CITY OF PACIFICA
PLANNING DEPARTMENT

Vista Mar Project

Initial Study/Mitigated Negative Declaration

January 2020

Prepared By

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INITIAL STUDY

January 2020

A. BACKGROUND

1. Project Title: Vista Mar Project

2. Lead Agency Name and Address: City of Pacifica
Planning Department
140 Santa Maria Avenue
Pacifica, CA 94044

3. Contact Person and Phone Number: Bonny O'Connor
Associate Planner
(650) 738-7443

4. Project Location: Monterey Road, South of the Monterey Road/Hickey Boulevard Intersection
Pacifica, CA 94044
APN 009-381-010

5. Project Sponsor's Name and Address: Vista Mar Development
848 Burns Court
Pacifica, CA 94044
(650) 355-0615

6. Existing General Plan Designation: Low Density Residential

7. Existing Zoning Designation: Multiple-Family Residential (R-3)

8. Potential Approvals from Other Public Agencies: Regional Water Quality Control Board
California Department of Fish and Wildlife
U.S. Army Corps of Engineers
San Mateo County

9. Surrounding Land Uses and Setting:

The project site consists of a 53,000-square foot (sf) lot, with steep, sloping terrain and dense vegetation. The site is located on Monterey Road approximately 0.1-mile south of the intersection with Hickey Boulevard in the City of Pacifica, California. Currently, the project site is vacant and undeveloped. The site is bordered by a single-family residence to the south, a multi-family apartment complex west across Monterey Road, and vacant land to the north and east.

10. Project Description Summary:

    The Vista Mar Project would include construction of four separate buildings, each with two attached townhomes, for a total of eight residential units. Each structure would have three stories and range from 1,592 to 1,869 sf of livable floor area. Each unit would also have a two-car garage. Vehicle access would be provided by a driveway with one entrance and one exit off of Monterey Road, the driveway would wrap behind the units. The project would also include a 2,500-sf Common Open Space area and 11,000 sf of landscaping. The project would require approval of a Tentative Subdivision Map and a Site Development Permit.

11. Status of Native American Consultation Pursuant to Public Resources Code Section 21080.3.1:

    Native American tribes in the project region have not requested notification of new development projects from the City. Thus, pursuant to Assembly Bill (AB) 52 (Public Resources Code Section 21080.3.1), project notification letters were not distributed and requests for consultation were not received.

B. SOURCES

All of the technical reports used for the project analysis are available upon request at the City of Pacifica Planning Department. The following documents are referenced information sources used for the purposes of this Initial Study:

1. Alameda County Transportation Commission. *2017 Congestion Management Program.* December 2017.
2. Bay Area Air Quality Management District. *California Environmental Quality Act Air Quality Guidelines*. May 2017.
3. California Air Resources Board. *The 2017 Climate Change Scoping Plan Update.* January 20, 2017.
4. California Department of Conservation. *San Mateo County Important Farmland 2014.* Published February 2018. Available at: https://www.conservation.ca.gov/dlrp/fmmp/Pages/SanMateo.aspx.
5. California Department of Conservation. *Tsunami Inundation Map for Emergency Planning, San Francisco South Quadrangle.* June 15, 2009.
6. California Department of Forestry and Fire Protection. *San Mateo County, Very High Fire Hazard Severity Zones in LRA*. November 24, 2008.
7. California Department of Toxic Substances Control. *Hazardous Waste and Substances Site List*. Available at: http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm. Accessed June 2019.
8. California Department of Transportation. *2016 Traffic Volumes on the California State Highway System.* Available at: http://www.dot.ca.gov/trafficops/census/docs/2016_aadt_volumes.pdf. Accessed June 2019.
9. California Scenic Highway Mapping System. *San Mateo County*. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/. Accessed June 2018.
10. City of Pacifica. *Climate Action Plan*. July 14, 2014.
11. City of Pacifica. *Design Guidelines.* Revised April 1990.
12. City of Pacifica. *Housing Element: 2015-2023.* Adopted May 11, 2015.

