asphalt chunks (12")			
3					- becomes estimated medium dense, damp			
12				GP	Estimated loose, GRAVEL with sand, trace silt, brown angular limestone, caving, increasing coarse gravel and cobble			
17								

TEST PIT TERMINATED AT 17½ FEET
GROUNDWATER NOT ENCOUNTERED
BACKFILLED IN LIFTS WITH TAMPED SPOILS

Figure A14, Log of Test Pit TP13, page 1 of 1

GEOCON

SAMPLE SYMBOLS
... SAMPLING UNSUCCESSFUL
... DISTURBED OR BAG SAMPLE
... STANDARD PENETRATION TEST
... CHUNK SAMPLE
... DRIVE SAMPLE (UNDISTURBED)
... WATER TABLE OR SEEPAGE

TEST PIT TP14

ELEV. (MSL.) ____ DATE COMPLETED **8/25/2015**

ENG./GEO. **JP** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ____

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	TP14-0-14			GM	FILL Estimated loose to medium dense, dry to damp, brown, Silty Sandy GRAVEL/Gravelly SAND, fine to coarse-grained sand, fine to coarse gravel, trace to little cobble and boulders (24" max)			
1 – 13								
14				CL-ML	RESIDUAL SOIL Moist, dark brown, Silty CLAY, trace sand and fine gravel -grades to dark grey-brown clay at 16'			
15	TP14-15							
16	TP14-16				Dark gray-brown CLAY, yellowish at 17'			
17					TEST PIT TERMINATED AT 17 FEET GROUNDWATER NOT ENCOUNTERED BACKFILLED IN LIFTS WITH TAMPED SPOILS			

Figure A15, Log of Test Pit TP14, page 1 of 1

GEOCON

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL
... STANDARD PENETRATION TEST
... DRIVE SAMPLE (UNDISTURBED)
... DISTURBED OR BAG SAMPLE
... CHUNK SAMPLE
... WATER TABLE OR SEEPAGE

TEST PIT TP15

ELEV. (MSL.) ____________ DATE COMPLETED **8/25/2015**

ENG./GEO. **JP** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ____________

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0 – 5				GM-SM	FILL Dry to damp, brown, Silty Sandy GRAVEL, trace cobble and boulders (36") to Silty Gravelly SAND, trace to little clay, clasts of limestone			
5 – 10	TP15-5-9			CL	LANDSLIDE/DEBRIS FLOW Damp to mosit, brown, Sandy CLAY with gravel (brown siltstone)			
10 – 14	TP15-10 TP15-14			CL-ML	RESIDUAL SOIL Moist, dark gray, Silty CLAY - becomes yellow			

TEST PIT TERMINATED AT 14 FEET
GROUNDWATER NOT ENCOUNTERED
BACKFILLED IN LIFTS WITH TAMPED SPOILS

Figure A16, Log of Test Pit TP15, page 1 of 1

GEOCON TEST PIT LOG E8867-04-02 ROCKAWAY QUARRY TEST PIT 8.25.2015.GPJ 10/21/15

GEOCON

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

TEST PIT TP16

ELEV. (MSL.) ____ DATE COMPLETED **8/25/2015**

ENG./GEO. **JP** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ____

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	TP16-0-3			CL-ML	RESIDUAL SOIL Gray-brown, Clayey SILT/Silty CLAY, trace fine roots, trace porosity, trace sand, trace gravel/cobbles in first 12"			
1								
2								
3								
4	TP16-4							
5					- grades to moist, yellow, silty clay			
6								
7	TP16-7							
8								
9								
10	TP16-10-12							
11					- becomes completely weathered claystone, excavates as: estimated stiff, very moist, multicolor: yellow and pale yellow-brown, silty clay, fine blocky soil structure			
12								
13								
14	TP16-14							

TEST PIT TERMINATED AT 14 FEET
GROUNDWATER NOT ENCOUNTERED
BACKFILLED IN LIFTS WITH TAMPED SPOILS

Figure A17, Log of Test Pit TP16, page 1 of 1

GEOCON

SAMPLE SYMBOLS
... SAMPLING UNSUCCESSFUL
... DISTURBED OR BAG SAMPLE
... STANDARD PENETRATION TEST
... CHUNK SAMPLE
... DRIVE SAMPLE (UNDISTURBED)
... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

TEST PIT TP17

ELEV. (MSL.)		DATE COMPLETED	**8/25/2015**
ENG./GEO.	**JP**	OPERATOR	**Geocon**
EQUIPMENT	**CAT 321D w/ 36" bucket**	HAMMER TYPE	

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL-ML	DEBRIS FLOW/SLIDE DEBRIS Dry, dark gray, Silty CLAY, trace fine roots			
1								
2					- becomes moist, yellow			
3					- increasing moisture from 3' to 8' - wet zone at 8' (2-3" thick)			
4								
5								
6								
7								
8	TP17-8.5			CL-ML	RESIDUAL SOIL Silty CLAY, trace black mottling, trace medium-grained sand			
9								
10					- moist from 10' to 17'			
11					- becomes completely weathered claystone, excavates as: estimated stiff, very moist, multicolor: yellow and pale yellow-brown, silty clay, fine blocky soil structure			
12								
13								
14								
15								
16	TP17-16							
17	TP17-17.5							

TEST PIT TERMINATED AT 17½ FEET
GROUNDWATER NOT ENCOUNTERED
BACKFILLED IN LIFTS WITH TAMPED SPOILS

Figure A18, Log of Test Pit TP17, page 1 of 1

GEOCON

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

TEST PIT TP18

ELEV. (MSL.) ____________ DATE COMPLETED **8/25/2015**

ENG./GEO. **JP** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ____________

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL-ML	LANDSLIDE DEBRIS Dry to damp, dark brown-gray, Silty CLAY, trace roots			
1								
2					- becomes moist, yellow			
3								
4	TP18-4							
5								
6	TP18-6			CL-ML	RESIDUAL SOIL Moist, yellow and yellow-brown, Silty CLAY - slide plane at 6' (1" thick moist yellow CLAY)			
7								
8	TP18-8							
9					TEST PIT TERMINATED AT 9 FEET GROUNDWATER NOT ENCOUNTERED BACKFILLED IN LIFTS WITH TAMPED SPOILS			

Figure A19, Log of Test Pit TP18, page 1 of 1

GEOCON

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

TEST PIT TP19

ELEV. (MSL.)		DATE COMPLETED	8/25/2015
ENG./GEO.	JP	OPERATOR	Geocon
EQUIPMENT	CAT 321D w/ 36" bucket	HAMMER TYPE	

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				GM	FILL Dry to damp, brown and dark brown, Silty GRAVEL, with cobble and boulders (30" max), trace clay			
1								
2								
3								
4								
5								
6								
7				CL-ML	Mixed, moist, dark brown and yellow, Silty CLAY			
8								
9								
10								
11	TP19-11			CL	Moist, multicolor: black and green, CLAY			
12								
13								
14	TP19-14			GP	Estimated loose, damp, gray, Sandy GRAVEL, 1/2" crushed baserock (man-made), caving			
15								
16								
17	TP19-17.5			CL-ML	RESIDUAL SOIL Moist, multicolor: brown, dark gray, yellow, Silty CLAY			
18	TP19-18			CL	Dark gray and dark brown, CLAY with sand, and fine sub-round gravel -limit of reach			
19								

TEST PIT TERMINATED AT 19½ FEET
GROUNDWATER NOT ENCOUNTERED
BACKFILLED IN LIFTS WITH TAMPED SPOILS

Figure A20, Log of Test Pit TP19, page 1 of 1

GEOCON

SAMPLE SYMBOLS
... SAMPLING UNSUCCESSFUL
... DISTURBED OR BAG SAMPLE
... STANDARD PENETRATION TEST
... CHUNK SAMPLE
... DRIVE SAMPLE (UNDISTURBED)
... WATER TABLE OR SEEPAGE

TEST PIT TP20

ELEV. (MSL.) ____ DATE COMPLETED **8/25/2015**

ENG./GEO. **JP** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ____

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				GM	FILL Dry, brown, Silty GRAVEL, trace cobble and boulder (30" max), trace clay			
1								
2				CL-ML	Damp to moist dark gray-brown and yellow-brown, Silty CLAY			
3								
4	TP20-4							
5								
6								
7				CL-ML	Dark gray, Silty CLAY, trace chunks asphalt, lens of asphalt (18" max, 4-5" wide)			
8								
9								
10								
11								
12					- becomes yellow and dark gray			
13				CL-ML	RESIDUAL SOIL Dark gray to dark gray-brown, Silty CLAY, trace sand and sub-round gravel -grades to yellow			
14								
15	TP20-15-16							
16					TEST PIT TERMINATED AT 16 FEET GROUNDWATER NOT ENCOUNTERED BACKFILLED IN LIFTS WITH TAMPED SPOILS			

Figure A21, Log of Test Pit TP20, page 1 of 1

GEOCON

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

TEST PIT TP21

ELEV. (MSL.) ____ DATE COMPLETED **8/25/2015**

ENG./GEO. **JP** OPERATOR **Geocon**

EQUIPMENT **CAT 321D w/ 36" bucket** HAMMER TYPE ____

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (TONS/SQFT)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	TP21-0-6			GM	FILL Estimated loose, dry to damp, brown to dark brown, Silty Sandy GRAVEL, with trace to little cobble			
1								
2								
3								
4								
5								
6	TP21-6			CL	Yellow to yellow-brown, Silty CLAY irregular abrupt boundary with vegetation imprints			
7								
8	TP21-8			ML	RESIDUAL SOIL Dark brown, Clayey SILT, fine, pale yellow roots at boundary			
9								
10				CL	Moist, yellow, Silty CLAY			
11								
12	TP21-12							

TEST PIT TERMINATED AT 12½ FEET
GROUNDWATER NOT ENCOUNTERED
BACKFILLED IN LIFTS WITH TAMPED SPOILS

Figure A22, Log of Test Pit TP21, page 1 of 1

GEOCON

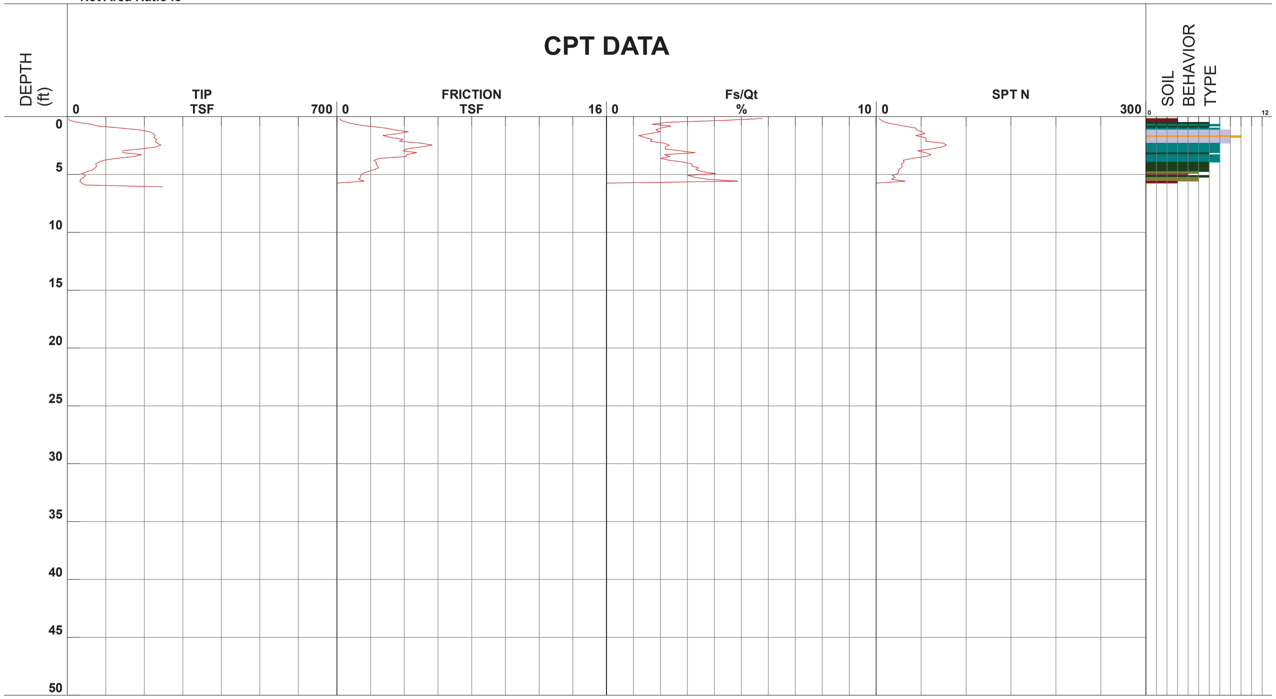
SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL
... DISTURBED OR BAG SAMPLE
... STANDARD PENETRATION TEST
... CHUNK SAMPLE
... DRIVE SAMPLE (UNDISTURBED)
... WATER TABLE OR SEEPAGE

Project	Rockaway Quarry	Operator	BH-JM	Filename	SDF(356).cpt
Job Number	E8867-04-03	Cone Number	DDG1448	GPS	
Hole Number	CPT-01	Date and Time	10/13/2018 11:04:02 AM	Maximum Depth	6.07 ft
EST GW Depth During Test		12.00 ft			

Net Area Ratio .8

CPT DATA



■ 1 - sensitive fine grained
■ 2 - organic material
■ 3 - clay
■ 4 - silty clay to clay
■ 5 - clayey silt to silty clay
■ 6 - sandy silt to clayey silt
■ 7 - silty sand to sandy silt
■ 8 - sand to silty sand
■ 9 - sand
■ 10 - gravelly sand to sand
■ 11 - very stiff fine grained (*)
■ 12 - sand to clayey sand (*)

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

GEOCON CONSULTANTS, INC.
6671 BRISA STREET - LIVERMORE, CA 94550
PHONE 925.371.5900 - FAX 925.371.5915

CONE PENETROMETER TEST 1

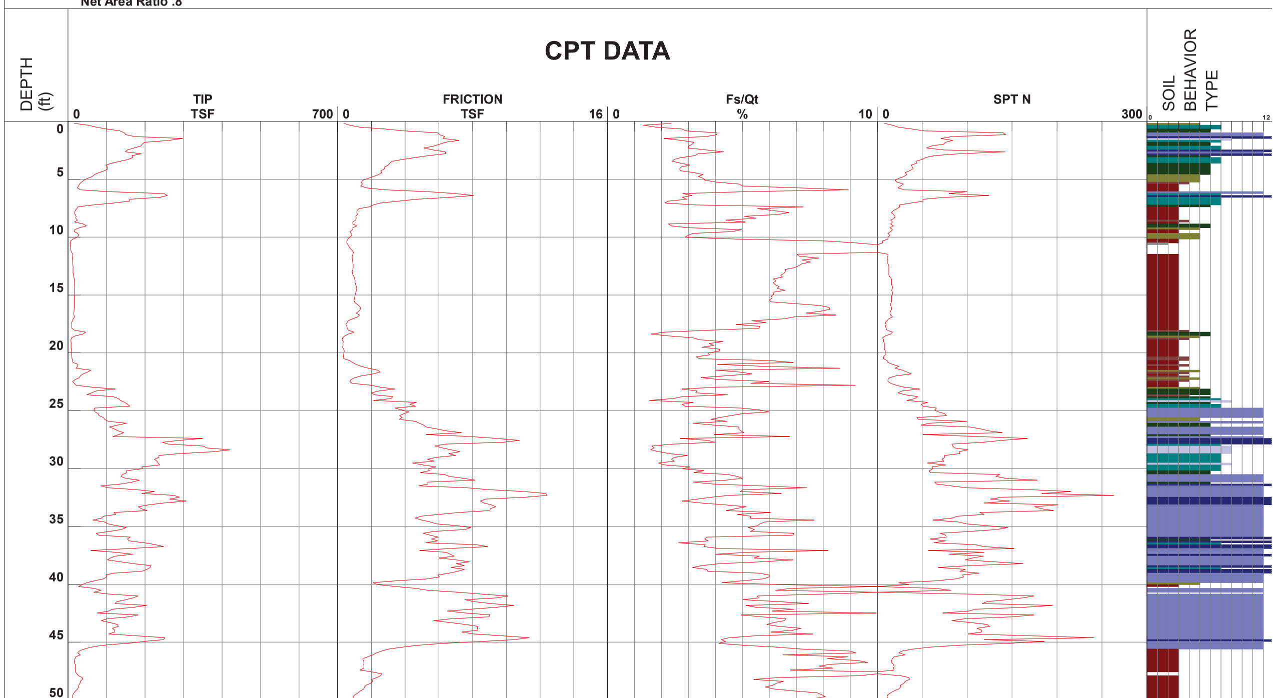
Project: Rockaway Quarry Reclamation
Location: Pacifica, CA
Project No. E8867-04-03
Date: December 2018

FIGURE A23

Project	Rockaway Quarry	Operator	BH-JM	Filename	SDF(355).cpt
Job Number	E8867-04-03	Cone Number	DDG1448	GPS	
Hole Number	CPT-02B	Date and Time	10/13/2018 10:17:38 AM	Maximum Depth	50.69 ft
EST GW Depth During Test		12.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

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CONE PENETROMETER TEST 2B

Project: Rockaway Quarry Reclamation

Location: Pacifica, CA

Project No. E8867-04-03

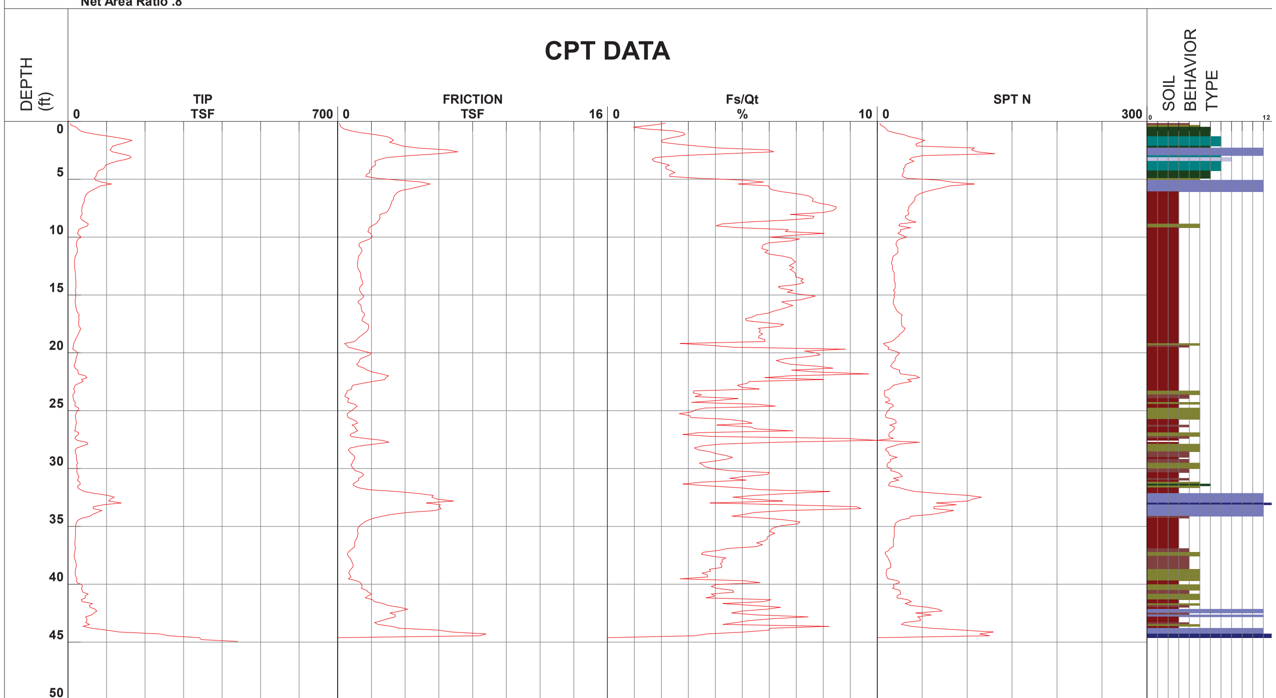
Date: December 2018

FIGURE A24

Project	Rockaway Quarry	Operator	BH-JM	Filename	SDF(352).cpt
Job Number	E8867-04-03	Cone Number	DDG1448	GPS	
Hole Number	CPT-03	Date and Time	10/13/2018 9:12:12 AM	Maximum Depth	44.95 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



■ 1 - sensitive fine grained
■ 2 - organic material
■ 3 - clay
■ 4 - silty clay to clay
■ 5 - clayey silt to silty clay
■ 6 - sandy silt to clayey silt
■ 7 - silty sand to sandy silt
■ 8 - sand to silty sand
■ 9 - sand
■ 10 - gravelly sand to sand
■ 11 - very stiff fine grained (*)
■ 12 - sand to clayey sand (*)

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

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6671 BRISA STREET - LIVERMORE, CA 94550
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CONE PENETROMETER TEST 3

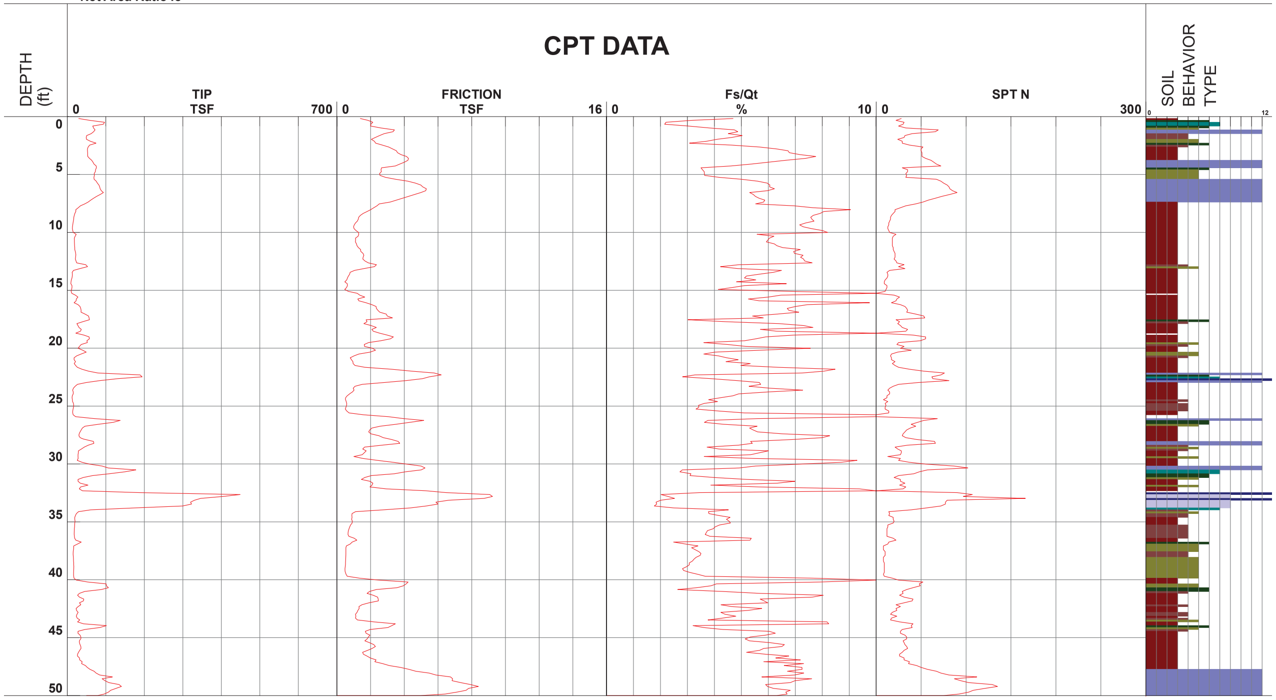
Project: Rockaway Quarry Reclamation
Location: Pacifica, CA
Project No. E8867-04-03
Date: December 2018

FIGURE A25

Project	Rockaway Quarry	Operator	BH-JM	Filename	SDF(351).cpt
Job Number	E8867-04-03	Cone Number	DDG1448	GPS	
Hole Number	CPT-04	Date and Time	10/13/2018 8:29:47 AM	Maximum Depth	50.52 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

GEOCON CONSULTANTS, INC.

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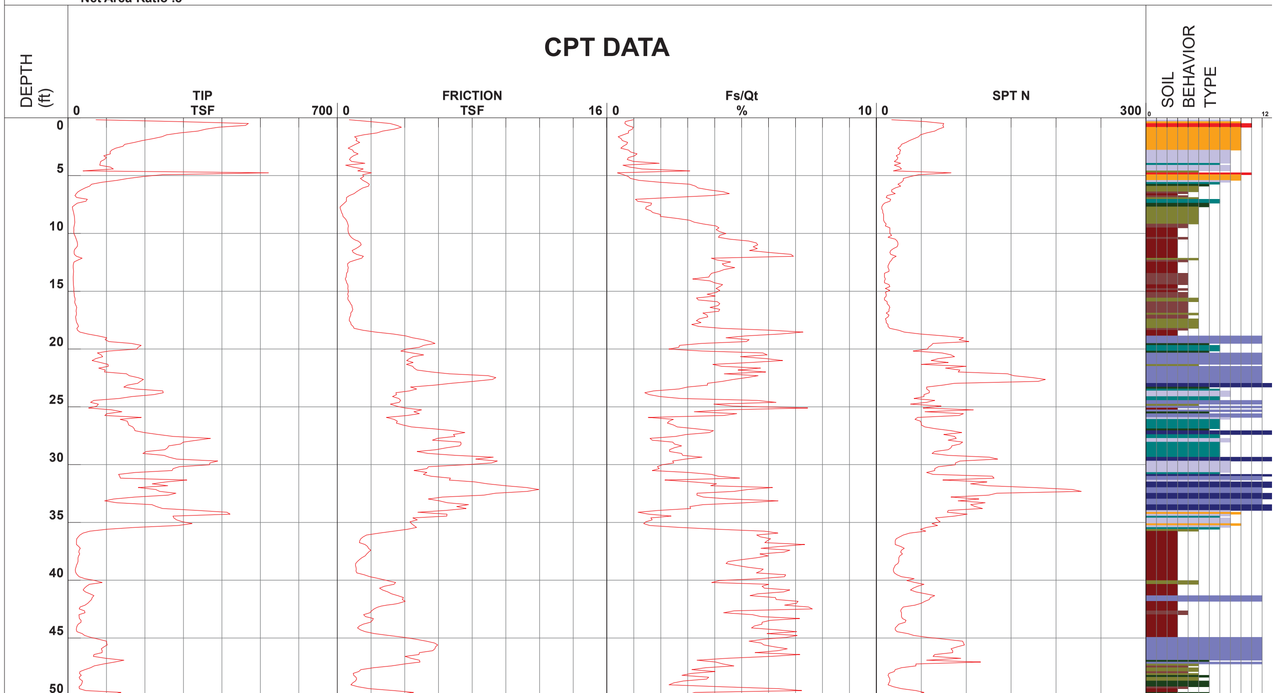
CONE PENETROMETER TEST 4

Project: Rockaway Quarry Reclamation
Location: Pacifica, CA
Project No. E8867-04-03
Date: December 2018

FIGURE A26

Project	Rockaway Quarry	Operator	BH-JM	Filename	SDF(350).cpt
Job Number	E8867-04-03	Cone Number	DDG1448	GPS	
Hole Number	CPT-05	Date and Time	10/13/2018 7:46:07 AM	Maximum Depth	50.69 ft
EST GW Depth During Test		10.00 ft			

Net Area Ratio .8



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

GEOCON CONSULTANTS, INC.
6671 BRISA STREET - LIVERMORE, CA 94550
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CONE PENETROMETER TEST 5

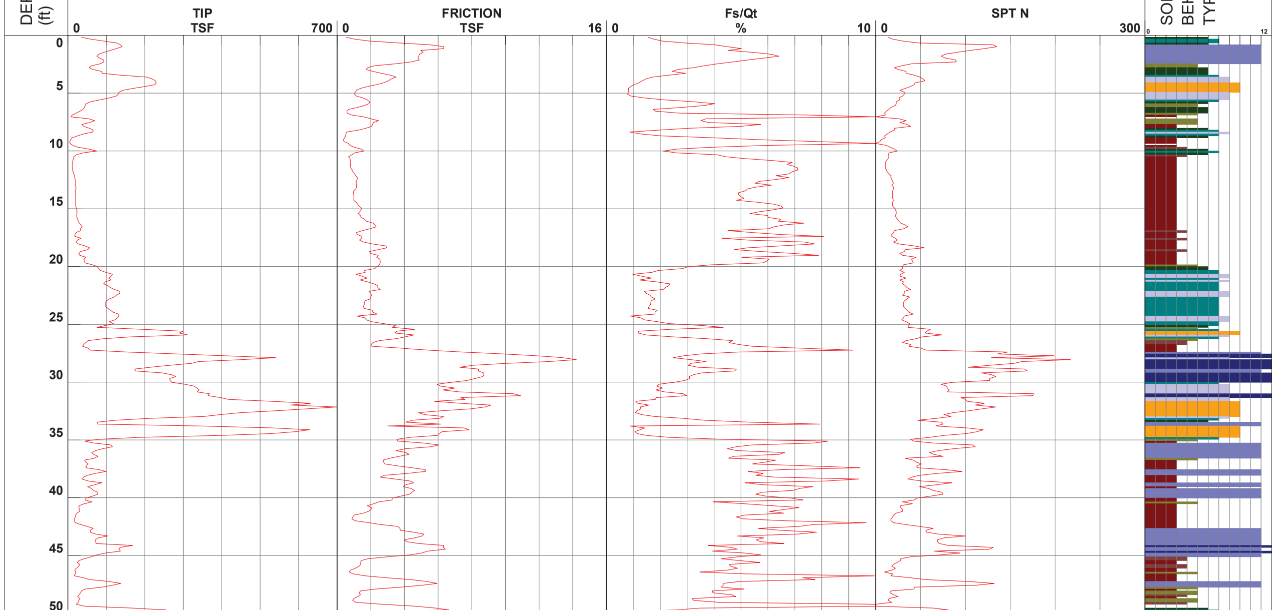
Project: Rockaway Quarry Reclamation
Location: Pacifica, CA
Project No. E8867-04-03
Date: December 2018

FIGURE A27

Project	Rockaway Quarry	Operator	BH-JM	Filename	SDF(360).cpt
Job Number	E8867-04-03	Cone Number	DDG1448	GPS	
Hole Number	CPT-06	Date and Time	10/13/2018 11:45:52 AM	Maximum Depth	50.20 ft
EST GW Depth During Test		10.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

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6671 BRISA STREET - LIVERMORE, CA 94550
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CONE PENETROMETER TEST 6

Project: Rockaway Quarry Reclamation
Location: Pacifica, CA
Project No. E8867-04-03
Date: December 2018

FIGURE A28

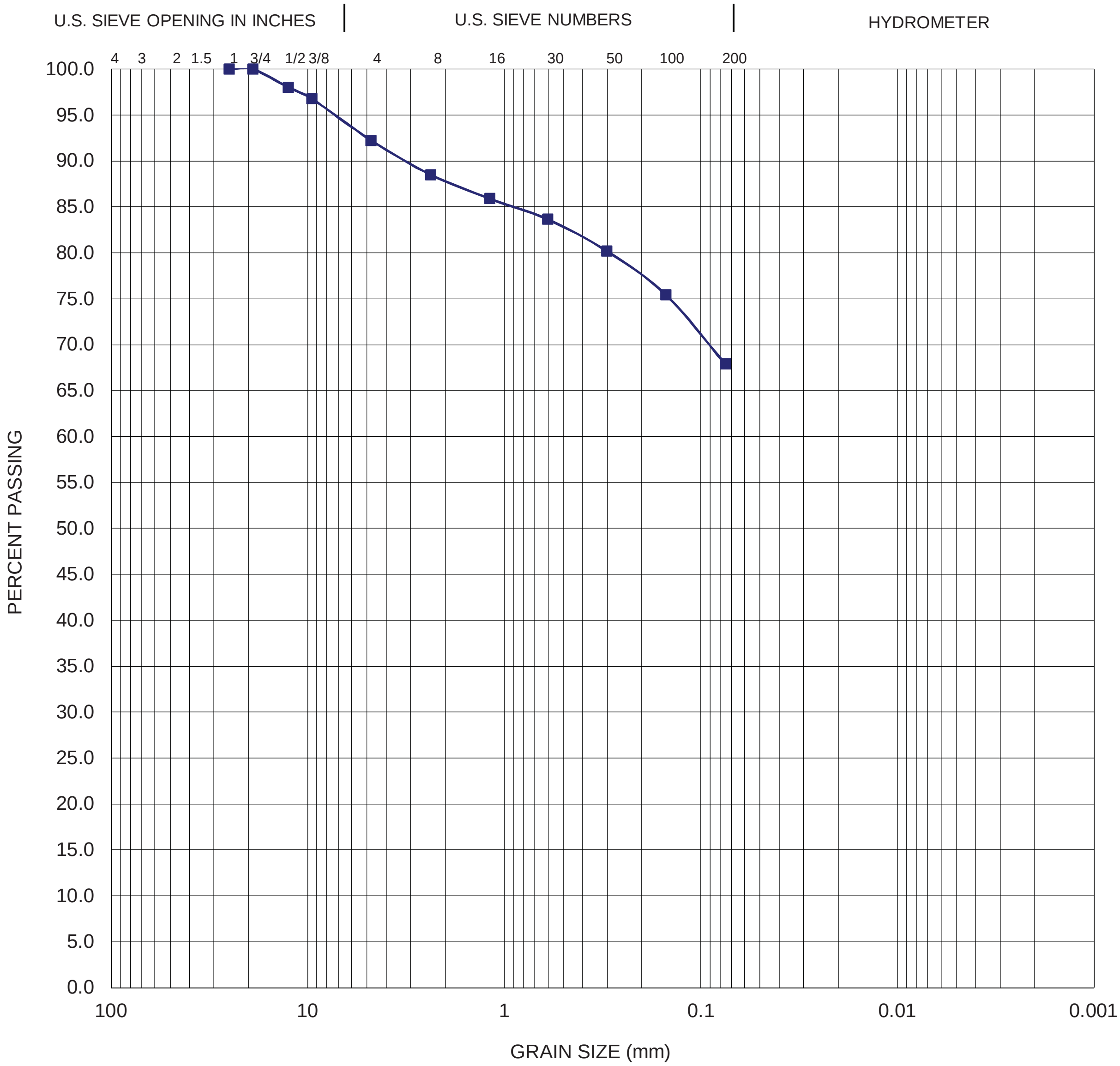
APPENDIX B

APPENDIX B
LABORATORY TESTING

Laboratory tests were performed in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM). Selected samples were tested for Atterberg Limits and grain size distribution. The results of the laboratory tests are summarized in tabular format below and the following figures.

TABLE B-I
SUMMARY OF LABORATORY ATTERBERG LIMITS TEST RESULTS
ASTM D 4318

Sample No.	Liquid Limit	Plastic Limit	Plasticity Index
TP1-8	24	16	8
TP2-5	45	23	22
TP7-4	22	15	7



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Pit: TP1

Depth To Sample: 1 - 3'

Sieve Date: 9/30/2015

Tested and Computed by: PG/JBM

Test Data

Sieve Number	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200
% Passing	100	100	100	97.999	96.8	92.2	88.5	85.9	83.6	80.2	75.4	67.9

Geocon Consultants, Inc.
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Telephone: (925) 371-5900
Fax: (925) 371-5915

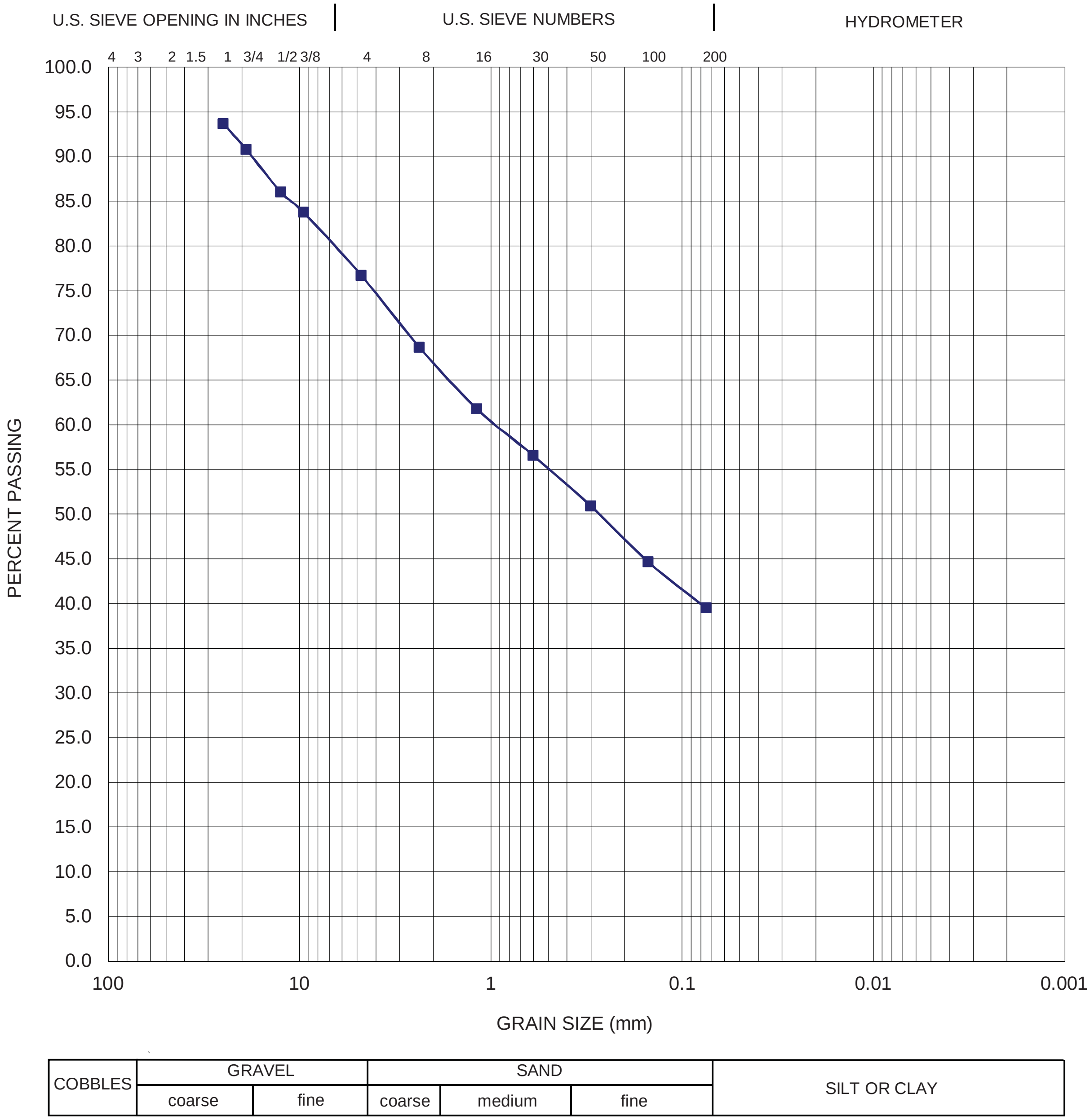
Particle Size Analysis - ASTM D422

Project: Rockaway Quarry

Location: Pacifica, California

Project No.: E8867-04-02

Figure B1



Test Pit: TP3

Depth To Sample: 3 - 4"

Sieve Date: 9/30/2015

Tested and Computed by: PG/JBM

Test Data

Sieve Number	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200
% Passing	95.194	93.717	90.812	86.002	83.8	76.7	68.7	61.8	56.6	50.9	44.6	39.5

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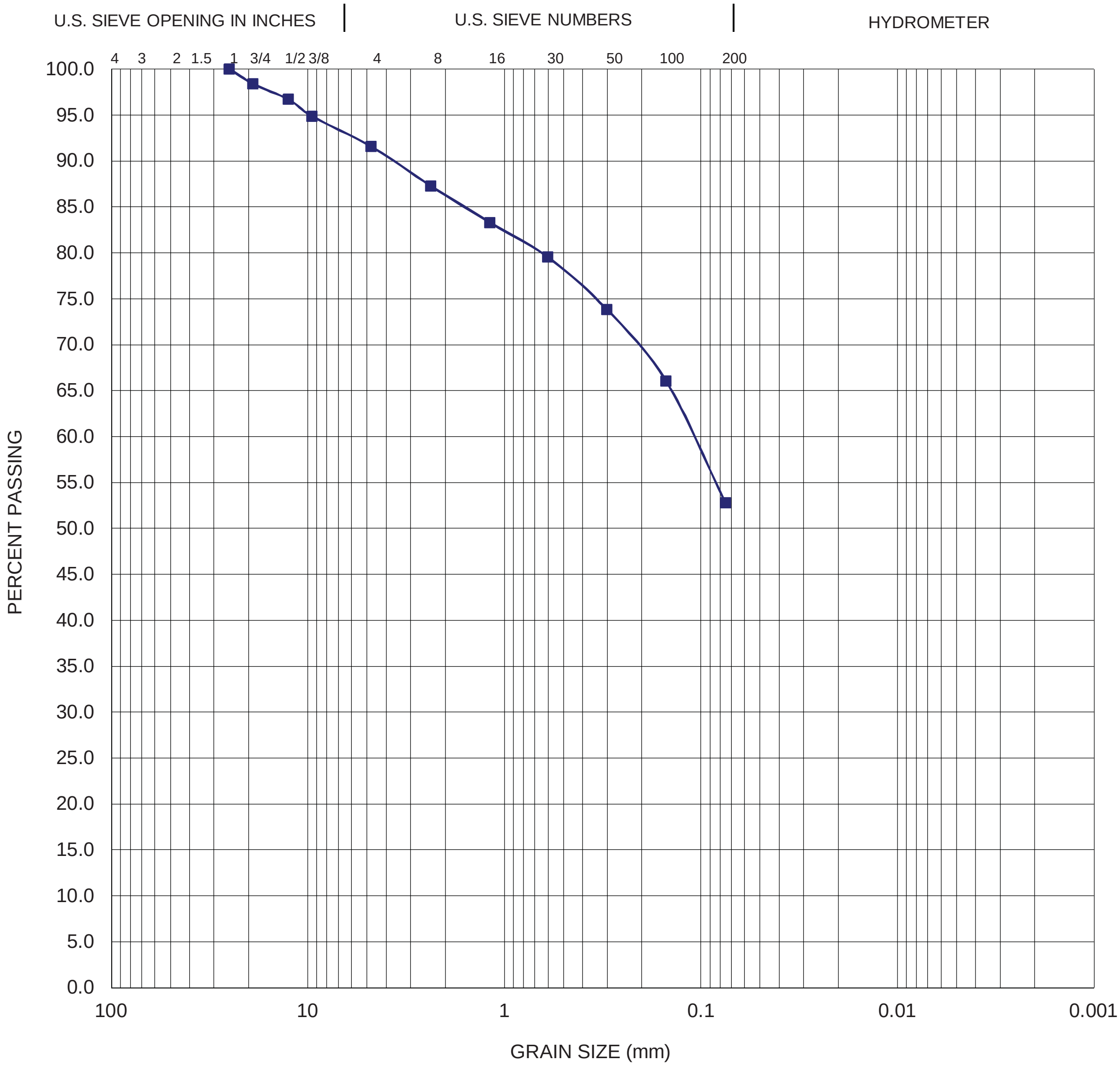
Figure B2



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Pit: TP5

Depth To Sample: 2'