13. City/County Association of Governments of San Mateo County, California. *Comprehensive Airport Land Use Plan for the Environs of San Francisco International Airport.* July 2012.
14. City/County Association of Governments of San Mateo County, San Mateo Countywide Water Pollution Prevention Program. *Construction Best Management Practices.* Available at: http://www.cityofpacifica.org/depts/planning/stormwater_compliance/default.asp. Accessed January 4, 2017.
15. City/County Association of Governments of San Mateo County, San Mateo Countywide Water Pollution Prevention Program. *C.3 Stormwater Technical Guidance.* June 2016.
16. City/County Association of Governments. *San Mateo County Congestion Management Program*. January 12, 2018.
17. Geocon Consultants, Inc. *Proposed Vista Mar Townhome Development Monterey Road Pacifica, California Geotechnical Peer Review*. June 24, 2019.
18. GeoForensics, Inc. *Geotechnical Investigation for Proposed New Townhouses.* Updated September 2, 2014.
19. Institute of Transportation Engineers. *Trip Generation Handbook, 9th Edition*. September 2012.
20. Jefferson Union High School District. *Level I Developer Fee Study.* June 12, 2018.
21. National Weather Service. *TsunamiReady in California.* Available at: http://www.tsunamiready.noaa.gov/tr-maps/ca-tr.shtml. Accessed July 15, 2019.
22. Native American Heritage Commission. *Vista Mar Project, City of Pacifica; San Francisco South USGS Quadrangle, San Mateo County.* May 30, 2019.
23. Native American Heritage Commission. *Vista Mar Project, City of Pacifica; San Francisco South USGS Quadrangle, San Mateo County.* May 30, 2019.
24. North Coast County Water District. *2015 Urban Water Management Plan.* June 15, 2016.
25. North Coast County Water District. *20-Year Long-Term Water Master Plan.* February 2016.
26. Northwest Information Center. *Record search results for the proposed Vista Mar Project.* June 28, 2019.
27. Regional Water Quality Control Board San Francisco Bay Region. *City of Pacifica, Calera Creek Water Recycling Plant and Wastewater Collection System, Pacifica, San Mateo County.* Available at: https://www.waterboards.ca.gov/sanfranciscobay/board_info/agendas/2017/April/7_ssr.pdf. April 12, 2017.
28. San Mateo County. *Comprehensive Airport Land Use Compatibility Plan.* December 1996.
29. Saxelby Acoustics LLC. *Environmental Noise Assessment, Vista Mar Residential.* June 25, 2019.
30. State of California. Division of Mines and Geology. *Generalized Mineral Land Classification Map of the South San Francisco Bay Production—Consumption Region*. Published 1996.
31. WRA, Inc. *Arborist Survey Report Vista Mar Development*. August 2019.
32. WRA, Inc. *Biological Resources Assessment, Vista Mar Development, Pacifica, San Mateo County, California.* August 2019.

C. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

As indicated by the checklist on the following pages, none of the environmental factors shown below would be significantly affected by the proposed project.

☐ **Aesthetics**	☐ **Agriculture and Forest Resources**	☐ **Air Quality**
☒ **Biological Resources**	☒ **Cultural Resources**	☐ **Energy**
☒ **Geology and Soils**	☐ **Greenhouse Gas Emissions**	☐ **Hazards and Hazardous Materials**
☒ **Hydrology and Water Quality**	☐ **Land Use and Planning**	☐ **Mineral Resources**
☒ **Noise**	☐ **Population and Housing**	☐ **Public Services**
☐ **Recreation**	☐ **Transportation**	☒ **Tribal Cultural Resources**
☐ **Utilities and Service Systems**	☐ **Wildfire**	☐ **Mandatory Findings of Significance**

D. DETERMINATION

On the basis of this initial study:

☐ I find that the Proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the applicant. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the Proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Bonny O'Connor
Signature

1/8/2020
Date

Bonny O'Connor, Associate Planner
Printed Name

City of Pacifica
For

E. BACKGROUND AND INTRODUCTION

This Initial Study/Mitigated Negative Declaration (IS/MND) identifies and analyzes the potential environmental impacts of the Vista Mar Project (proposed project). The information and analysis presented in this document are organized in accordance with the order of the CEQA checklist in Appendix G of the CEQA Guidelines. If the analysis provided in this document identifies potentially significant environmental effects of the project, mitigation measures that should be applied to the project are prescribed. All of the technical reports and modeling results used for the purposes of this analysis are available upon request at the City of Pacifica Planning Department.