Sieve Date: 9/28/2015

Tested and Computed by: PG/JBM

Test Data

Sieve Number	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200
% Passing	100	100	98.403	96.684	94.9	91.6	87.3	83.3	79.5	73.8	66.0	52.8

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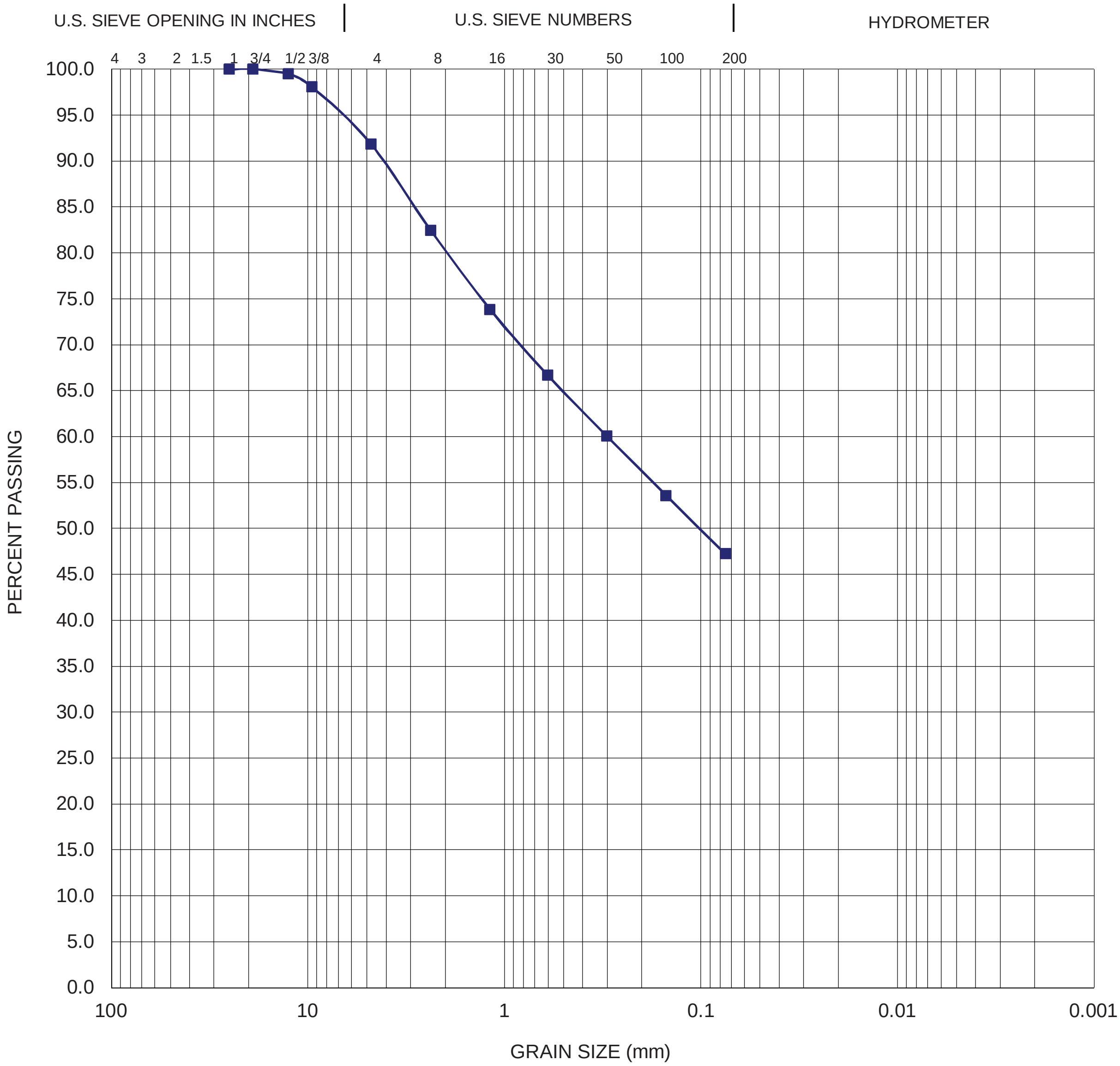
Particle Size Analysis - ASTM D422

Project: Rockaway Quarry

Location: Pacifica, California

Project No.: E8867-04-02

Figure B3



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Pit: TP6

Depth To Sample: 7 - 8'

Sieve Date: 9/28/2015

Tested and Computed by: PG/JBM

Test Data

Sieve Number	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200
% Passing	100	100	100	99.46	98.0	91.8	82.4	73.8	66.6	60.0	53.5	47.2

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Project: Rockaway Quarry

Location: Pacifica, California

Project No.: E8867-04-02

Figure B4

APPENDIX C

APPENDIX C
RECOMMENDED GRADING SPECIFICATIONS

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, Geocon (Consultant) shall be engaged for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills or *soil-rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9 and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition.

4. CLEARING AND PREPARING AREAS TO BE FILLED

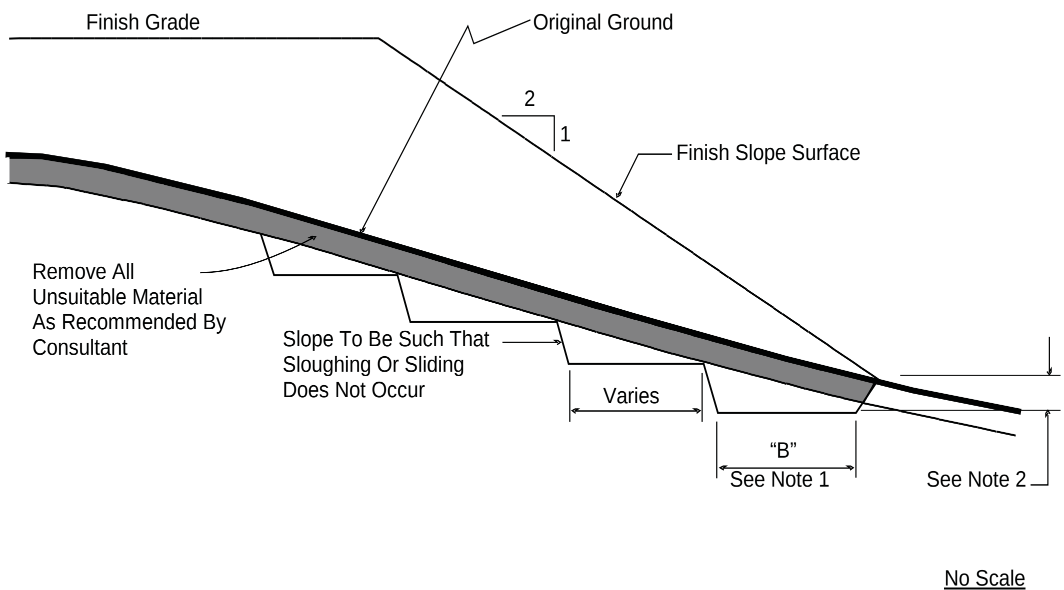
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



DETAIL NOTES:

(1) Key width "B" should be a minimum of 15 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 5 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 2 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 2 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 2 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 5 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 2 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 4 feet wide and 3 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

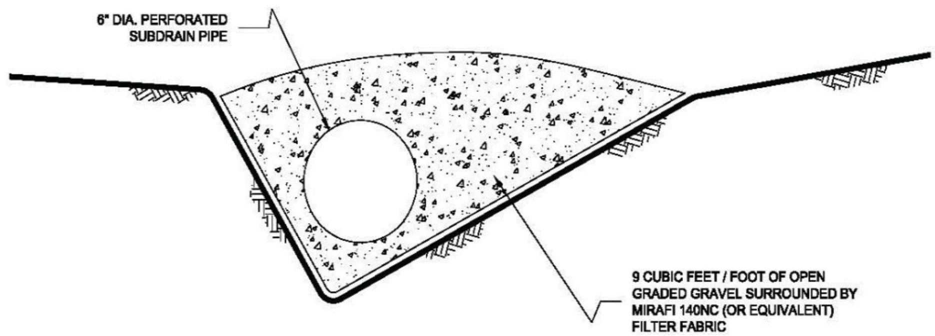
6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL SUBDRAIN DETAIL



NOTES:

1......8-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2......6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

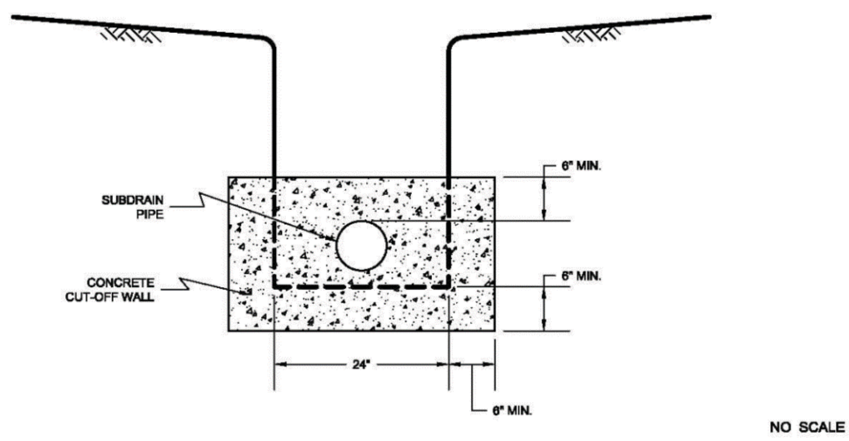
7.2 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.3 S*oil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric.

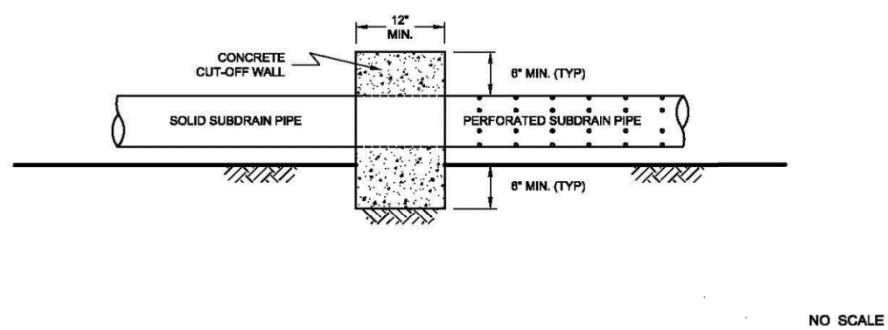
7.4 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

TYPICAL CUT OFF WALL DETAIL

FRONT VIEW

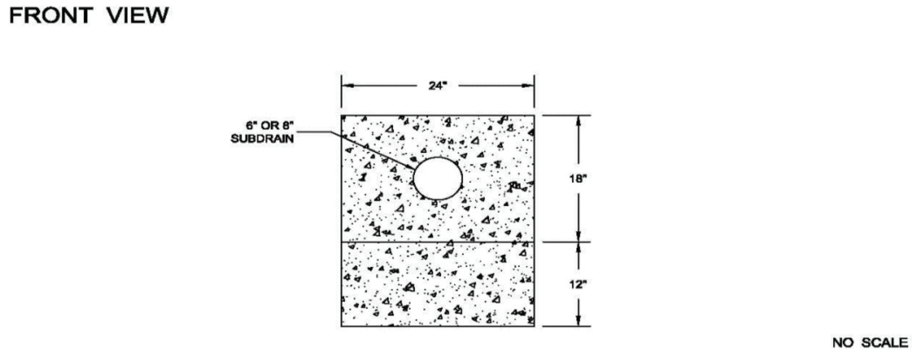


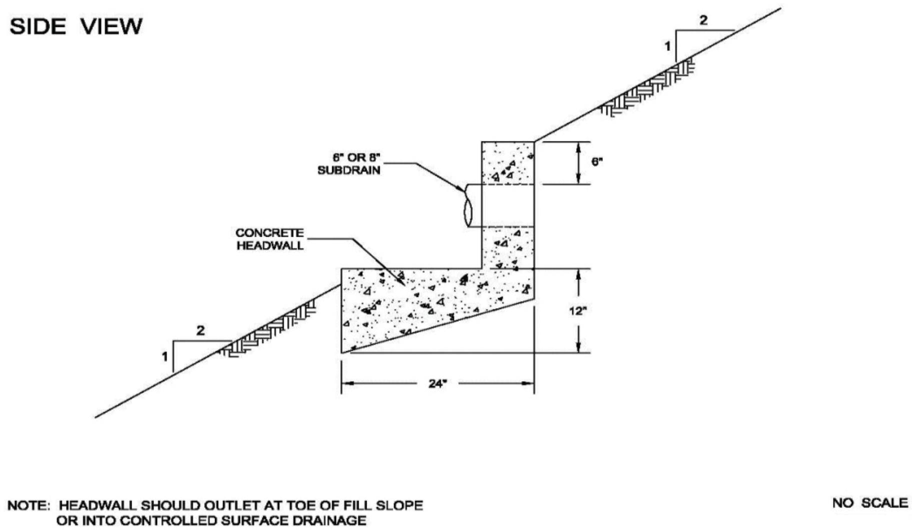
SIDE VIEW



7.5 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

TYPICAL HEADWALL DETAIL





7.6 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an "as-built" map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. The testing interval should be increased to at least one test for every 1 foot of vertical elevation in fills that will support settlement sensitive improvements. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.4 Testing procedures shall conform to the following Standards as appropriate:

- Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*
- Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).*
- Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop*.
- Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

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APPENDIX K

Drainage Report

Hydrologic & Hydraulic Analysis

Rockaway Quarry Reclamation

06/14/2019

REGISTERED PROFESSIONAL ENGINEER
MATTHEW R. WALSH
C 79026
CIVIL
STATE OF CALIFORNIA

Prepared For:

Baylands Soils

Prepared By:

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979 OSOS ST, SUITE F-4 SAN LUIS OBISPO, CA 93401

Table of Contents

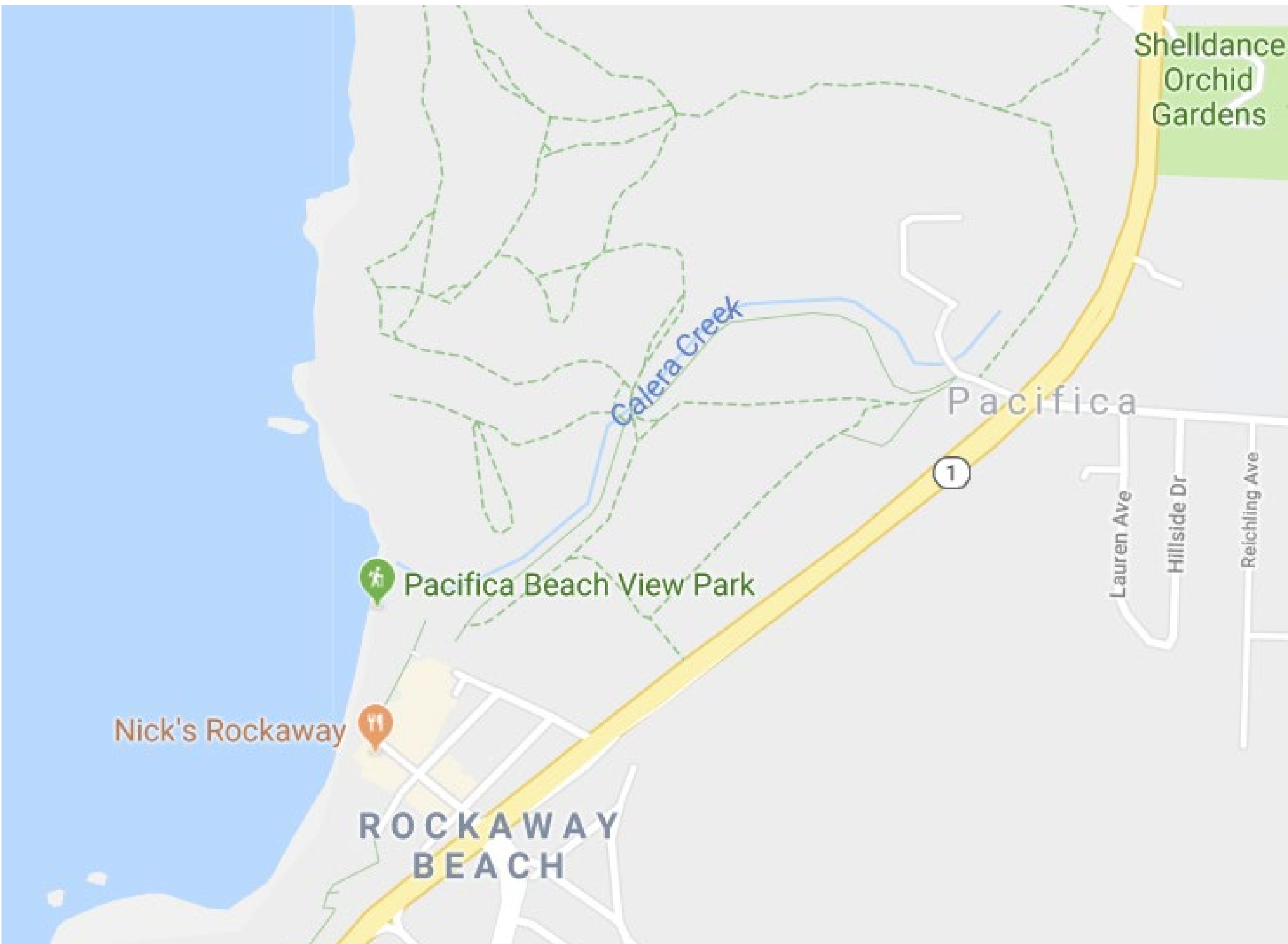
1. Introduction and Background

The project site is located at along Highway 1 on Assessor's Parcel Number 018-150-110, 018-150-120 and 018-150-150 in the County of San Mateo, CA. The project will consist of reclaiming the existing quarry land and returning the land to its natural state.

This report will investigate the project compliance with requirements set forth in the City of Pacifica. This will be done by implementing stormwater control measures set forth, while also best utilizing the project site and existing conditions.

2. Location Map and Description

The project site is comprised of 3 parcels with a total area of approximately 86.1 acres. The project is located directly adjacent to California Highway 1, with the Calera Creek bisecting the two halves of the project.



3. Watershed Description and Delineation

The pre- and post-development hydrologic conditions can be found in Appendix A-Drainage Management Area (DMA) Exhibit. The DMA Exhibit shows, graphically and numerically, the area considered for the drainage calculations. The directions of flow and watersheds can be seen in the exhibit.

The site conditions include a relatively hilly topography on the West Quarry Parcel (DMA 1) with gentle slopes on the East Quarry Parcel (DMA 2). Soils onsite are categorized as Hydraulic Soil Group C per the USDA Web Soil Survey (see Appendix B). The existing surface cover of DMA 1 is a mix of vegetated cover and exposed rock surfaces due to the previous mining operations. DMA 2 almost completely covered in native vegetation. Historically, half of DMA 1's drainage travels via overland flow where it eventually discharges into a depression located at the southwest end of the parcel. From here, the drainage is then transported to Calera Creek via a 24" CMP culvert located onsite. The other half directly discharges directly into Calera Creek and the Pacific Ocean, traveling via overland flow. Most of DMA 2's drainage travels via overland flow where it ultimately discharges at the easternmost portion of the site containing four existing PVC culverts.

4. Hydrologic & Hydraulic Analysis

Per the City of Pacifica requirements, the proposed and existing drainage facilities have been designed to safely convey the 100-Year, 24-Hour storm event. The effect on existing Hydrologic and Hydraulic calculations were performed utilizing AutoDesk's Civil 3D Storm and Sanitary Analysis 2014 Program (SSA). This program performs calculations based on the Hydrograph Analysis Method of the National Resources Conservation Service (NRCS TR-55 Method) with Pond Routing Method for Storage-indication based on site conditions. Results of the analysis and calculations can be seen Appendix B.

The Rainfall Distribution modeled in the calculations is an SCS Type I storm event contained in SSA. The storm event modeled is the 100-year 24-hour event with a total rainfall amounting to 6.7 inches. Only the 100-year event was modeled, as this would drive the basis for the flood control analysis.

The Time of Concentration was calculated utilizing SSA's built-in Time of Concentration calculator. Results and equations can be found in Attachment A. The Time Increment for the analysis was taken at a minimum of 0.10 hour increments.

The model was designed to compare the pre- and post-development flow rates at critical drainage points (see Appendix A). Once the model was run, the impact on the existing system was assessed. Mitigation measures and proposed storm drains were adjusted to meet the requirements set forth.