The mitigation measures prescribed for environmental effects described in this IS/MND will be implemented in conjunction with the project, as required by CEQA. The mitigation measures will be incorporated into the project through project conditions of approval. The City will adopt findings and a Mitigation Monitoring and Reporting Program for the project in conjunction with approval of the project.

In 1980, the City of Pacifica adopted the City of Pacifica General Plan. In March of 2014, the City of Pacifica released a Draft General Plan Update and associated Draft Environmental Impact Report (EIR). However, the Draft General Plan Update and associated Draft EIR have not yet been adopted or certified by the City. Therefore, the analysis contained within this IS/MND relies on the guidelines and information contained within the adopted 1980 General Plan. It should be noted that the 2014 Draft General Plan Update did not propose any policy or designation changes related to the project site.

F. PROJECT DESCRIPTION

The following provides a description of the project site location and setting, as well as the proposed project components and the discretionary actions required for the project.

Project Location and Setting

The project site consists of approximately 1.2 acres located along Monterey Road approximately 0.1 mile south of the Hickey Boulevard intersection in the Westview-Pacific Highlands neighborhood of the City of Pacifica, California (see Figure 1 and Figure 2). The site is bordered to the west by Monterey Road and associated sidewalks, as well as a multi-family apartment complex across Monterey Road. Single-family residences exist directly to the south, and open space surrounds the site along the northern and eastern portions of the site. The Sunset Ridge Elementary School is located 0.12-mile north of the project site and the Westside Baptist Church is located 0.08-mile east. State Route (SR) 1 is approximately 0.75-mile to the west of the site. The site is identified by Assessor's Parcel Number (APN) 009-381-010.

The site is designated Low Density Residential, three to nine dwelling units/acre, per the City's General Plan and is zoned Multiple-Family Residential (R-3). The site is currently vacant and covered in dense vegetation. The northern and eastern portions of the site consist of coastal shrub/chaparral habitat. Several trees and shrubs cover the entire project site area. The southern portions of the site are predominantly covered in dense ruderal vegetation that appears to have been influenced by past cut and fill activities. The site is also characterized by steeply sloping terrain in the northern and eastern portions, with elevations ranging from 325 to 500 feet above mean sea level.

Figure 1
Regional Project Location

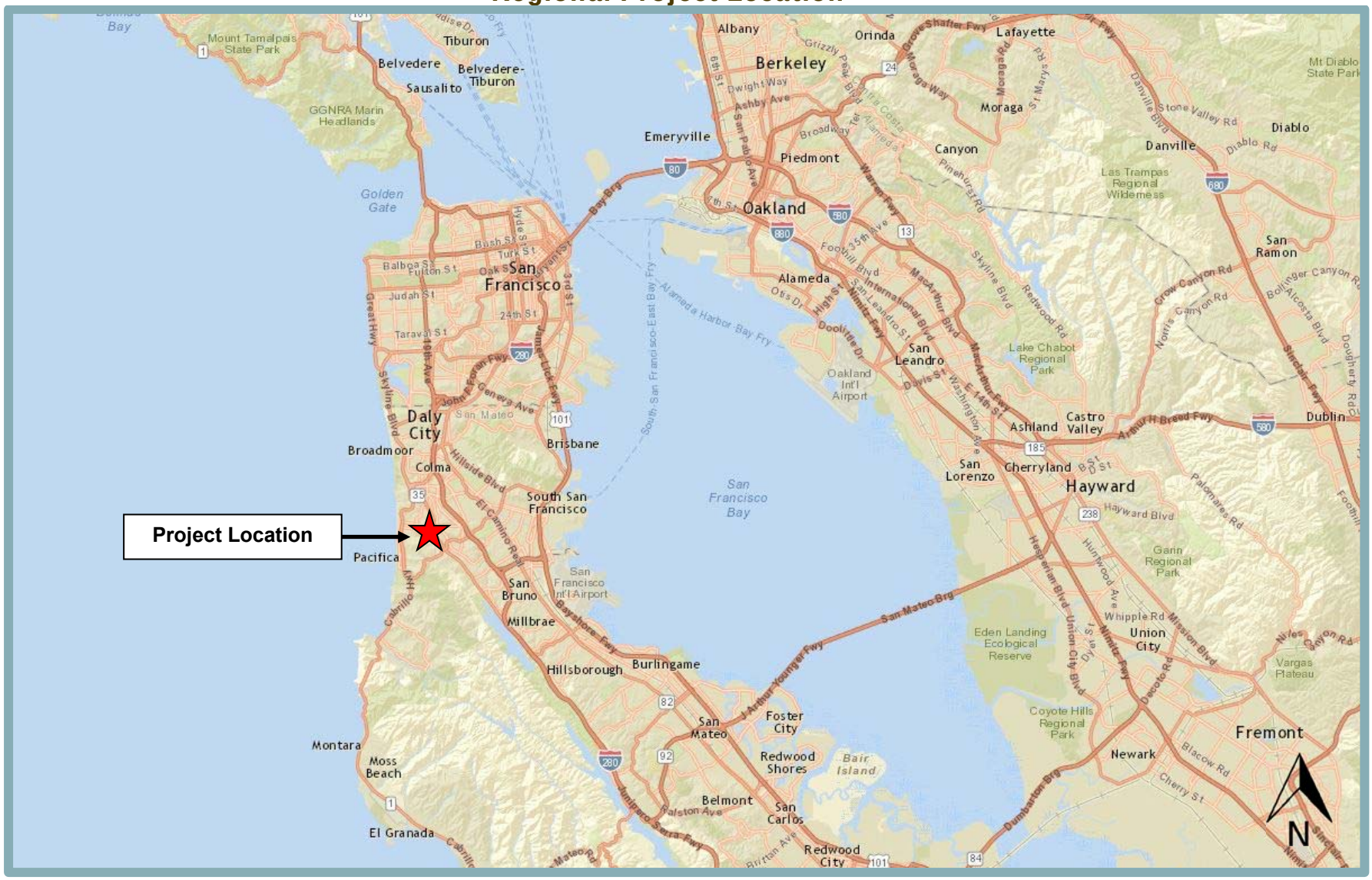


Figure 2
Project Site Boundaries

An ephemeral drainage ditch flows east to west along the southeastern boundary of the site. The ditch originates outside of the eastern border of the site; upstream of the project site the natural form of the ditch has been altered through armoring with riprap. Water carried in the drainage flows down the steep southwestern facing slope and empties into a storm drain on Monterey Road.

Project Components

The proposed project includes eight townhouses across four separate buildings (see Figure 3). The unit details are shown in Table 1. In addition, the proposed project would include 11,000 sf of landscaping. Access to the site would be provided by two driveways off of Monterey Road that would wrap around the rear of the buildings allowing access to private garages and guest parking. Additional details regarding the townhouses, access and circulation, utilities infrastructure, landscaping, and construction are discussed below.

Table 1
Proposed Unit Details

Townhouse	Living Area (sf)	Footprint (sf)	Garage (sf)	Private Open Space (sf)	Common Open Space (sf)	Covered Parking
1	1,812.46	831.01	396.23	224.24	537.92	2 vehicles
2	1,872.86	872.98	466.64	195.74	487.46	2 vehicles
3	1,622.32	737.80	435.45	184.57	468.34	2 vehicles
4	1,622.32	737.80	481.67	184.57	492.43	2 vehicles
5	1,863.12	876.06	376.54	155.81	520.63	2 vehicles
6	1,622.32	737.80	435.45	184.57	468.34	2 vehicles
7	1,622.32	737.80	435.45	184.57	468.34	2 vehicles
8	1,622.32	737.80	435.45	184.57	460.61	2 vehicles
Total	13,660.04	6,269.05	3,462.88	1,498.64	3,904.07	2 vehicles