5. Conclusions

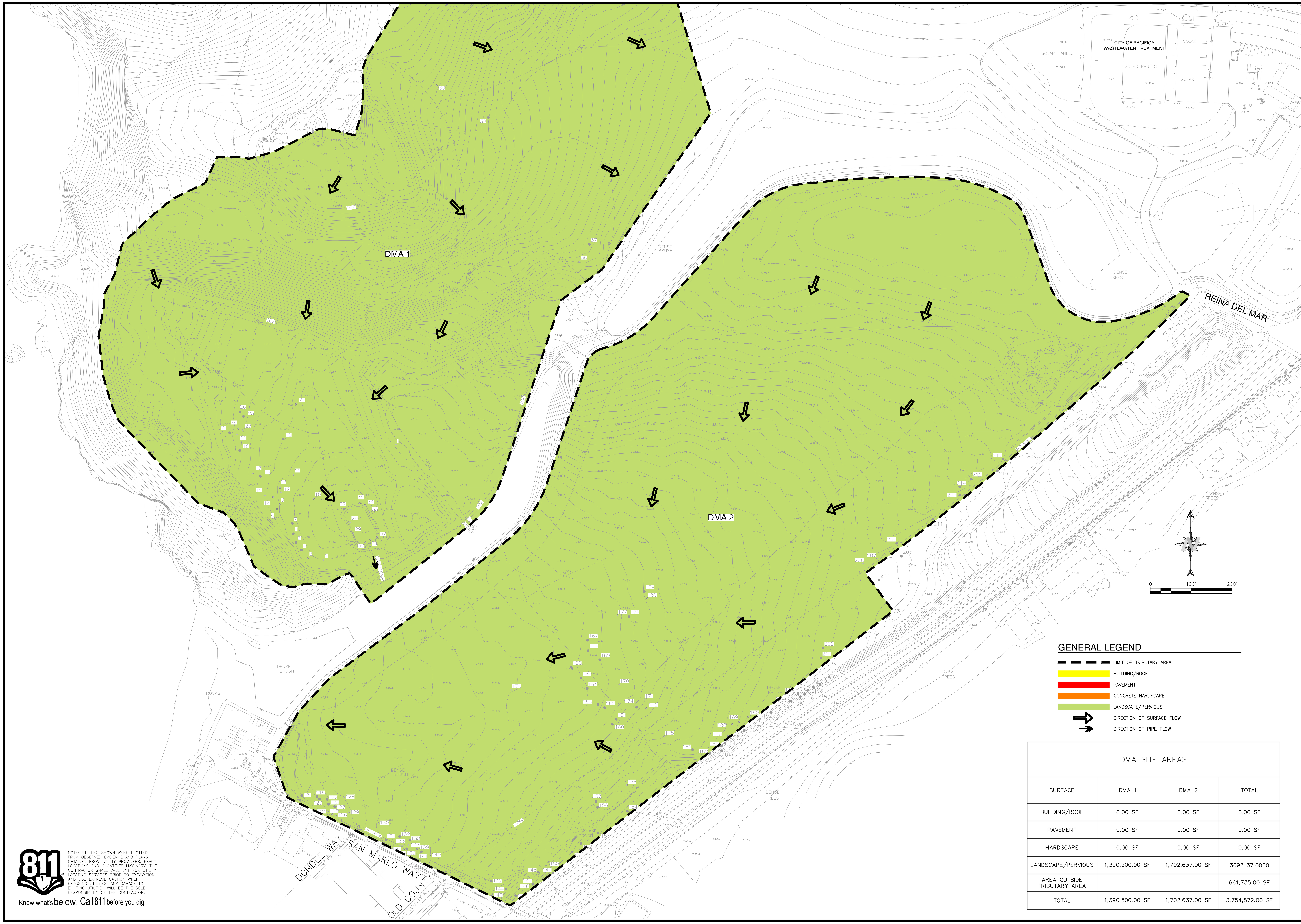
Overall, the peak flow rates were not significantly increased as a result of the proposed development (see summary of peak flow rates at critical points in Appendix A). This means that the existing drainages facilities will not be adversely impacted. Overall peak from the DMA 1 was reduced from 70.8 cfs to 60.0 cfs. This is due to the fact that the slopes were significantly softened, the existing exposed rock face will be revegetated, and the historically direct flow path has been redirected through a series of concrete swales and storm drains. As a result, the existing three 72” HDPE culverts passing under the access road, and the existing 24” CMP culvert will be adequate to transport the desired storm events. Sizing of proposed storm drain pipes can be found in the “Conveyance Links” tab located within Appendix B. As for DMA 2, peak flows were slightly increased from 39.5 cfs to 39.9 cfs. Although slopes were dramatically softened here as well, the channelization created by the protected in place wetlands slightly increased the peak runoff. Despite this increase, the existing four 24” PVC culverts should be more than adequate to convey the storm event in question. Lastly, the point of confluence between the DMAs was modeled. At this point the overall peak flow was decreased from 91.8 cfs to 84.4 cfs due to decrease in peak flow rate from DMA 1.

6. Appendices

A: Drainage Management Area (DMA) Exhibits

B: Support Calculations

Appendix A: Drainage Management Area Exhibits



GENERAL LEGEND

- LIMIT OF TRIBUTARY AREA
- BUILDING/ROOF
- PAVEMENT
- CONCRETE HARDSCAPE
- LANDSCAPE/PERVIOUS
- DIRECTION OF SURFACE FLOW
- DIRECTION OF PIPE FLOW

DMA SITE AREAS

SURFACE	DMA 1	DMA 2	TOTAL
BUILDING/ROOF	0.00 SF	0.00 SF	0.00 SF
PAVEMENT	0.00 SF	0.00 SF	0.00 SF
HARDSCAPE	0.00 SF	0.00 SF	0.00 SF
LANDSCAPE/PERVIOUS	1,390,500.00 SF	1,702,637.00 SF	3093137.0000
AREA OUTSIDE TRIBUTARY AREA	–	–	661,735.00 SF
TOTAL	1,390,500.00 SF	1,702,637.00 SF	3,754,872.00 SF

NOTE: UTILITIES SHOWN WERE PLOTTED FROM OBSERVED EVIDENCE AND PLANS OBTAINED FROM UTILITY PROVIDERS. EXACT LOCATIONS AND QUANTITIES MAY VARY. THE CONTRACTOR SHALL CALL 811 FOR UTILITY LOCATING SERVICES PRIOR TO EXCAVATION AND USE EXTREME CAUTION WHEN EXPOSING UTILITIES. ANY DAMAGE TO EXISTING UTILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

Know what's below. Call 811 before you dig.

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NO. | DATE | REVISIONS

WALSH ENGINEERING
WALSHENGINEERING.NET (805) 319-4948
979 OSOS ST, SUITE F-4 SAN LUIS OBISPO, CA 93401

ROCKAWAY QUARRY
RECLAMATION PLAN
PACIFICA, CA

REGISTERED PROFESSIONAL ENGINEER
MATTHEW R. WALSH
C 79026
CIVIL
STATE OF CALIFORNIA

DESIGNED BY: KKE
DRAFTED BY: KKE
CHECKED BY: MRW
DATE: 06/14/2018

PRE-DEVELOPEMENT HYDROLOGY EXHIBIT

SHEET

GENERAL LEGEND

- LIMIT OF TRIBUTARY AREA
- BUILDING/ROOF
- PAVEMENT
- CONCRETE HARDSCAPE
- LANDSCAPE/PERVIOUS
- DIRECTION OF SURFACE FLOW
- DIRECTION OF PIPE FLOW

DMA SITE AREAS

SURFACE	DMA 1	DMA 2	TOTAL
BUILDING/ROOF	0.00 SF	0.00 SF	0.00 SF
PAVEMENT	0.00 SF	0.00 SF	0.00 SF
HARDSCAPE	10,196.00 SF	0.00 SF	10,196.00 SF
LANDSCAPE/PERVIOUS	1,383,028.00 SF	1,702,637.00 SF	3,085,665.00 SF
AREA OUTSIDE TRIBUTARY AREA	–	–	661,735.00 SF
TOTAL	1,393,224.00 SF	1,702,637.00 SF	3,757,596.00 SF

811

NOTE: UTILITIES SHOWN WERE PLOTTED FROM OBSERVED EVIDENCE AND PLANS OBTAINED FROM UTILITY PROVIDERS. EXACT LOCATIONS AND QUANTITIES MAY VARY. THE CONTRACTOR SHALL CALL 811 FOR UTILITY LOCATING SERVICES PRIOR TO EXCAVATION AND USE EXTREME CAUTION WHEN EXPOSING UTILITIES. ANY DAMAGE TO EXISTING UTILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

Know what's **below.** **Call 811** before you dig.

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NO.	DATE	REVISIONS

WALSH ENGINEERING
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ROCKAWAY QUARRY

RECLAMATION PLAN

PACIFICA, CA

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STATE OF CALIFORNIA

DESIGNED BY: KKE
DRAFTED BY: KKE
CHECKED BY: MRW
DATE: 06/14/2018

POST-DEVELOPEMENT HYDROLOGY EXHIBIT

SHEET

2 OF 2

Appendix B: Support Calculations

Project Description

File Name .... 100-Year Storm Analysis_Pre.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	SCS TR-55
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Kinematic Wave
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods ...	YES

Analysis Options

Start Analysis On	Oct 29, 2018	00:00:00
End Analysis On	Oct 30, 2018	12:00:00
Start Reporting On	Oct 29, 2018	00:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	1
Subbasins..	2
Nodes..	3
Junctions	2
Outfalls	1
Flow Diversions	0
Inlets	0
Storage Nodes	0
Links..	2
Channels	1
Pipes	1
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1		Time Series	100-year	Cumulative	inches	California	San Mateo (Millbrae)	100	6.70	SCS Type I 24-hr

Subbasin Summary

SN	Subbasin ID	Area (ft²)	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	DMA1_Pre	1390500.02	79.00	6.70	4.31	137.61	72.70	0 00:23:58
2	DMA2_Pre	1702635.99	74.00	6.70	3.78	147.83	39.64	0 01:17:19

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Out1_Pre	Junction	22.00	40.00	0.00	0.00	0.00	70.81	23.36	0.00	16.64	0 00:00	0.00	0.00
2	Out2_Pre	Junction	0.00	6.00	0.00	6.00	0.00	39.53	0.00	0.00	6.00	0 00:00	0.00	0.00
3	Out_Combined_Pre	Outfall	19.00					91.80	20.36					

Subbasin Hydrology

Subbasin : DMA1_Pre

Input Data

Area (ft²) 1390500.02
Weighted Curve Number 79.00
Rain Gage ID .... *

Composite Curve Number

Soil/Surface Description	Area (ft²)	Soil Group	Curve Number
50 - 75% grass cover, Fair	1390500.02	C	79.00
Composite Area & Weighted CN	1390500.02		79.00

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation :

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where :

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.35	0.00	0.00
Flow Length (ft) :	300	0.00	0.00
Slope (%) :	25	0.00	0.00
2 yr, 24 hr Rainfall (in) :	2.90	0.00	0.00
Velocity (ft/sec) :	0.28	0.00	0.00
Computed Flow Time (min) :	17.78	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	1060	0.00	0.00
Slope (%) :	17	0.00	0.00
Surface Type :	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec) :	2.89	0.00	0.00
Computed Flow Time (min) :	6.11	0.00	0.00

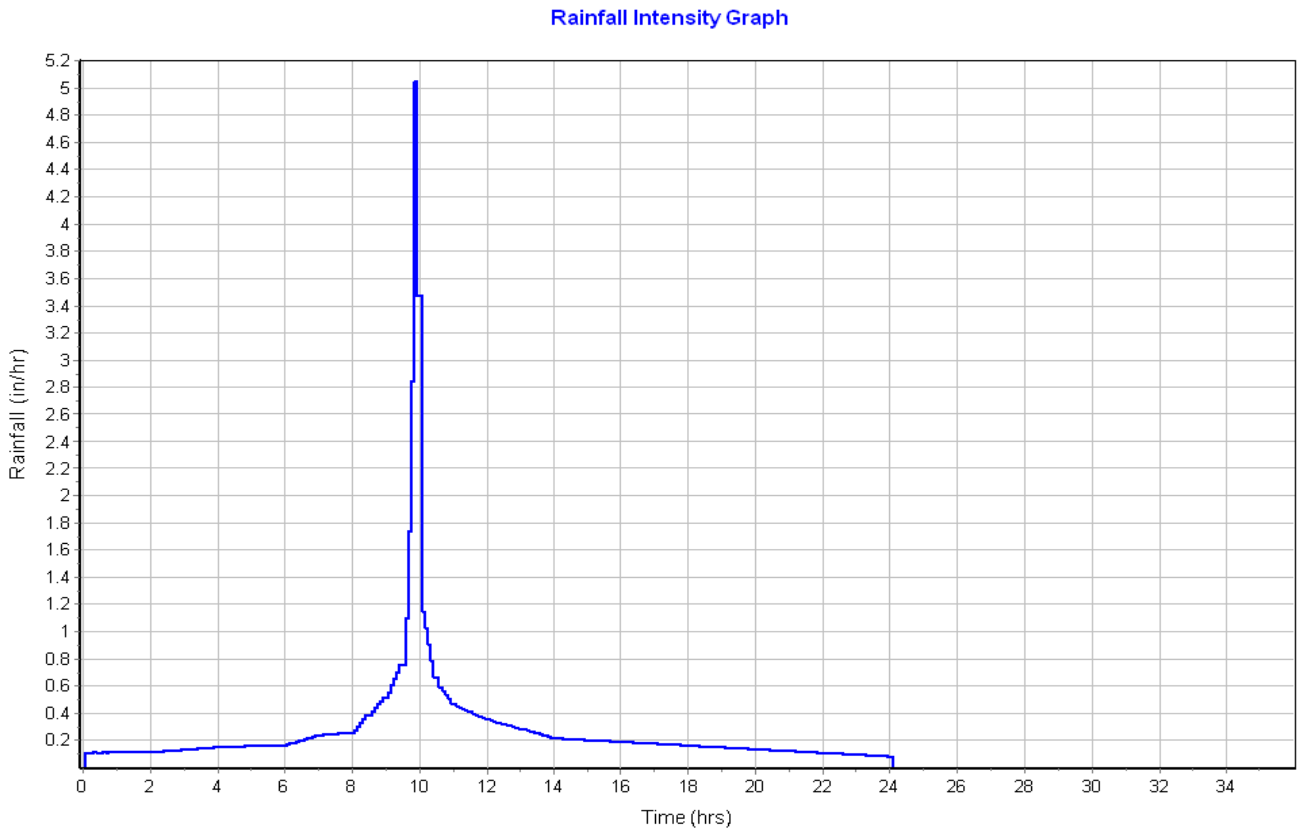
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	.013	0.00	0.00
Flow Length (ft) :	125	0.00	0.00
Channel Slope (%) :	14	0.00	0.00
Cross Section Area (ft^2) :	3.14	0.00	0.00
Wetted Perimeter (ft) :	6.28	0.00	0.00
Velocity (ft/sec) :	27.02	0.00	0.00
Computed Flow Time (min) :	0.08	0.00	0.00

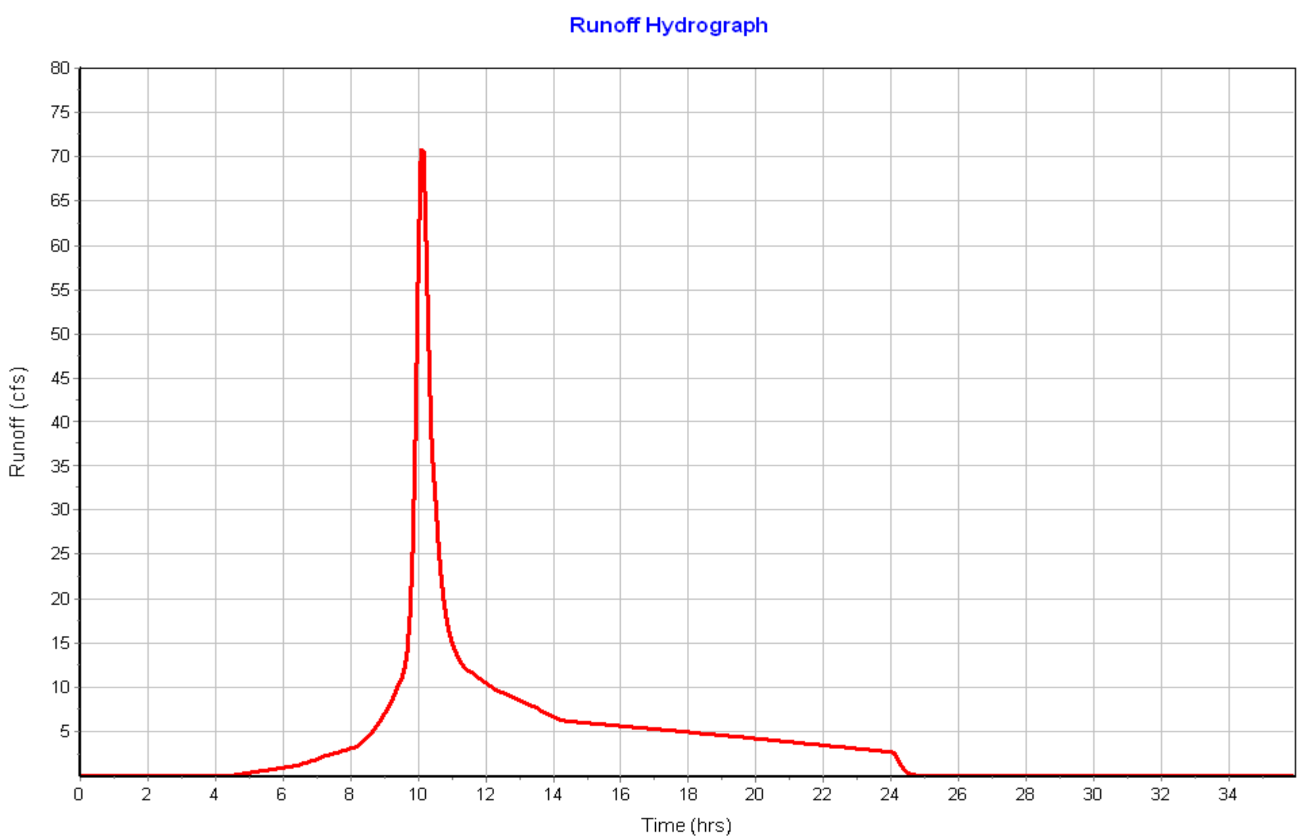
Total TOC (min) 23.97

Subbasin Runoff Results

Total Rainfall (in) 6.70
Total Runoff (in) 4.31
Peak Runoff (cfs) 72.70
Weighted Curve Number 79.00
Time of Concentration (days hh:mm:ss) 0 00:23:58

Subbasin : DMA1_Pre





Subbasin : DMA2_Pre

Input Data

Area (ft²) 1702635.99
Weighted Curve Number 74.00
Rain Gage ID .... *

Composite Curve Number

Soil/Surface Description	Area (ft²)	Soil Group	Curve Number
> 75% grass cover, Good	1702635.99	C	74.00
Composite Area & Weighted CN	1702635.99		74.00

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	300	0.00	0.00
Slope (%) :	3	0.00	0.00
2 yr, 24 hr Rainfall (in) :	2.90	0.00	0.00
Velocity (ft/sec) :	0.11	0.00	0.00
Computed Flow Time (min) :	46.19	0.00	0.00

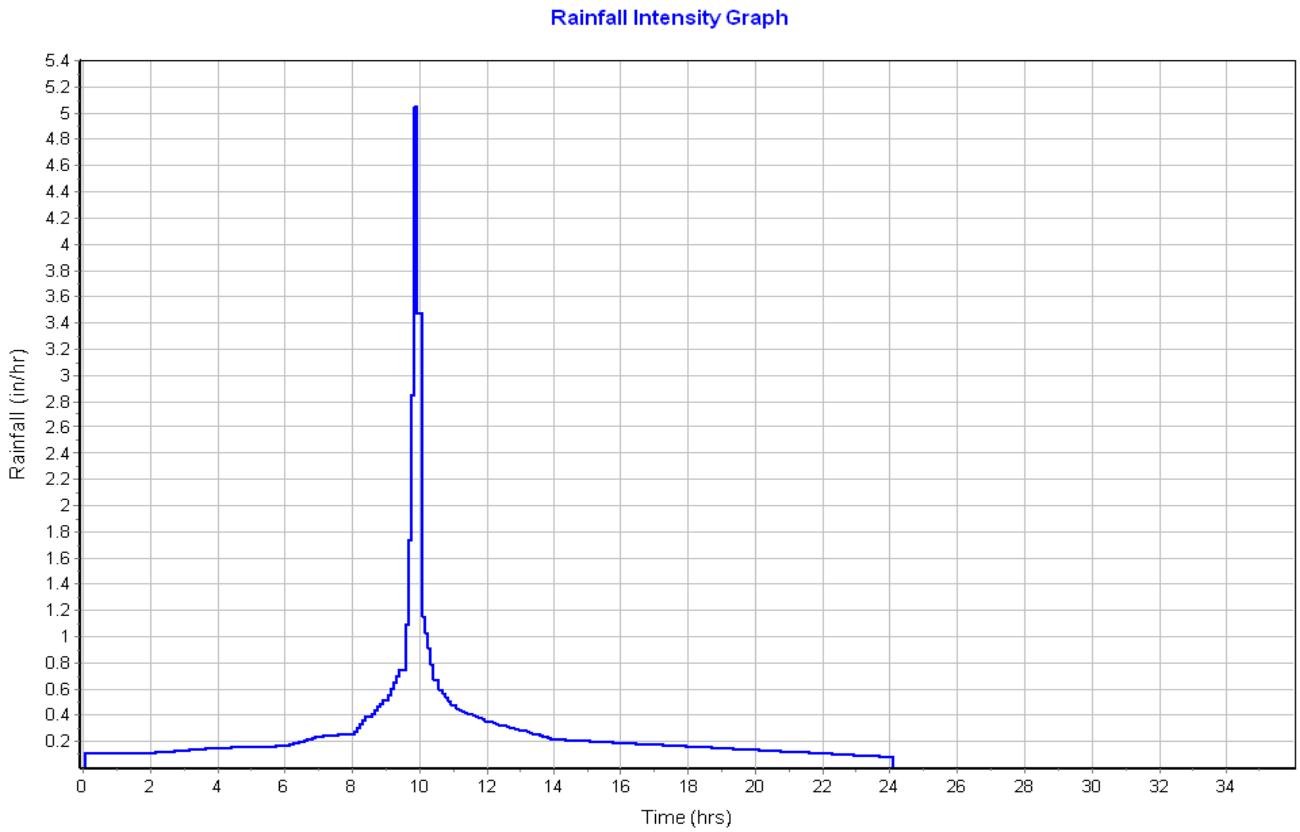
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	1850	0.00	0.00
Slope (%) :	2	0.00	0.00
Surface Type :	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec) :	0.99	0.00	0.00
Computed Flow Time (min) :	31.14	0.00	0.00