Townhouses

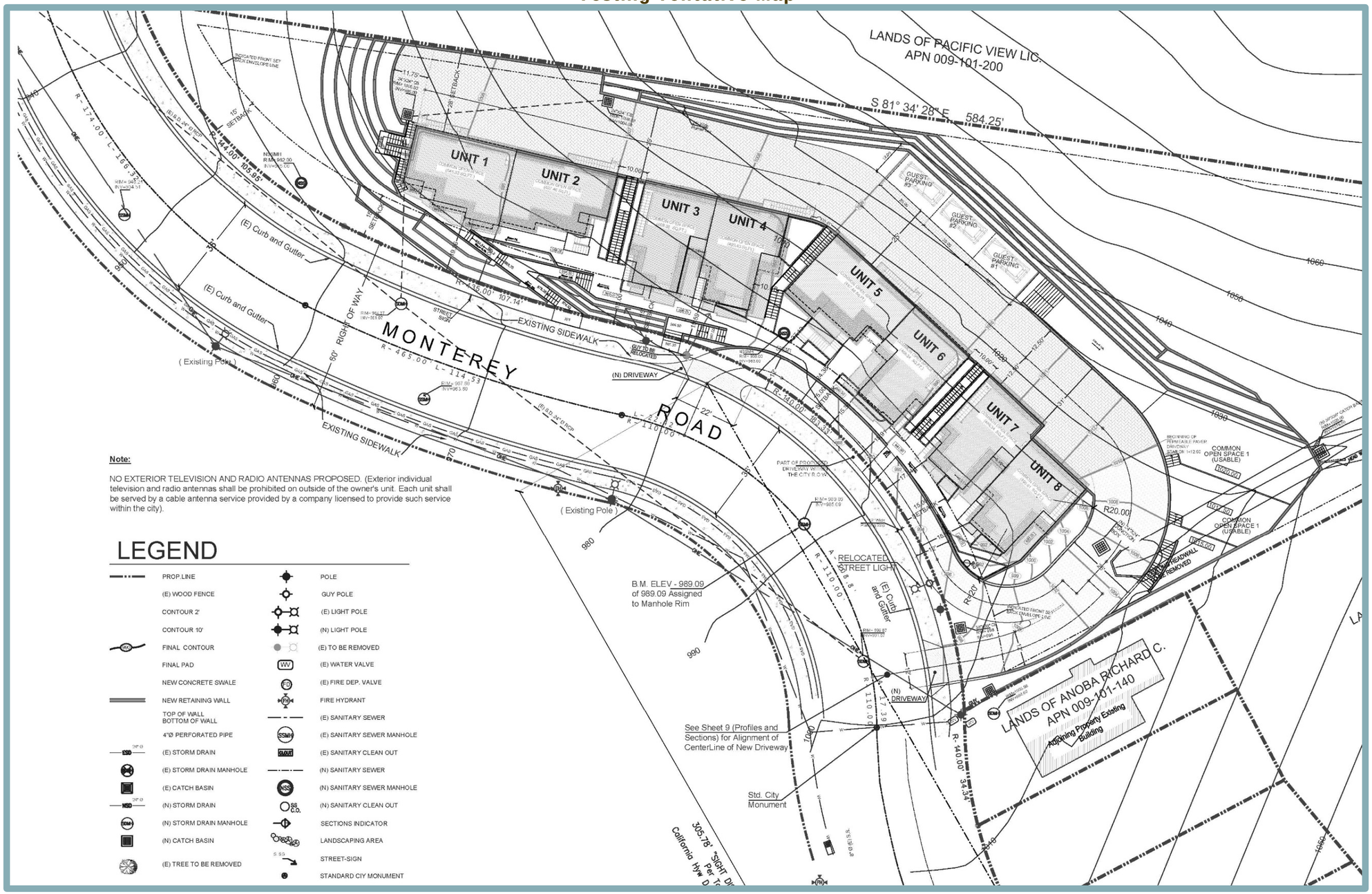
The proposed project includes four buildings each containing two side by side townhouses, for a total of eight townhouse units. The units would range in size from 1,622 sf to 1,872 sf of living area with three stories and a two-car garage. The maximum height of any unit would be 35 feet. The exterior of the buildings would be designed with a mix of stucco and siding, several windows, and a modern, natural design.

A walkway along the frontage of the buildings would join all townhouse units and provide access to each. Additionally, four sets of staircases would be included throughout the site and would provide access to the garages and rear of the buildings.