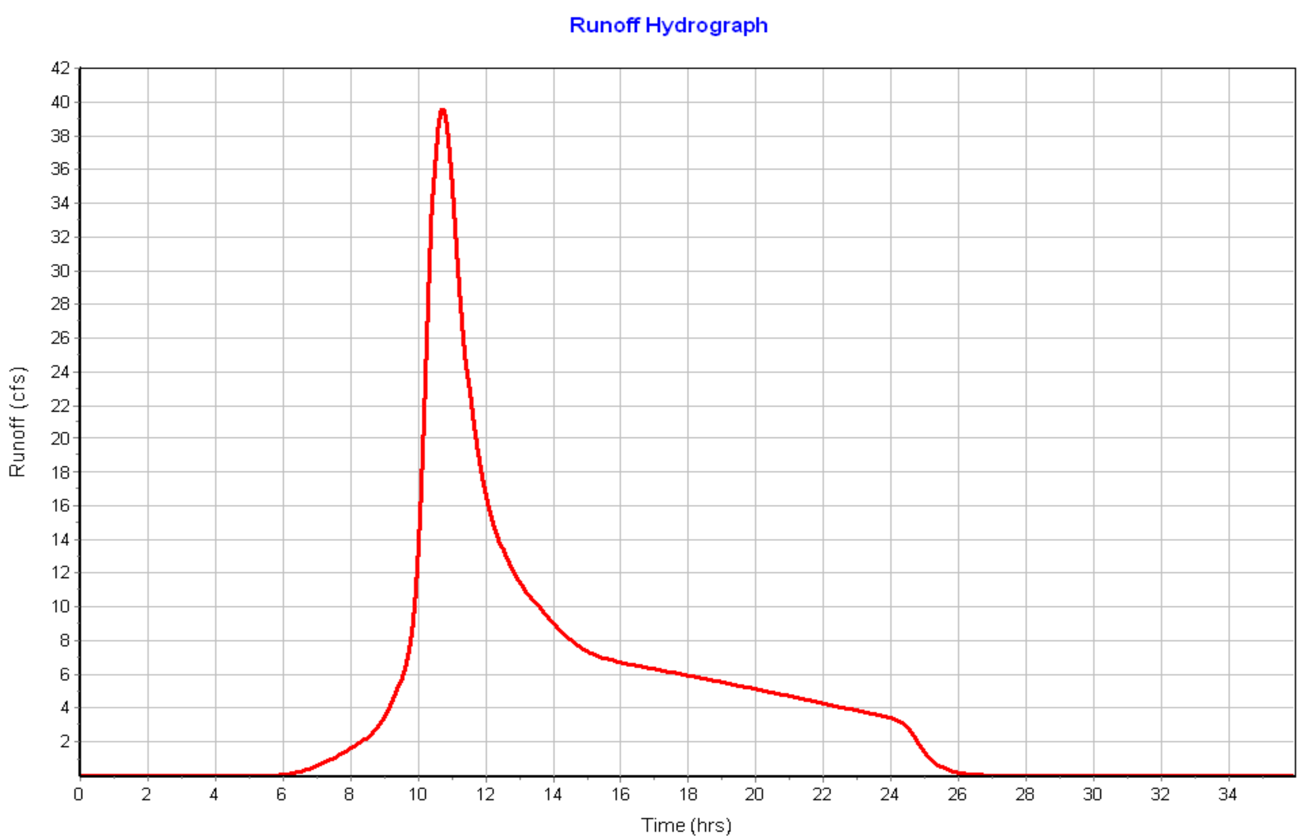
Total TOC (min) 77.33

Subbasin Runoff Results

Total Rainfall (in) 6.70
Total Runoff (in) 3.78
Peak Runoff (cfs) 39.64
Weighted Curve Number 74.00
Time of Concentration (days hh:mm:ss) 0 01:17:20

Subbasin : DMA2_Pre





Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Out1_Pre	70.81	70.81	23.36	1.36	0.00	16.64	22.17	0.17	0 10:10	0 00:00	0.00	0.00
2	Out2_Pre	39.53	39.53	0.00	0.00	0.00	6.00	0.00	0.00	0 00:00	0 00:00	0.00	0.00

Project Description

File Name .... 100-Year Storm Analysis_Post.SPF

Project Options

Flow Units .... CFS
Elevation Type .... Elevation
Hydrology Method .... SCS TR-55
Time of Concentration (TOC) Method .... SCS TR-55
Link Routing Method .... Kinematic Wave
Enable Overflow Ponding at Nodes .... YES
Skip Steady State Analysis Time Periods ... YES

Analysis Options

Start Analysis On	Oct 29, 2018	00:00:00
End Analysis On	Oct 30, 2018	12:00:00
Start Reporting On	Oct 29, 2018	00:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	1
Subbasins..	5
Nodes...	6
Junctions	5
Outfalls	1
Flow Diversions	0
Inlets	0
Storage Nodes	0
Links...	5
Channels	2
Pipes	3
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1		Time Series	100-year	Cumulative	inches	California	San Mateo (Millbrae)	100	6.70	SCS Type I 24-hr

Subbasin Summary

SN	Subbasin ID	Area (ft²)	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	DMA1A_Post	363789.99	74.00	6.70	3.78	31.59	16.12	0 00:24:36
2	DMA1B_Post	2239.99	74.00	6.70	3.77	0.19	0.13	0 00:10:00
3	DMA1C_Post	745441.02	74.33	6.70	3.82	65.30	33.98	0 00:23:52
4	DMA1D_Post	271557.00	74.00	6.70	3.78	23.58	13.17	0 00:20:13
5	DMA2_Post	1702636.99	74.00	6.70	3.78	147.83	39.92	0 01:16:27

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft^2)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Out1A_Post	Junction	97.00	102.00	0.00	0.00	0.00	44.54	38.34	0.00	6.66	0 00:00	0.00	0.00
2	72inHDPECulverts_Post	Junction	32.70	45.00	0.00	0.00	0.00	59.63	49.63	0.00	0.78	0 00:00	0.00	0.00
3	Out1_Post	Junction	20.50	50.00	0.00	0.00	0.00	33.10	80.57	0.00	1.43	0 00:00	0.00	0.00
4	Out1C_Post	Junction	79.00	82.00	0.00	0.00	0.00	39.87	17.77	0.00	7.23	0 00:00	0.00	0.00
6	Out_Combined_Post	Outfall	0.00	25.00	0.00	0.00	0.00	84.42	20.48					

Subbasin Hydrology

Subbasin : DMA1A_Post

Input Data

Area (ft²) 363789.99
Weighted Curve Number 74.00
Rain Gage ID .... *

Composite Curve Number

Soil/Surface Description	Area (ft²)	Soil Group	Curve Number
> 75% grass cover, Good	363789.99	C	74.00
Composite Area & Weighted CN	363789.99		74.00

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation :

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where :

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	300	0.00	0.00
Slope (%) :	22	0.00	0.00
2 yr, 24 hr Rainfall (in) :	2.90	0.00	0.00
Velocity (ft/sec) :	0.24	0.00	0.00
Computed Flow Time (min) :	20.82	0.00	0.00

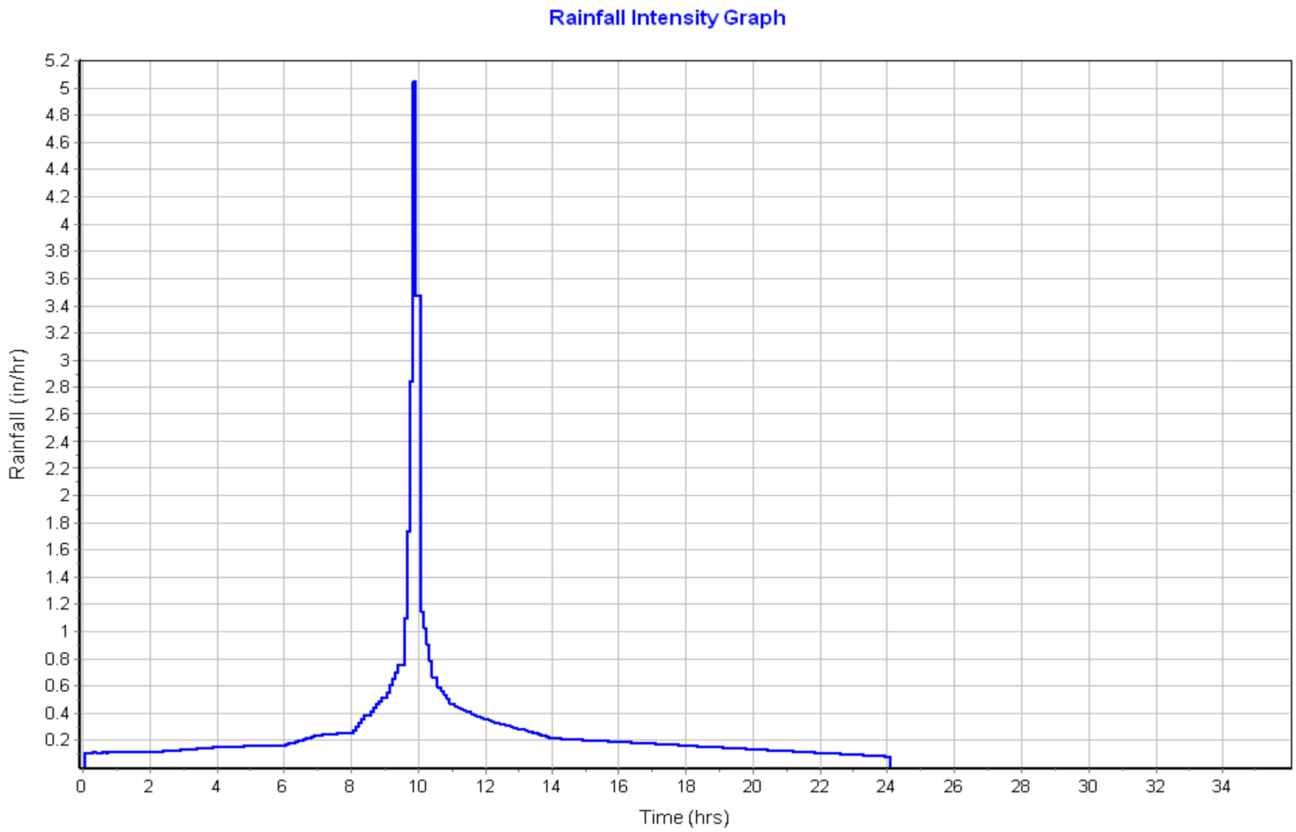
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	1078	0.00	0.00
Slope (%) :	10	0.00	0.00
Surface Type :	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec) :	4.74	0.00	0.00
Computed Flow Time (min) :	3.79	0.00	0.00

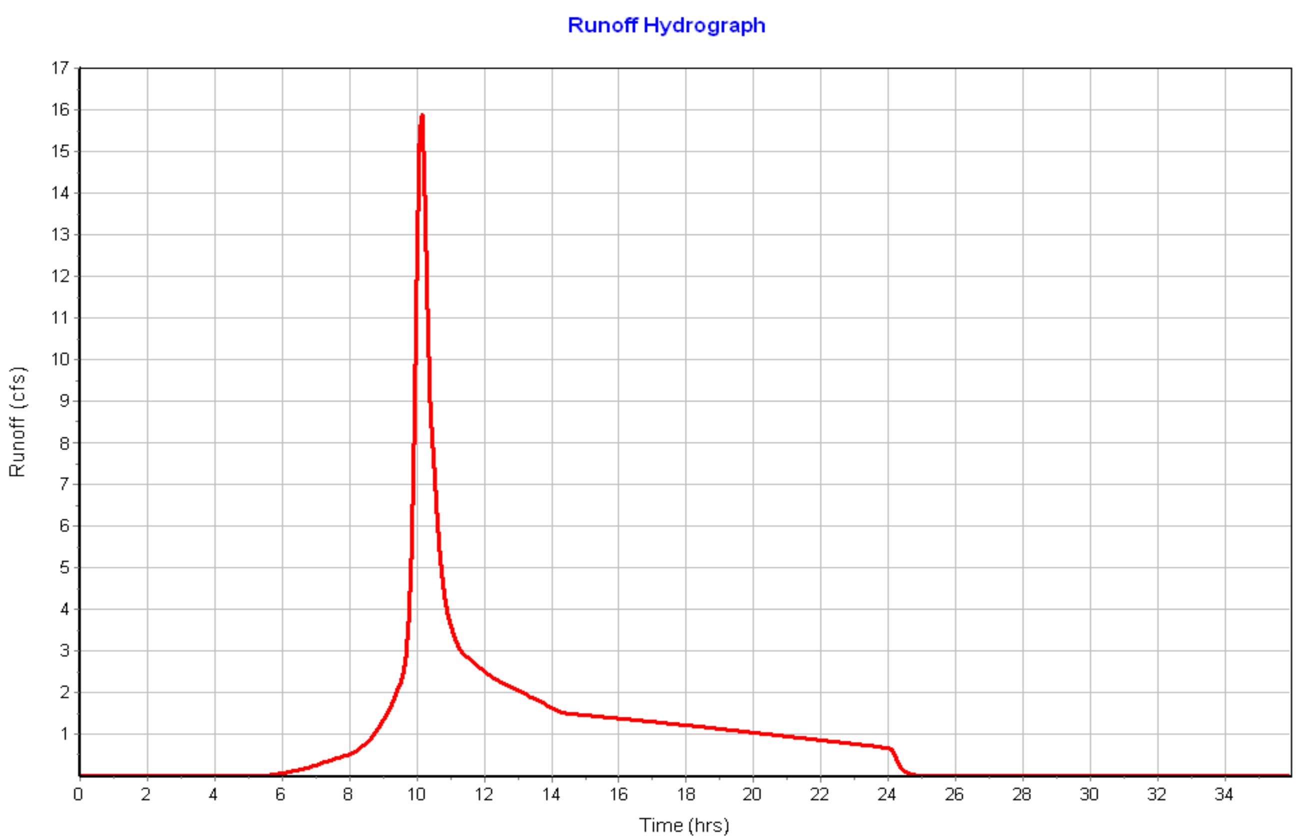
Total TOC (min) 24.61

Subbasin Runoff Results

Total Rainfall (in) 6.70
Total Runoff (in) 3.78
Peak Runoff (cfs) 16.12
Weighted Curve Number 74.00
Time of Concentration (days hh:mm:ss) 0 00:24:37

Subbasin : DMA1A_Post





Subbasin : DMA1B_Post

Input Data

Area (ft²) 2239.99
Weighted Curve Number 74.00
Rain Gage ID .... *

Composite Curve Number

Soil/Surface Description	Area (ft²)	Soil Group	Curve Number
> 75% grass cover, Good	2239.99	C	74.00
Composite Area & Weighted CN	2239.99		74.00

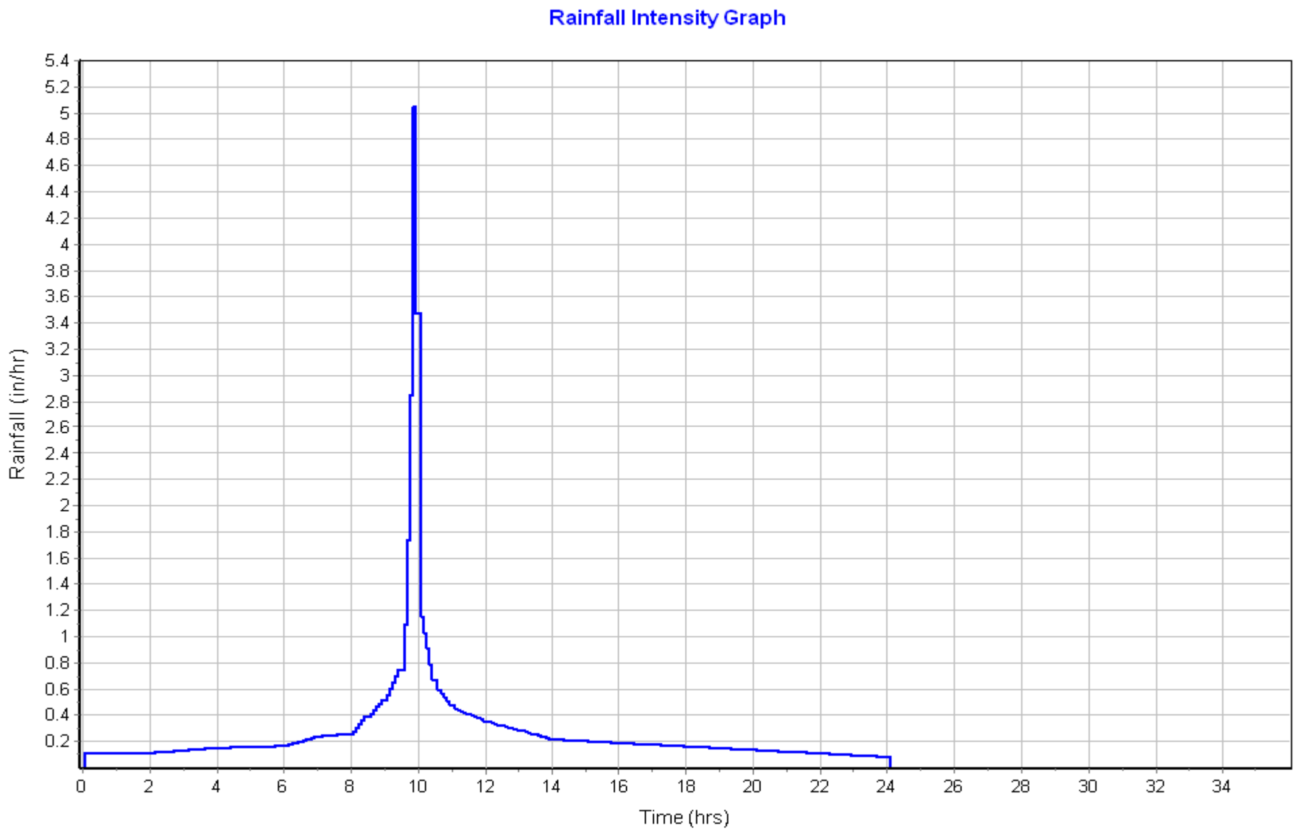
Time of Concentration

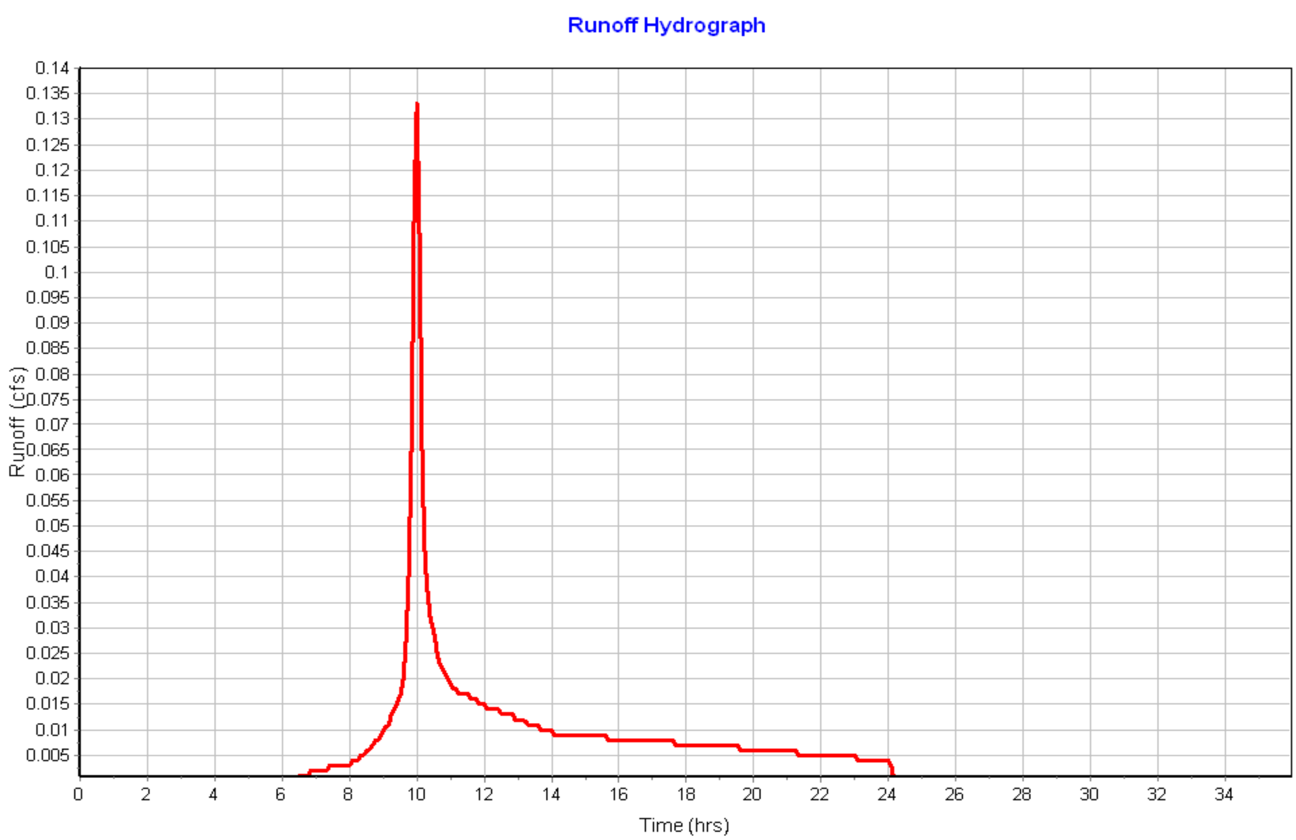
User-Defined TOC override (minutes): 10

Subbasin Runoff Results

Total Rainfall (in) 6.70
Total Runoff (in) 3.77
Peak Runoff (cfs) 0.13
Weighted Curve Number 74.00
Time of Concentration (days hh:mm:ss) 0 00:10:00

Subbasin : DMA1B_Post





Subbasin : DMA1C_Post

Input Data

Area (ft²) 745441.02
Weighted Curve Number 74.33
Rain Gage ID .... *

Composite Curve Number

Soil/Surface Description	Area (ft²)	Soil Group	Curve Number
> 75% grass cover, Good	735215.00	C	74.00
Paved parking & roofs	10196.00	C	98.00
Composite Area & Weighted CN	745411.00		74.33

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	300	0.00	0.00
Slope (%) :	21	0.00	0.00
2 yr, 24 hr Rainfall (in) :	2.90	0.00	0.00
Velocity (ft/sec) :	0.24	0.00	0.00
Computed Flow Time (min) :	21.21	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	360	0.00	0.00
Slope (%) :	9	0.00	0.00
Surface Type :	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec) :	4.50	0.00	0.00
Computed Flow Time (min) :	1.33	0.00	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.015	0.00	0.00
Flow Length (ft) :	885	0.00	0.00
Channel Slope (%) :	5	0.00	0.00
Cross Section Area (ft²) :	1	0.00	0.00
Wetted Perimeter (ft) :	2.83	0.00	0.00
Velocity (ft/sec) :	11.10	0.00	0.00
Computed Flow Time (min) :	1.33	0.00	0.00

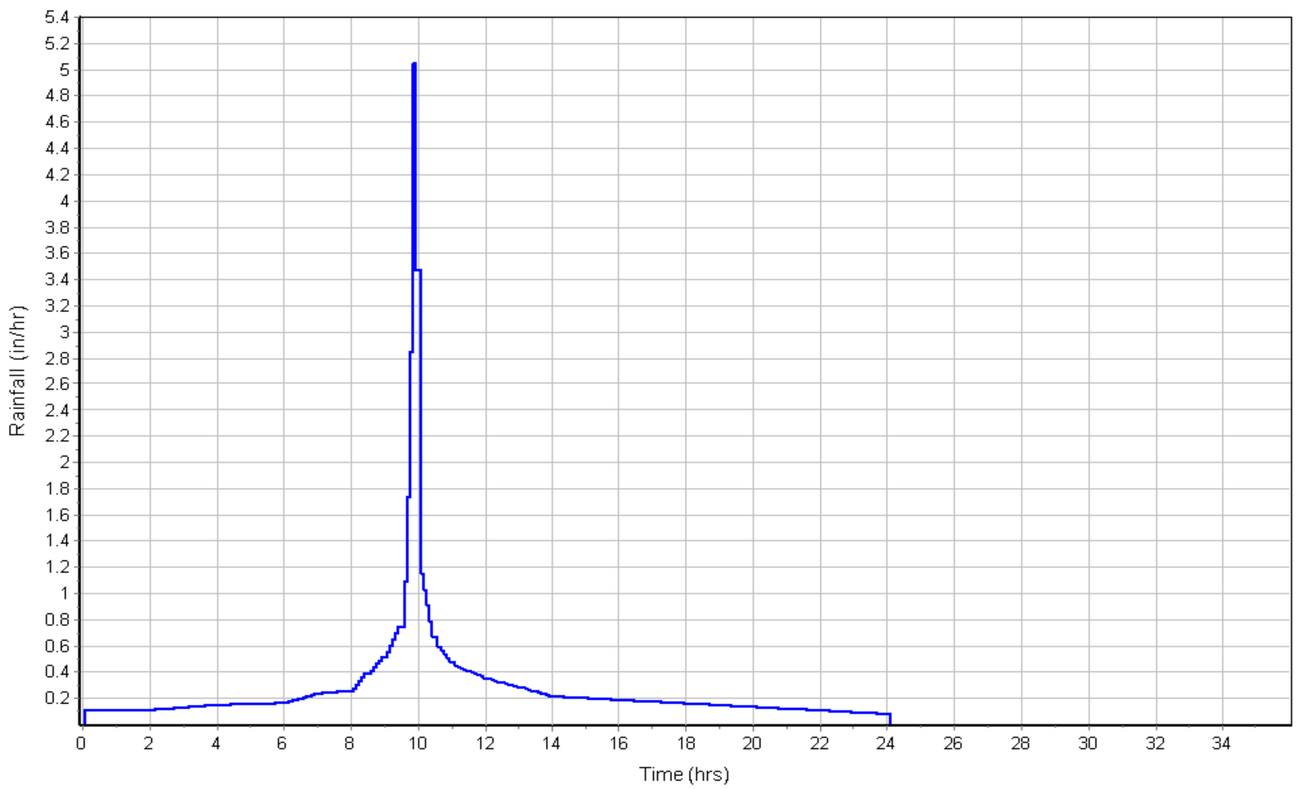
Total TOC (min) 23.87

Subbasin Runoff Results

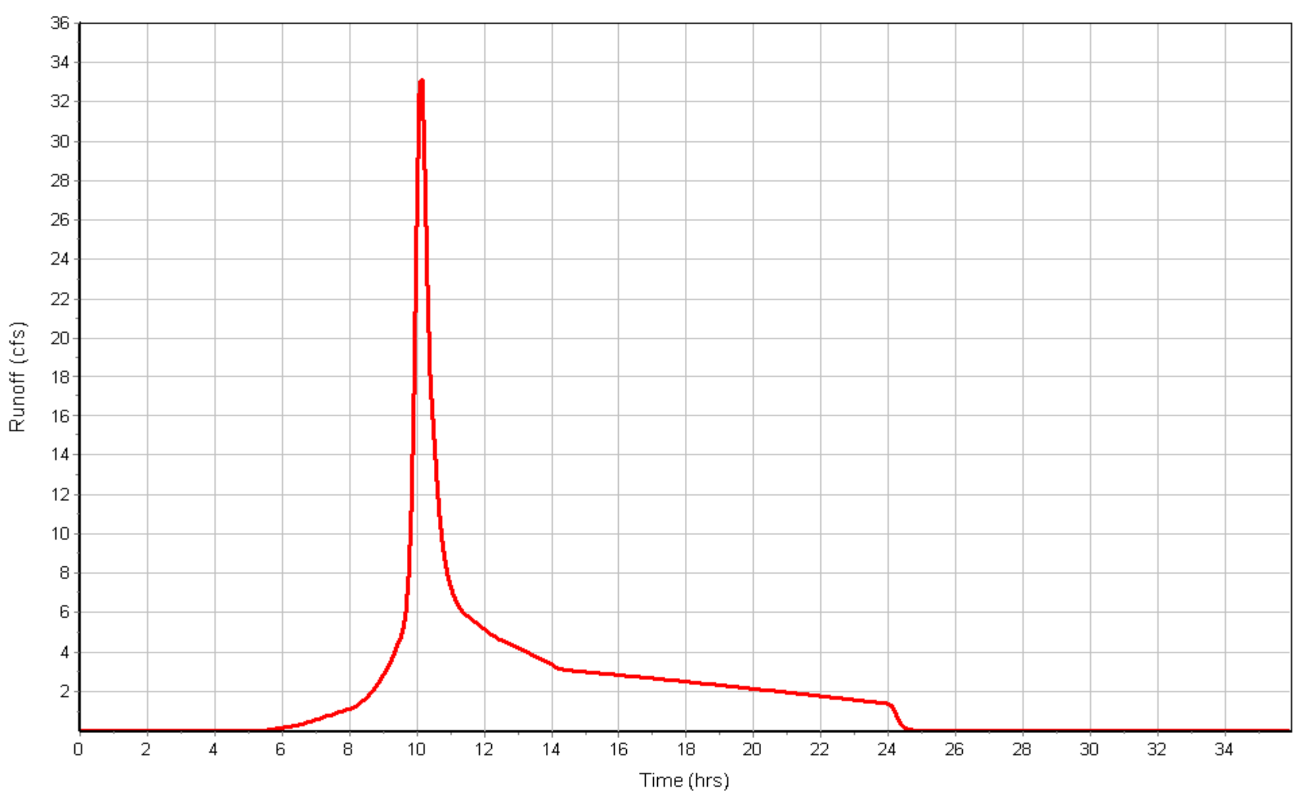
Total Rainfall (in) 6.70
Total Runoff (in) 3.82
Peak Runoff (cfs) 33.98
Weighted Curve Number 74.33
Time of Concentration (days hh:mm:ss) 0 00:23:52

Subbasin : DMA1C_Post

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : DMA1D_Post

Input Data

Area (ft²) 271557.00
Weighted Curve Number 74.00
Rain Gage ID .... *

Composite Curve Number

Soil/Surface Description	Area (ft²)	Soil Group	Curve Number
> 75% grass cover, Good	271557.00	C	74.00
Composite Area & Weighted CN	271557.00		74.00

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	300	0.00	0.00
Slope (%) :	41	0.00	0.00
2 yr, 24 hr Rainfall (in) :	2.90	0.00	0.00
Velocity (ft/sec) :	0.31	0.00	0.00
Computed Flow Time (min) :	16.23	0.00	0.00

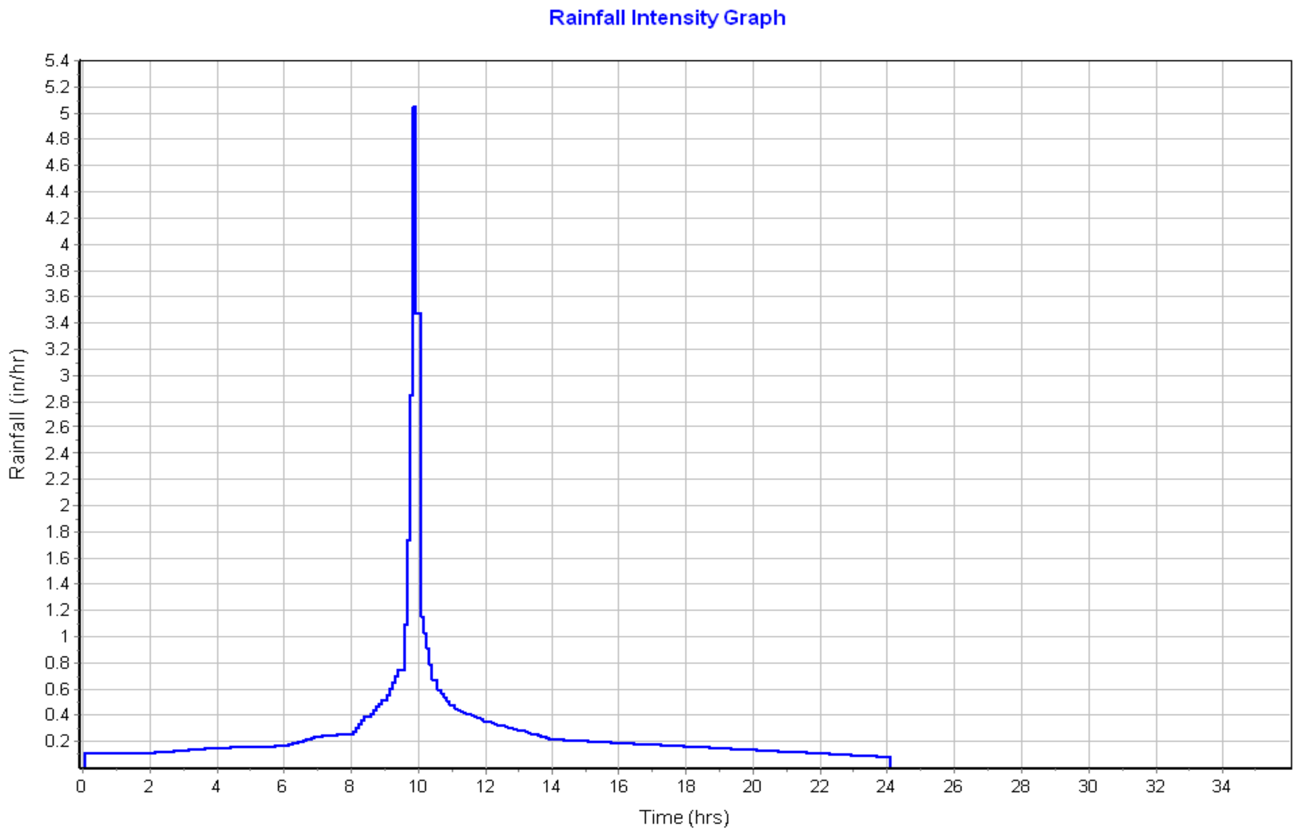
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	628	0.00	0.00
Slope (%) :	14	0.00	0.00
Surface Type :	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec) :	2.62	0.00	0.00
Computed Flow Time (min) :	3.99	0.00	0.00

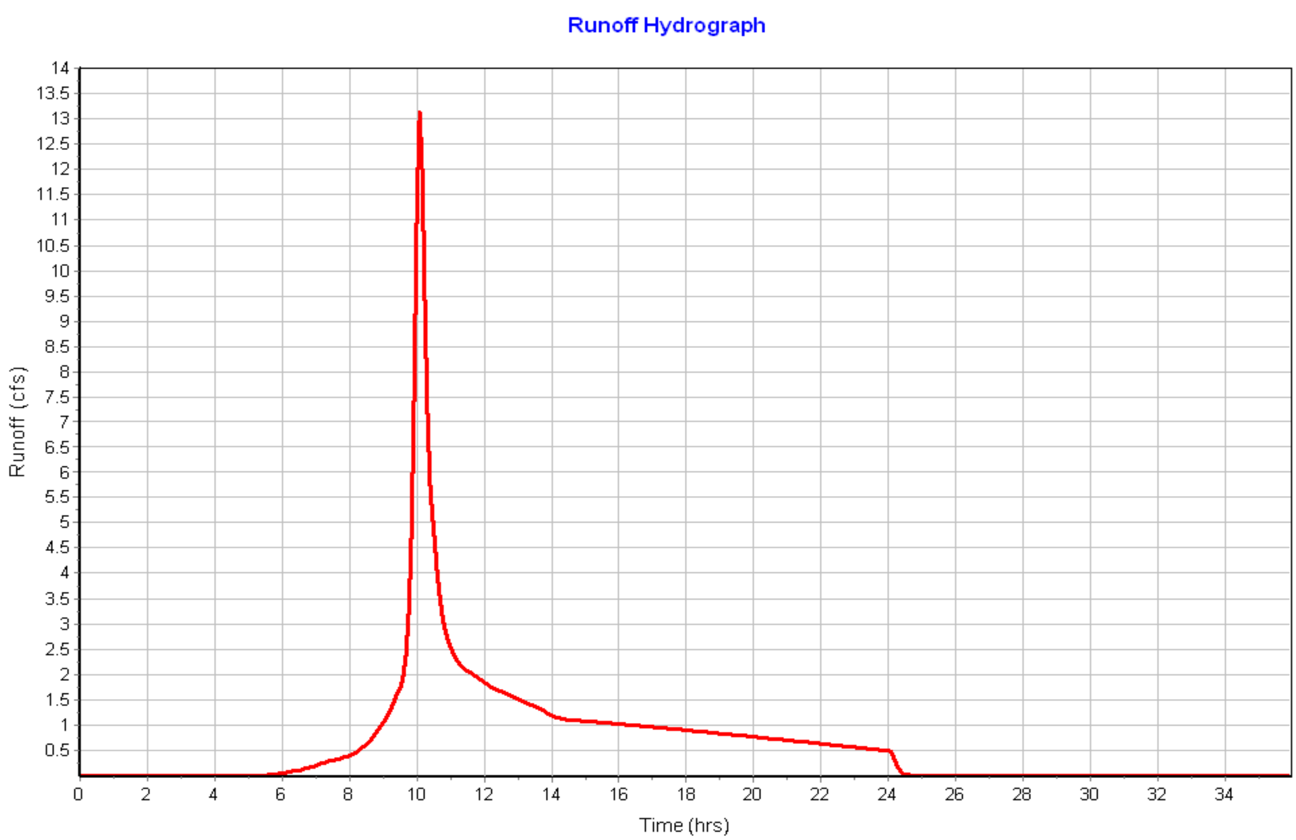
Total TOC (min) 20.22

Subbasin Runoff Results

Total Rainfall (in) 6.70
Total Runoff (in) 3.78
Peak Runoff (cfs) 13.17
Weighted Curve Number 74.00
Time of Concentration (days hh:mm:ss) 0 00:20:13

Subbasin : DMA1D_Post





Subbasin : DMA2_Post

Input Data

Area (ft²) 1702636.99
Weighted Curve Number 74.00
Rain Gage ID .... *

Composite Curve Number

Soil/Surface Description	Area (ft²)	Soil Group	Curve Number
> 75% grass cover, Good	1702636.99	C	74.00
Composite Area & Weighted CN	1702636.99		74.00

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.00	0.00
Flow Length (ft) :	300	0.00	0.00
Slope (%) :	3	0.00	0.00
2 yr, 24 hr Rainfall (in) :	2.90	0.00	0.00
Velocity (ft/sec) :	0.11	0.00	0.00
Computed Flow Time (min) :	46.19	0.00	0.00

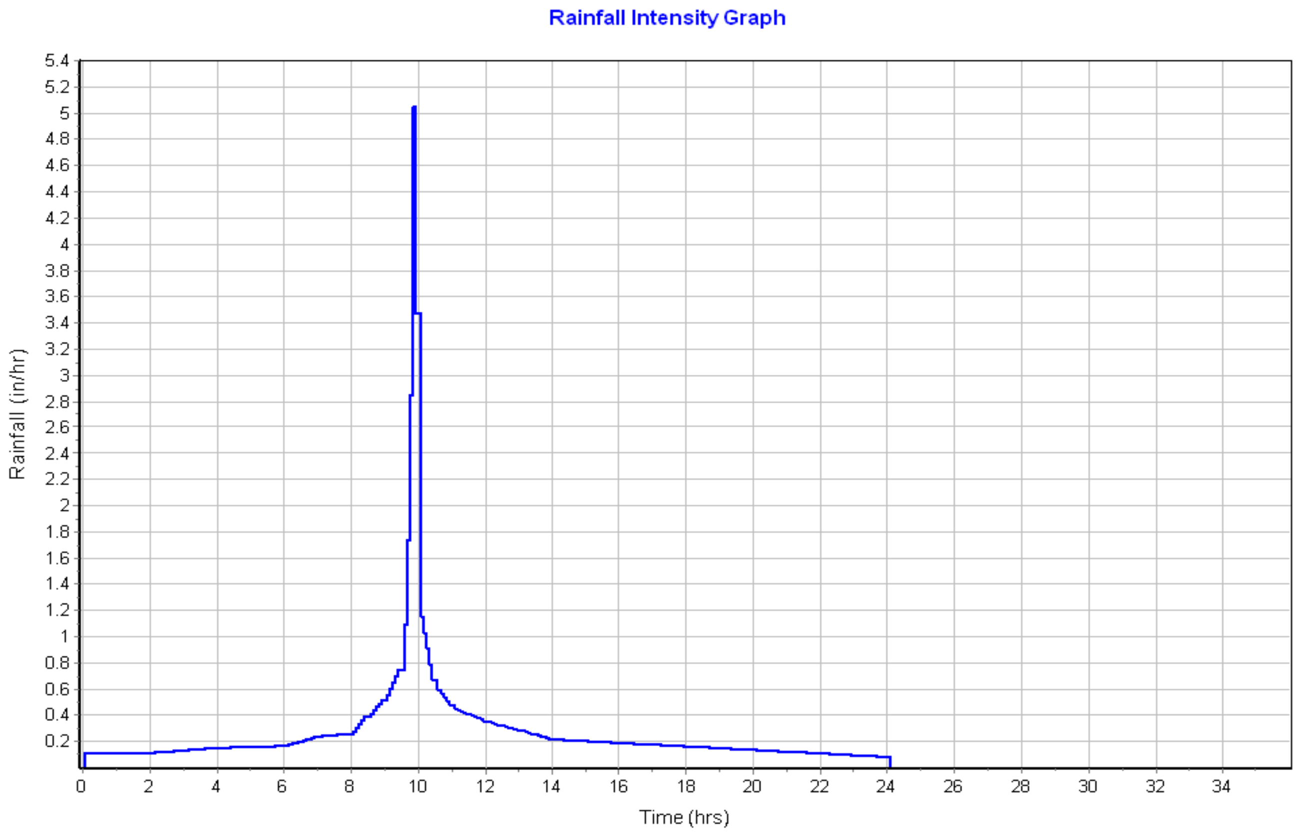
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	1160	1185	0.00
Slope (%) :	2	1.5	0.00
Surface Type :	Grass pasture	ssed wate	Unpaved
Velocity (ft/sec) :	0.99	1.84	0.00
Computed Flow Time (min) :	19.53	10.73	0.00