Parking, Access, and Circulation

Access to the proposed project would be provided by a driveway with one entrance and one exit off of Monterey Road. Monterey Road exits off of SR 1 and extends approximately one mile before connecting to Manor Drive. The nearest roadways are primarily used for access to residential areas. The entrance and exit driveways at the project site would be 22 and 12 feet wide, respectively, and would lead to a driveway which would run along the frontage of the site and around the rear of the buildings. The driveway would be between 12 and 25 feet wide and would provide access to each individual garage on the rear of the buildings. Three guest parking spaces would also be accessible by the driveway on the rear side of the buildings. The proposed project would provide all the off-street parking required by the Pacifica Municipal Code.

Figure 3
Vesting Tentative Map



Note:

NO EXTERIOR TELEVISION AND RADIO ANTENNAS PROPOSED. (Exterior individual television and radio antennas shall be prohibited on outside of the owner's unit. Each unit shall be served by a cable antenna service provided by a company licensed to provide such service within the city).

LEGEND

PROP.LINE	POLE
(E) WOOD FENCE	GUY POLE
CONTOUR 2'	(E) LIGHT POLE
CONTOUR 10'	(N) LIGHT POLE
FINAL CONTOUR	(E) TO BE REMOVED
FINAL PAD	(E) WATER VALVE
NEW CONCRETE SWALE	(E) FIRE DEP. VALVE
NEW RETAINING WALL	FIRE HYDRANT
TOP OF WALL / BOTTOM OF WALL	(E) SANITARY SEWER
4"Ø PERFORATED PIPE	(E) SANITARY SEWER MANHOLE
(E) STORM DRAIN	(E) SANITARY CLEAN OUT
(E) STORM DRAIN MANHOLE	(N) SANITARY SEWER
(E) CATCH BASIN	(N) SANITARY SEWER MANHOLE
(N) STORM DRAIN	(N) SANITARY CLEAN OUT
(N) STORM DRAIN MANHOLE	SECTIONS INDICATOR
(N) CATCH BASIN	LANDSCAPING AREA
(E) TREE TO BE REMOVED	STREET-SIGN
	STANDARD CIY MONUMENT

Entrances to each unit would be on either the first or second floor. Because of the slope of the site, the driveway would lead around the rear of the buildings and garage access would be provided on the third floor of each townhouse (see **Error! Not a valid bookmark self-reference.** for an example floor plan). Roof access would be provided from each townhouse and would lead to a common open space which would be shared between two townhouse units.

A walkway made of decomposed granite would be constructed to connect the frontage of all eight units. Pedestrian access would also be provided to the site by the existing sidewalk along Monterey Road by two staircases leading to the walkway along the frontage of the townhouses.

Utilities

Sewer service for the proposed project would be provided by the City. In order to connect to the existing sanitary sewer line within Monterey Road, the proposed project would require extension of a new eight-inch sanitary sewer line for approximately 100 feet between the project frontage and the existing sanitary sewer line. The new sewer line would be located within the existing right-of-way and would be routed through an existing manhole situated on the east side of Monterey Road. Additionally, a new six-inch sanitary sewer line would be extended within the project site and would connect the proposed townhouses. Construction would include two new sanitary sewer manholes on the project site as well.