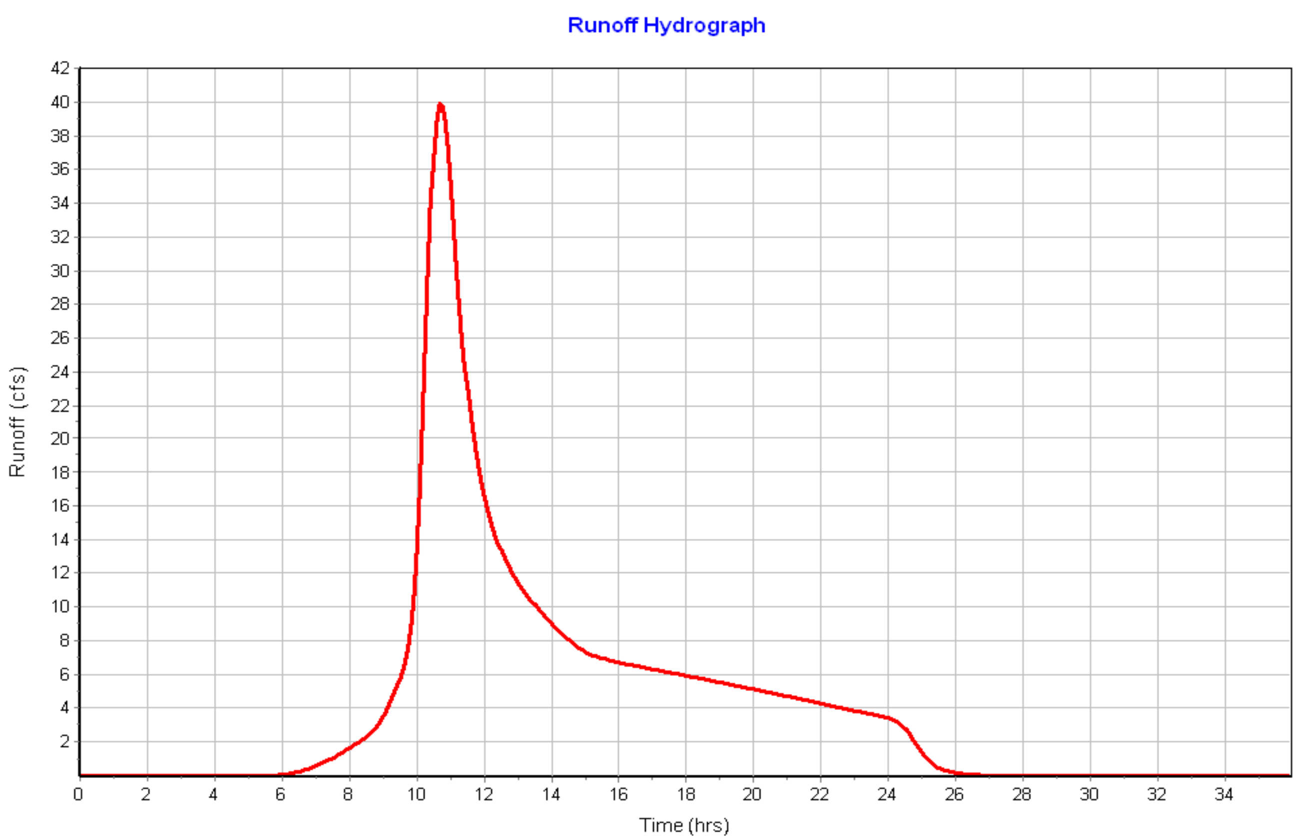
Total TOC (min) 76.45

Subbasin Runoff Results

Total Rainfall (in) 6.70
Total Runoff (in) 3.78
Peak Runoff (cfs) 39.92
Weighted Curve Number 74.00
Time of Concentration (days hh:mm:ss) 0 01:16:27

Subbasin : DMA2_Post





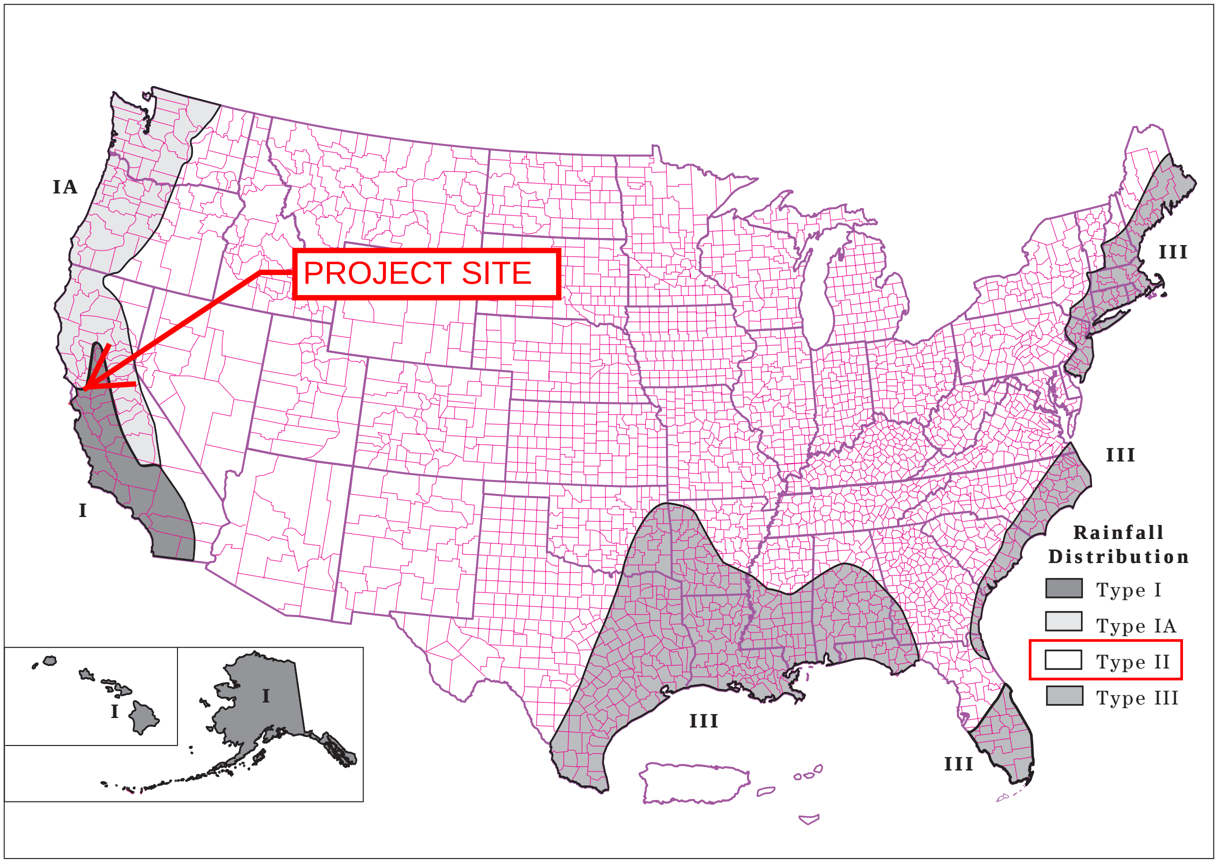
Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Out1A_Post	44.54	13.13	38.34	5.64	0.00	6.66	36.99	4.29	0 10:16	0 00:00	0.00	0.00
2	72inHDPECulverts_Post	59.63	0.13	49.63	29.13	0.00	0.78	48.59	28.09	0 10:19	0 00:00	0.00	0.00
3	Out1_Post	33.10	33.10	80.57	1.57	0.00	1.43	79.22	0.22	0 10:15	0 00:00	0.00	0.00
4	Out1C_Post	39.87	39.87	17.77	0.00	0.00	7.23	17.77	0.00	0 00:00	0 00:00	0.00	0.00
5	Out2_Post												

Pipe Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1	Link-05	39.87	0 10:45	0.00	0.69	0.00		1.71	0.86	0.00		Calculated
2	24inCMPCulvert_Post	33.07	0 10:16	45.99	0.72	10.46	4.02	1.56	0.63	0.00		Calculated
3	PIPE1C											

Figure B-2 Approximate geographic boundaries for NRCS (SCS) rainfall distributions



Rainfall data sources

This section lists the most current 24-hour rainfall data published by the National Weather Service (NWS) for various parts of the country. Because NWS Technical Paper 40 (TP-40) is out of print, the 24-hour rainfall maps for areas east of the 105th meridian are included here as figures B-3 through B-8. For the area generally west of the 105th meridian, TP-40 has been superseded by NOAA Atlas 2, the Precipitation-Frequency Atlas of the Western United States, published by the National Ocean and Atmospheric Administration.

East of 105th meridian

Hershfield, D.M. 1961. Rainfall frequency atlas of the United States for durations from 30 minutes to 24 hours and return periods from 1 to 100 years. U.S. Dept. Commerce, Weather Bur. Tech. Pap. No. 40. Washington, DC. 155 p.

West of 105th meridian

Miller, J.F., R.H. Frederick, and R.J. Tracey. 1973. Precipitation-frequency atlas of the Western United States. Vol. I Montana; Vol. II, Wyoming; Vol III, Colorado; Vol. IV, New Mexico; Vol V, Idaho; Vol. VI, Utah; Vol. VII, Nevada; Vol. VIII, Arizona; Vol. IX, Washington; Vol. X, Oregon; Vol. XI, California. U.S. Dept. of Commerce, National Weather Service, NOAA Atlas 2. Silver Spring, MD.

Alaska

Miller, John F. 1963. Probable maximum precipitation and rainfall-frequency data for Alaska for areas to 400 square miles, durations to 24 hours and return periods from 1 to 100 years. U.S. Dept. of Commerce, Weather Bur. Tech. Pap. No. 47. Washington, DC. 69 p.

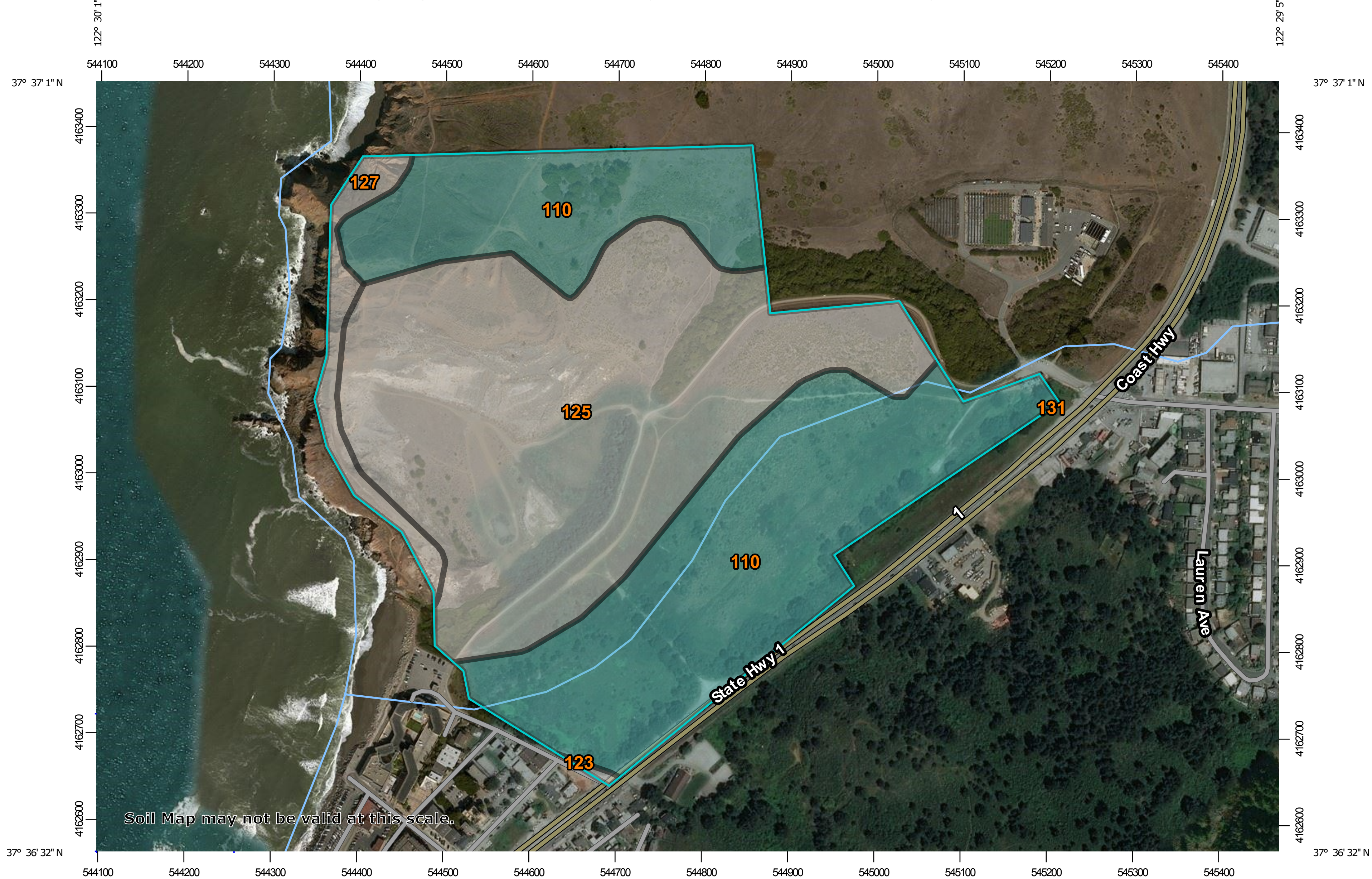
Hawaii

Weather Bureau. 1962. Rainfall-frequency atlas of the Hawaiian Islands for areas to 200 square miles, durations to 24 hours and return periods from 1 to 100 years. U.S. Dept. Commerce, Weather Bur. Tech. Pap. No. 43. Washington, DC. 60 p.

Puerto Rico and Virgin Islands

Weather Bureau. 1961. Generalized estimates of probable maximum precipitation and rainfall-frequency data for Puerto Rico and Virgin Islands for areas to 400 square miles, durations to 24 hours, and return periods from 1 to 100 years. U.S. Dept. Commerce, Weather Bur. Tech. Pap. No. 42. Washington, DC. 94 P.

Hydrologic Soil Group—San Mateo County, Eastern Part, and San Francisco County, California



Map Scale: 1:6,270 if printed on A landscape (11" x 8.5") sheet.

N

0 50 100 200 300 Meters

0 300 600 1200 1800 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Mateo County, Eastern Part, and San Francisco County, California
Survey Area Data: Version 14, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 26, 2010—May 19, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
110	Candlestick-Kron-Buriburi complex, 30 to 75 percent slo pes	C	43.2	46.7%
123	Orthents, cut and fill-Urban land complex, 0 to 5 percent slopes		0.1	0.2%
125	Pits and Dumps		45.7	49.4%
127	Rock outcrop-Orthents complex, 30 to 75 percent slopes		3.5	3.8%
131	Urban land		0.0	0.0%
Totals for Area of Interest			**92.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

SAN MATEO COUNTYWIDE Water Pollution Prevention Program

COUNTY OF SAN MATEO
Planning & Building Department
455 County Center, 2nd Floor
Redwood City, CA 94063
BLD: 650-599-7311/PLN: 650-363-1825
http://planning.smcgov.org/

C.3 and C.6 Development Review Checklist

Municipal Regional Stormwater Permit (MRP)
Stormwater Controls for Development Projects

Applicants: This form should be filled out by the Project Civil Engineer, if one is associated with the project.
Office Use: Planners, scan and upload to Accela Case and provide hard copy to EC Team; Building Techs, forward to DPW

Project Information

I.A **Enter Project Data** *(For "C.3 Regulated Projects," data will be reported in the municipality's stormwater Annual Report.)*

Project Name: Rockaway Quarry in The City of Pacifica Case Number:

Project Address & Cross St.: Nearest cross street: San Marlo Way & Pacific Coast Highway (SR 1)

Project APN: 018-150-110,120,150 Project Watershed: Calera Creek Watershed

Applicant Name: The Preserve at Pacifica LLC (Agent: Walsh Engineering) **I.A.4** Slope on Site: %

Applicant Phone: (616) 530-5500 Applicant Email Address: pcheule@eenhoorn.com

I.A.1 Development type: (check all that apply)

- ☐ Single Family Residential: A stand-alone home that is not part of a larger project.
- ☐ Single Family Residential: Two or more lot residential development.[1] # of units: ________
- ☐ Multi-Family Residential # of units: ________
- ☐ Commercial
- ☐ Industrial, Manufacturing
- ☐ Mixed-Use # of units: ________
- ☐ Streets, Roads[2], etc.
- ☐ 'Redevelopment' as defined by MRP: creating, adding and/or replacing exterior existing impervious surface on a site where past development has occurred.
- ☐ '**Special land use categories'** as defined by MRP: (1) auto service facilities[3], (2) retail gasoline outlets, (3) restaurants, (4) uncovered parking area (stand-alone or part of a larger project)
- ☐ Institutions: schools, libraries, jails, etc.
- ☐ Parks and trails, camp grounds, other recreational
- ☐ Agricultural, wineries
- ☐ Kennels, Ranches
- ☒ Other, Please specify Quarry Reclamation

Project Description[4]: (Also note any past or future phases of the project.)
This project consists of grading, excavation, remedial mitigation, and installation of drainage improvements in accordance with Surface Mining and Reclamation Act (SMARA) Standards for reclamation of the abandoned Rockaway Quarry.

I.A.2 Total Area of Site: 86.4 acres

I.A.3 Total Area of land disturbed during construction (include clearing, grading, excavating and stockpile area): 36.5 acres.

I.A.5 Certification:
I certify that the information provided on this form is correct and acknowledge that, should the project exceed the amount of new and/or replaced impervious surface provided in this form, the as-built project may be subject to additional improvements.

☐ Attach Preliminary Calculations ☐ Attach Final Calculations ☒ Attach copy of site plan showing areas

Name of person completing the form: Matt Walsh Title: Principal

Signature: Matt Walsh Date: 07/25/2018

Phone number: (805) 319-4948 Email address: matt@walshengineering.net

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[1] Common Plans of Development (subdivisions or contiguous, commonly owned lots, for the construction of two or more homes developed within 1 year of each other) are not considered single family projects by the MRP.
[2] Roadway projects creating 10,000 sq.ft. or more of contiguous impervious surface are subject to C.3 requirements if the roadway is new or being widened with additional traffic lanes.
[3] See Standard Industrial Classification (SIC) codes here
[4] Project description examples: 5-story office building, industrial warehouse, residential with five 4-story buildings for 200 condominiums, etc.

I.B Is the project a "C.3 Regulated Project" per MRP Provision C.3.b?

I.B.1 Enter the amount of impervious surface[5] Retained, Replaced and/or Created by the project:

Table I.B.1 Impervious and Pervious Surfaces

Type of Impervious Surface	I.B.1.a Pre-Project Impervious Surface (sq.ft.)	I.B.1.b Existing Impervious Surface to be Retained[6] (sq.ft.)	I.B.1.c Existing Impervious Surface to be Replaced[6] (sq.ft.)	I.B.1.d New Impervious Surface to be Created[6] (sq.ft.)	I.B.1.e Post-Project Impervious Surface (sq.ft.) (=b+c+d)
Roof area(s)	0	0	0	0	0
Impervious[5] sidewalks, patios, paths, driveways, streets	0	0	0	0	0
Impervious[5] uncovered parking[7]	0	0	0	0	0
Totals of Impervious Surfaces:	0	0	0	0	0
I.B.1.f - Total Impervious Surface Replaced and Created ***(sum of totals for columns I.B.1.c and I.B.1.d)*****:**				0	
Type of Pervious Surface	Pre-Project Pervious Surface (sq.ft.)				Post-project Pervious Surface (sq.ft.)
Landscaping	2,087,187				2,076,464
Pervious Paving	0				0
Green Roof	0				0
Totals of Pervious Surfaces:	2,087,187				2,076,464
Total Site Area (Total Impervious+Total Pervious=**I.A.1**)	2,087,187				2,076,464

I.B.2 Please review and attach additional worksheets as required below using the Total Impervious Surface Replaced and Created in cell I.B.1.f from Table I.B.1 above and other factors:

	Check all that apply:	Check If Yes	Attach Worksheet
I.B.2.a	Does this project involve any earthwork?	☒	A
I.B.2.b	Is **I.B.1.f** greater than or equal to 2,500 sq.ft? *If YES, the Project is subject to Provision C.3.i.*	☐	B, C
I.B.2.c	Is the total Existing Impervious Surface to be Replaced (column **I.B.1.c**) 50 percent or more of the total Pre-Project Impervious Surface (column **I.B.1.a**)? *If YES, site design, source control and treatment requirements apply to the whole site; if NO, these requirements apply only to the impervious surface created and/or replaced.*	☐	
I.B.2.d	Is this project one of the Special Land Use Categories (box checked in section I.A. above) and is **I.B.1.f** greater than or equal to 5,000 sq.ft? *If YES, project is a C.3 Regulated Project.*	☐	D, D-1, D-2
I.B.2.e	Is **I.B.1.f** greater than or equal to 10,000 sq.ft? *If YES, project is a C.3 Regulated Project.*	☐	D, D-1, D-2
I.B.2.f	Is **I.B.1.f** greater than or equal to 43,560 sq.ft. (1 acre)? *If YES, project may be subject to Hydromodification Management requirements.*	☐	E
I.B.2.g	Is **I.A.2** (pg. 1) greater than or equal to 1 acre? *If YES, obtain coverage under the state's Construction General Permit and submit to the municipality a copy of your Notice of Intent. See: www.swrcb.ca.gov/water_issues/programs/stormwater/construction.shtml.*	☒	
I.B.2.h	Is this a Special Project or does it have the potential to be a Special Project?	☐	F
I.B.2.i	Is this project a High Priority Site? (Determined by the Permitting Jurisdiction. High Priority Sites can include those located in or within 100 feet of a sensitive habitat, ASBS, or body of water, or on sites with slopes, and are subject to monthly inspections from Oct 1 to April 30.)	☐	G
B.2.10	For Municipal Staff Use Only (Alternative Certification, O&M Submittals, Project Close Out)	☐	G

[5] Per the MRP, pavement that meets the following definition of pervious pavement is NOT an impervious surface. Pervious pavement is defined as pavement that stores and infiltrates rainfall at a rate equal to immediately surrounding unpaved, landscaped areas, or that stores and infiltrates the rainfall runoff volume described in Provision C.3.

[6] "Retained" means to leave existing impervious surfaces in place, unchanged; "Replaced" means to install new impervious surface where existing impervious surface is removed anywhere on the same property; and "Created" means the amount of new impervious surface being proposed which exceeds the total existing amount of impervious surface at the property.

[7] Uncovered parking includes the top level of a parking structure.

Worksheet A

C6 – Construction Stormwater BMPs

Identify Plan sheet showing the appropriate construction Best Management Practices (BMPs) used on this project:
(Applies to all projects with earthwork)

Yes	Plan Sheet	Best Management Practice (BMP)
☒	Reclamation Plan Sheet 6	Control and prevent the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water or sediments, rinse water from architectural copper, and non-stormwater discharges to storm drains and watercourses.
☒	Sheet 6	Store, handle, and dispose of construction materials/wastes properly to prevent contact with stormwater.
☒	Sheet 6	Do not clean, fuel, or maintain vehicles on-site, except in a designated area where wash water is contained and treated.
☒	Sheet 6	Train and provide instruction to all employees/subcontractors re: construction BMPs.
☒	Sheet 5	Protect all storm drain inlets in vicinity of site using sediment controls such as berms, fiber rolls, or filters.
☒	Sheet 5	Limit construction access routes and stabilize designated access points.
☒	Sheet 4	Attach the San Mateo Countywide Water Pollution Prevention Program's construction BMP plan sheet to project plans and require contractor to implement the applicable BMPs on the plan sheet.
☒	Sheet 6	Use temporary erosion controls to stabilize all denuded areas until permanent erosion controls are established.
☒	Sheet 6	Delineate with field markers clearing limits, easements, setbacks, sensitive or critical areas, buffer zones, trees, and drainage courses.
☒	Revegetation Section of the written Reclamation Plan Report by Zentner & Zentner	Provide notes, specifications, or attachments describing the following: ▪ Construction, operation and maintenance of erosion and sediment controls, include inspection frequency; ▪ Methods and schedule for grading, excavation, filling, clearing of vegetation, and storage and disposal of excavated or cleared material; ▪ Specifications for vegetative cover & mulch, include methods and schedules for planting and fertilization; ▪ Provisions for temporary and/or permanent irrigation.
☒	Sheet 6	Perform clearing and earth moving activities only during dry weather.
☒	Sheet 6	Use sediment controls or filtration to remove sediment when dewatering and obtain all necessary permits.
☒	Sheet 5	Trap sediment on-site, using BMPs such as sediment basins or traps, earthen dikes or berms, silt fences, check dams, soil blankets or mats, covers for soil stock piles, etc.
☒	Sheet 5	Divert on-site runoff around exposed areas; divert off-site runoff around the site (e.g., swales and dikes).
☒	Sheet 5	Protect adjacent properties and undisturbed areas from construction impacts using vegetative buffer strips, sediment barriers or filters, dikes, mulching, or other measures as appropriate.

Worksheet B

C3 - Source Controls

Select appropriate source controls and identify the detail/plan sheet where these elements are shown.

Yes	Detail/Plan Sheet No.	Features that require source control measures	Source Control Measures (Refer to Local Source Control List for detailed requirements)
☒	Recl. Plan, Sheet 2	Storm Drain	Mark on-site inlets with the words “No Dumping! Flows to Bay” or equivalent.
☐		Floor Drains	Plumb interior floor drains to sanitary sewer[8] [or prohibit].
☐		Parking garage	Plumb interior parking garage floor drains to sanitary sewer.[8]
☐		Landscaping	▪ Retain existing vegetation as practicable. ▪ Select diverse species appropriate to the site. Include plants that are pest- and/or disease-resistant, drought-tolerant, and/or attract beneficial insects. ▪ Minimize use of pesticides and quick-release fertilizers. ▪ Use efficient irrigation system; design to minimize runoff.
☐		Pool/Spa/Fountain	Provide connection to the sanitary sewer to facilitate draining.[8]
☐		Food Service Equipment (non-residential)	Provide sink or other area for equipment cleaning, which is: ▪ Connected to a grease interceptor prior to sanitary sewer discharge.[8] ▪ Large enough for the largest mat or piece of equipment to be cleaned. ▪ Indoors or in an outdoor roofed area designed to prevent stormwater run-on and run-off, and signed to require equipment washing in this area.
☐		Refuse Areas	▪ Provide a roofed and enclosed area for dumpsters, recycling containers, etc., designed to prevent stormwater run-on and runoff. ▪ Connect any drains in or beneath dumpsters, compactors, and tallow bin areas serving food service facilities to the sanitary sewer.[8]
☐		Outdoor Process Activities [9]	Perform process activities either indoors or in roofed outdoor area, designed to prevent stormwater run-on and runoff, and to drain to the sanitary sewer.[8]
☐		Outdoor Equipment/ Materials Storage	▪ Cover the area or design to avoid pollutant contact with stormwater runoff. ▪ Locate area only on paved and contained areas. ▪ Roof storage areas that will contain non-hazardous liquids, drain to sanitary sewer[8], and contain by berms or similar.
☐		Vehicle/ Equipment Cleaning	▪ Roofed, pave and berm wash area to prevent stormwater run-on and runoff, plumb to the sanitary sewer[8], and sign as a designated wash area. ▪ Commercial car wash facilities shall discharge to the sanitary sewer.[8]
☐		Vehicle/ Equipment Repair and Maintenance	▪ Designate repair/maintenance area indoors, or an outdoors area designed to prevent stormwater run-on and runoff and provide secondary containment. Do not install drains in the secondary containment areas. ▪ No floor drains unless pretreated prior to discharge to the sanitary sewer.[8] ▪ Connect containers or sinks used for parts cleaning to the sanitary sewer.[8]
☐		Fuel Dispensing Areas	▪ Fueling areas shall have impermeable surface that is a) minimally graded to prevent ponding and b) separated from the rest of the site by a grade break. ▪ Canopy shall extend at least 10 ft. in each direction from each pump and drain away from fueling area.
☐		Loading Docks	▪ Cover and/or grade to minimize run-on to and runoff from the loading area. ▪ Position downspouts to direct stormwater away from the loading area. ▪ Drain water from loading dock areas to the sanitary sewer.[8] ▪ Install door skirts between the trailers and the building.
☐		Fire Sprinklers	Design for discharge of fire sprinkler test water to landscape or sanitary sewer.[8]
☐		Miscellaneous Drain or Wash Water	▪ Drain condensate of air conditioning units to landscaping. Large air conditioning units may connect to the sanitary sewer.[8] ▪ Roof drains from equipment drain to landscaped area where practicable. ▪ Drain boiler drain lines, roof top equipment, all wash water to sanitary sewer.[8]
☐		Architectural Copper Rinse Water	▪ Drain rinse water to landscaping, discharge to sanitary sewer[8], or collect and dispose properly offsite. See flyer “Requirements for Architectural Copper.”

[8] Any connection to the sanitary sewer system is subject to sanitary district approval.
[9] Businesses that may have outdoor process activities/equipment include machine shops, auto repair, industries with pretreatment facilities.

Worksheet C

Low Impact Development – Site Design Measures

Select Appropriate Site Design Measures *(Required for C.3 Regulated Projects; all other projects are encouraged to implement site design measures, which may be required at municipality discretion.) Projects that create and/or replace 2,500 – 10,000 sq.ft. of impervious surface, and stand-alone single family homes that create/replace 2,500 sq.ft. or more of impervious surface, must include* ***one of Site Design Measures a through f*** *(Provision C.3.i requirements).*[10] *Larger projects must also include applicable Site Design Measures g through i. Consult with municipal staff about requirements for your project.*

Select appropriate site design measures and Identify the Plan Sheet where these elements are shown.

Yes	Plan Sheet Number	
☐		a. Direct roof runoff into cisterns or rain barrels and use rainwater for irrigation or other non-potable use.
☐		b. Direct roof runoff onto vegetated areas.
☐		c. Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas.
☐		d. Direct runoff from driveways and/or uncovered parking lots onto vegetated areas.
☐		e. Construct sidewalks, walkways, and/or patios with pervious or permeable surfaces. Use the specifications in the C3 Technical Guidance (Version 4.1) downloadable at www.flowstobay.org/newdevelopment.
☐		f. Construct bike lanes, driveways, and/or uncovered parking lots with pervious surfaces. Use the specifications in the C3 Technical Guidance (Version 4.1) downloadable at www.flowstobay.org/newdevelopment.
☒	Sheet C1.0	g. Limit disturbance of natural water bodies and drainage systems; minimize compaction of highly permeable soils; protect slopes and channels; and minimize impacts from stormwater and urban runoff on the biological integrity of natural drainage systems and water bodies.
☒	Sheet C1.0	h. Conserve natural areas, including existing trees, other vegetation and soils.
☒	Sheet C1.0	i. Minimize impervious surfaces.

Regulated Projects can also consider the following site design measures to reduce treatment system sizing:

Yes	Plan Sheet Number	
☐		j. Self-treating area (see Section 4.2 of the C.3 Technical Guidance)
☐		k. Self-retaining area (see Section 4.3 of the C.3 Technical Guidance)
☐		l. Plant or preserve interceptor trees (Section 4.1, C.3 Technical Guidance)

[10] See MRP Provision C.3.a.i.(6) for non-C.3 Regulated Projects, C.3.c.i.(2)(a) for Regulated Projects, C.3.i for projects that create/replace 2,500 to 10,000 sq.ft. of impervious surface and stand-alone single family homes that create/replace 2,500 sq.ft. or more of impervious surface.

APPENDIX L

July 13, 2020

Mr. Bill Gilmartin
ProVen Management, Inc.
225 3rd Street,
Oakland CA 94607

Traffic Analysis for Rockaway Quarry Reclamation Project

Dear Mr. Gilmartin;

As requested, W-Trans has prepared a traffic analysis relative to the Rockaway Quarry Reclamation in the City of Pacifica. The purpose of this memo is to address the potential effects of truck trips accessing the site, on State Route 1, and in the surrounding area.

Existing Conditions

The study area consists of State Route 1, which runs north-south along the frontage of the project site in the City of Pacifica. State Route 1 is classified as a multilane highway in the project site vicinity and becomes a freeway approximately one-half mile north of the project site, where it connects to Interstate 280 north of Pacifica. Along the project frontage the road has two 12-foot travel lanes in each direction with a concrete median barrier. Annual average daily traffic for State Route 1 near the project site is 54,000 vehicles.

Project Description

The proposed project would import 970,000 cubic yards (cy) of soil into the Rockaway Quarry for the reclamation project. The project would be split into four sub-phases that would occur over a minimum of four years and result in a maximum of 242,500 cy of soil imported per year. West Quarry Parcel is expected to take 48 months to complete, after the Amended Reclamation Plan is approved by the City.

Inbound trucks will come from the north and access the project site from southbound State Route 1 through the Old Quarry Road connection, an existing dirt access road located about one-third mile south of Reina Del Mar Avenue; this access point is currently blocked by large boulders that would be removed as part of the access plan. Vehicles egress from the site would be accommodated at the existing traffic signal at State Route 1/Reina Del Mar Avenue; trucks will turn left onto State Route 1 and return to the north via Interstate 280, see Exhibit 1.

Review of Internal Site Circulation and Access Plan

The *Appendix H, Access Plan* (December 7, 2018) was reviewed for adequacy in terms of sight distance, turning radii, and overall vehicle maneuverability. The truck entrance point on State Route 1 and Old Quarry Road has been reviewed and found to be acceptable for truck turning radii. The gated truck receiving area at the Calera Creek Crossing will provide adequate queue storage for trucks prior to accessing the western portion of the site without affecting circulation on the remainder of the site. There is approximately 1,300 feet for truck queueing between the Caldera Creek Crossing and State Route 1. This is enough room to fit about 26 trucks with plenty of room between each truck.

Based on a review of the sight distance as the quarry roadway enters the parking lot near the Calera Creek Water Recycling Facility, and also the queue space approaching Reina Del Mar, truck circulation on the quarry road is expected to operate acceptably within the site.

Trip Generation

Due to the nature of the project, the size of trucks, and the hours of operation, it was assumed that truck trips would be evenly spaced over the course of the work day for purposes of this analysis. The anticipated trip generation for the proposed project was estimated by converting the amount of soil that will be hauled per year into the number of passenger car equivalent (PCE) trips per peak hour. Trucks used for this type of operation have a capacity ranging from 10 cubic yards (cy) to 14 cy. It was assumed trucks would haul an average of 12 cy of soil per trip. The total number of cubic yards of soil to be moved per year was divided by 12 cy per truck to get the total number of trucks per year. This figure was then multiplied by two to account for each truck arriving at the site, unloading the soil, and then leaving (i.e., one inbound trip and one outbound trip). Next, the total number of truck trips per year were divided by 250 operational days per year to calculate the number of truck trips per day.

The Quarry is anticipated to operate between 7:00 a.m. and 5:00 p.m. Therefore, the truck trips per day were divided by ten hours of operation per day to get truck trips per hour. According to the *Highway Capacity Manual,* Sixth Edition, the PCE for trucks on rolling terrain is 3.0 (i.e., each truck has the effect of three passenger cars on a roadway due to longer start up times at intersections and when making turns). Thus, the number of truck trips per hour was multiplied by three to get the equivalent passenger car trips per hour.

It is anticipated that there will be five employees on-site to run the operation. It was conservatively assumed that all five employees would arrive during the a.m. peak hour and leave during the p.m. peak hour, despite the 7 a.m. start time. The truck trips per hour (converted to PCE trips) plus the employee trips were then added to calculate the total number of peak hour vehicle trips. For a complete summary of the trip generation, see the enclosed Exhibit 1.

Total Project Trip Generation

The expected trip generation potential for the proposed project is indicated in Table 1. Because the amount of imported soil is so similar for each subphase, project trips for each subphase are the same. The proposed project is expected to generate an average of 161 truck trips (483 PCE trips) per day plus 10 employee trips per day, including 16 truck trips (48 PCE trips) during both the a.m. and p.m. peak hours.

Table 1 – Trip Generation Summary

	Daily Trips		AM Peak Hour						PM Peak Hour					
	Truck	PCE	Truck Trips	PCE Trips	Employee Trips	Total Trips	In	Out	Truck Trips	PCE Trips	Employee Trips	Total Trips	In	Out
West Quarry Parcel														
242,500 cy	161	483	16	48	5	53	29	24	16	48	5	53	24	29
242,500 cy	161	483	16	48	5	53	29	24	16	48	5	53	24	29
242,500 cy	161	483	16	48	5	53	29	24	16	48	5	53	24	29
242,500 cy	161	483	16	48	5	53	29	24	16	48	5	53	24	29

Note: cy = cubic yard; PCE = passenger car equivalent

Traffic Analysis of Truck Routes to/from Pacifica Quarry

All truck deliveries will be made by trucks coming from the north and returning to the north, connecting to Interstate 280. Ingress to the site will be made via the existing access point at Old Quarry Road from southbound State Route 1, about one-third mile south of Reina Del Mar Avenue. Egress will occur via the existing traffic signal at the State Route 1/Reina Del Mar Avenue intersection, with trucks making a left turn onto State Route 1 northbound. No trucks will use

City of Pacifica streets at any time. Other than on-site circulation, trucks will only be on designated truck routes (state highways), and therefore no alternative truck routes will be necessary. There are no at-grade intersections or traffic signals between Reina De Mar Avenue and Interstate 280 that would be affected by project-generated traffic.

Access at Old Quarry Road

As contained in Section 405.2 and Figure 405.2B of the Caltrans *Highway Design Manual* (2018), right-turn storage length is determined in the same manner as left-turn storage length. At unsignalized intersections, such as at the SR 1/Old Quarry Road intersection, storage length is based on the number of turning vehicles likely to arrive in an average two-minute period during a peak hour. The proposed project is expected to generate a maximum of 29 inbound trips during the peak hour, or approximately one trip during an average two-minute period. Of the 29 maximum inbound trips during the peak hour, many of those are anticipated to be made by trucks. Because right turns can be made without stopping, no queuing would be expected, so no storage is necessary; however, adequate length to decelerate would be required.

The posted speed limit on SR 1 near the project site is 45 miles per hour (mph). Under Caltrans guidelines, the speed at which drivers would enter the turn lane can be up to 20 mph lower than the design speed, resulting in vehicles decelerating to 25 mph before entering the turn lane. For this speed reduction, the deceleration length required is 195 feet. There is an existing shoulder in the southbound direction with a width of 10 feet for approximately 245 feet in advance of Old Quarry Road; this space can be used in lieu of a dedicated right-turn lane and would allow deceleration from a speed greater than 25 mph.

Conclusions

- *Appendix H, Access Plan* dated December 78, 2018 has been reviewed and is expected to result in adequate truck circulation.

- The West Parcel is expected to generate an average of 161 truck trips (483 PCE trips) per day, including 16 truck trips (53 PCE trips) during each of the ten hours of daily operation, including the a.m. and p.m. peak hours.

- The existing shoulder on the southbound approach to Old Quarry Road would provide adequate space for deceleration and storage for trips entering the proposed project site.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,

Mark E. Spencer

Mark Spencer, PE
Senior Principal

MES/acj/PAC005.L1-7

Enclosures: Exhibit 1, Table 2 Trip Generation Summary- Extended Table

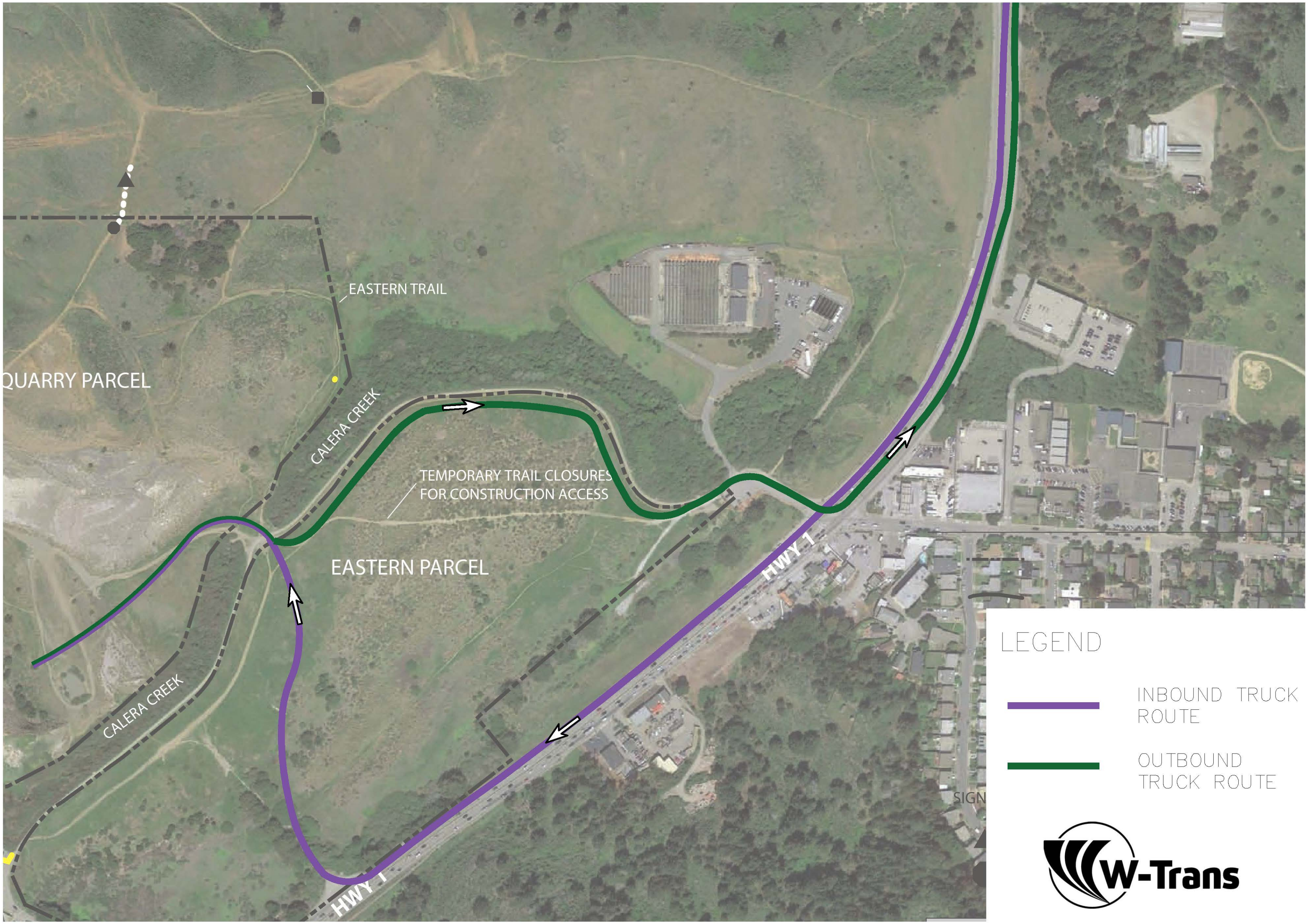

Exhibit 1– Truck Routes

Table 2 – Trip Generation Summary- Extended

Land Use					AM Peak Hour						PM Peak Hour					
Yearly Truck Haul Amount	Inbound Truck Trips/Year	Total truck Trips/Year	Truck Trips/Day	Truck Trips/Hour	Truck Trips	PCE Trips	Employee Trips	Total Trips	In	Out	Truck Trips	PCE Trips	Employee Trips	Total Trips	In	Out
West Quarry Parcel																
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**
A	B=A/12	C=B*2	D=C/250	E=D/10	F=E	G=F*3	H	I=G+H	J=G/2+H	K=G/2	L=E	M=L*3	N	O=M+N	P=M/2	Q=M/2+N
1A: 242,500 cy	20,208	40,416	161	16	16	48	5	53	29	24	16	48	5	53	24	29
1B: 242,500 cy	20,208	40,416	161	16	16	48	5	53	29	24	16	48	5	53	24	29
1C: 242,500 cy	20,208	40,416	161	16	16	48	5	53	29	24	16	48	5	53	24	29
1D: 242,500 cy	20,208	40,416	161	16	16	48	5	53	29	24	16	48	5	53	24	29

Notes: PCE = Passenger car equivalent; cy = cubic yards1
A =Given in "Exhibit F1 Performance Benchmarks for Works,", Walsh Engineering August 15.2018; modified in March 2020 for a total of 970,000 CY
B = Total yearly trucks divided by average size of trucks (12 cy)
C = Trucks per year multiplied by 2 to account for a truck coming in, dropping dirt off and leaving
D = 250 working days/year expected
E = Site expected to operate from 7:00 am – 5:00 pm
G, M = One truck is equivalent to 3 passenger car trips, Highway Capacity Manual, Sixth Edition Exhibit 12-25
H = 5 employees expected onsite daily.
J, Q= All employees expected to arrive during the am peak hour and depart during the pm peak hour
K, P = PCE trips split between inbound and outbound