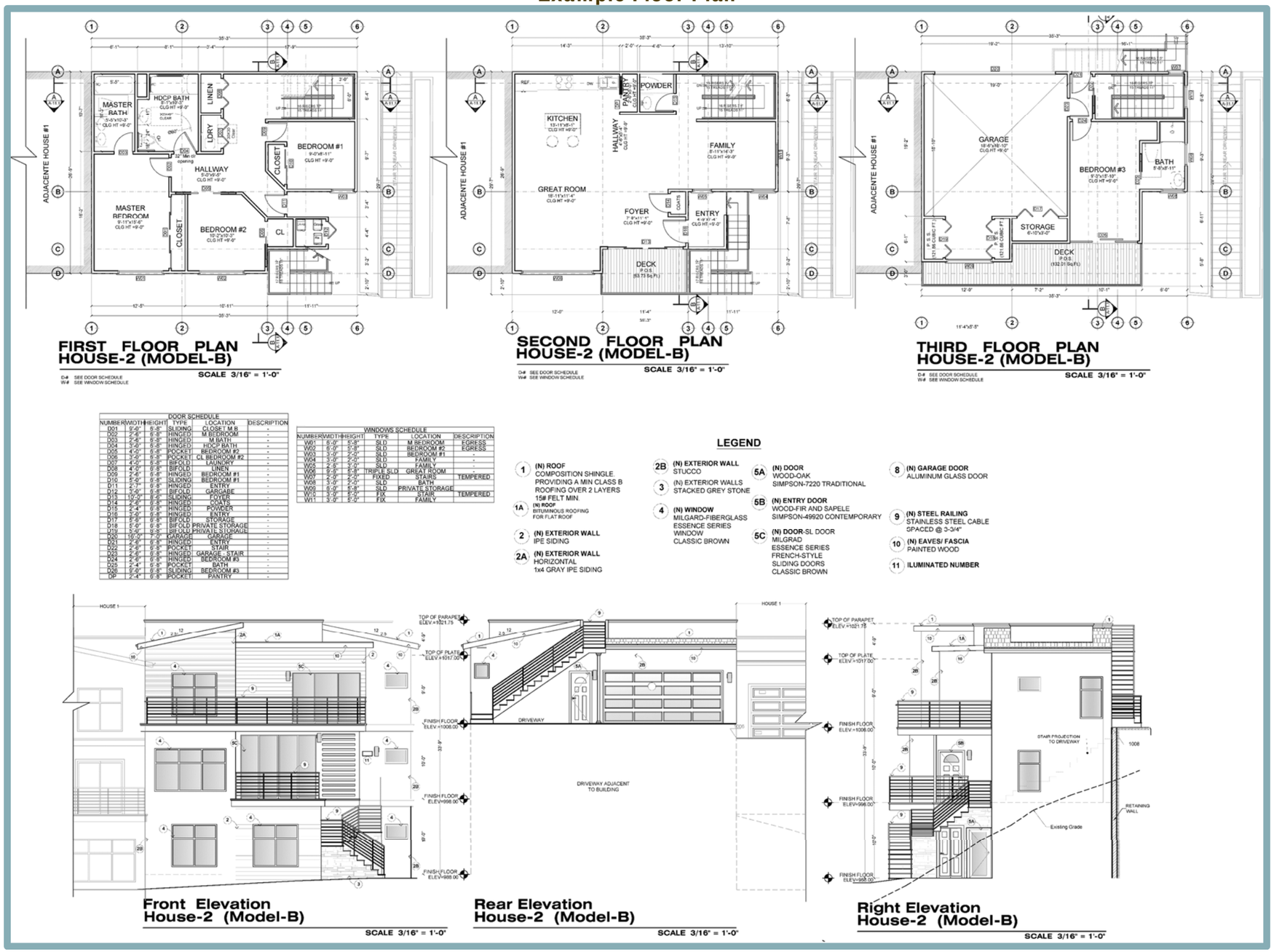
Water service would be provided by the North Coast County Water District (NCCWD) through connection to the existing water main located at Monterey Road. Electricity, natural gas, and telecommunications infrastructure would also be extended underground across Monterey Road. Both water and dry utility extensions would require trenching within the right-of-way on Monterey Road.

Runoff from roofs would collect in downspouts attached to the units and drain to flow through planters throughout the project site. All other runoff from impervious areas, including all hardscape, parking areas, and driveways would be collected by new 12- or 24-inch storm drain pipes within the proposed driveways. Runoff flowing through the storm drains would empty into a catch basin located on the southeast corner of the site, behind the common space area. Treated stormwater would be routed through two new storm drain manholes, which would connect to the existing 18-inch storm drain within Monterey Road. Similar to sewer connections, construction of and connection to the public storm drain system would involve construction within the public right-of-way. The Utilities Plan can be seen in Figure 5 below.

Landscaping

The proposed project would include many landscaping features for both the visual appearance of the site and to provide flow-through planters for runoff. A new retaining wall, which would range from five feet to 11 feet high, would be constructed surrounding the site on the rear side of the buildings and would be tiered to include vegetation and permeable landscaping within the concrete retaining wall. The retaining wall would help to accommodate the existing slope on which the project site is located, and would ensure that stormwater flowing down the slope would be directed to the appropriate stormwater facilities for treatment and distribution into the City drainage system. Behind the wall, several trees and shrubs would be planted.

Figure 4
Example Floor Plan



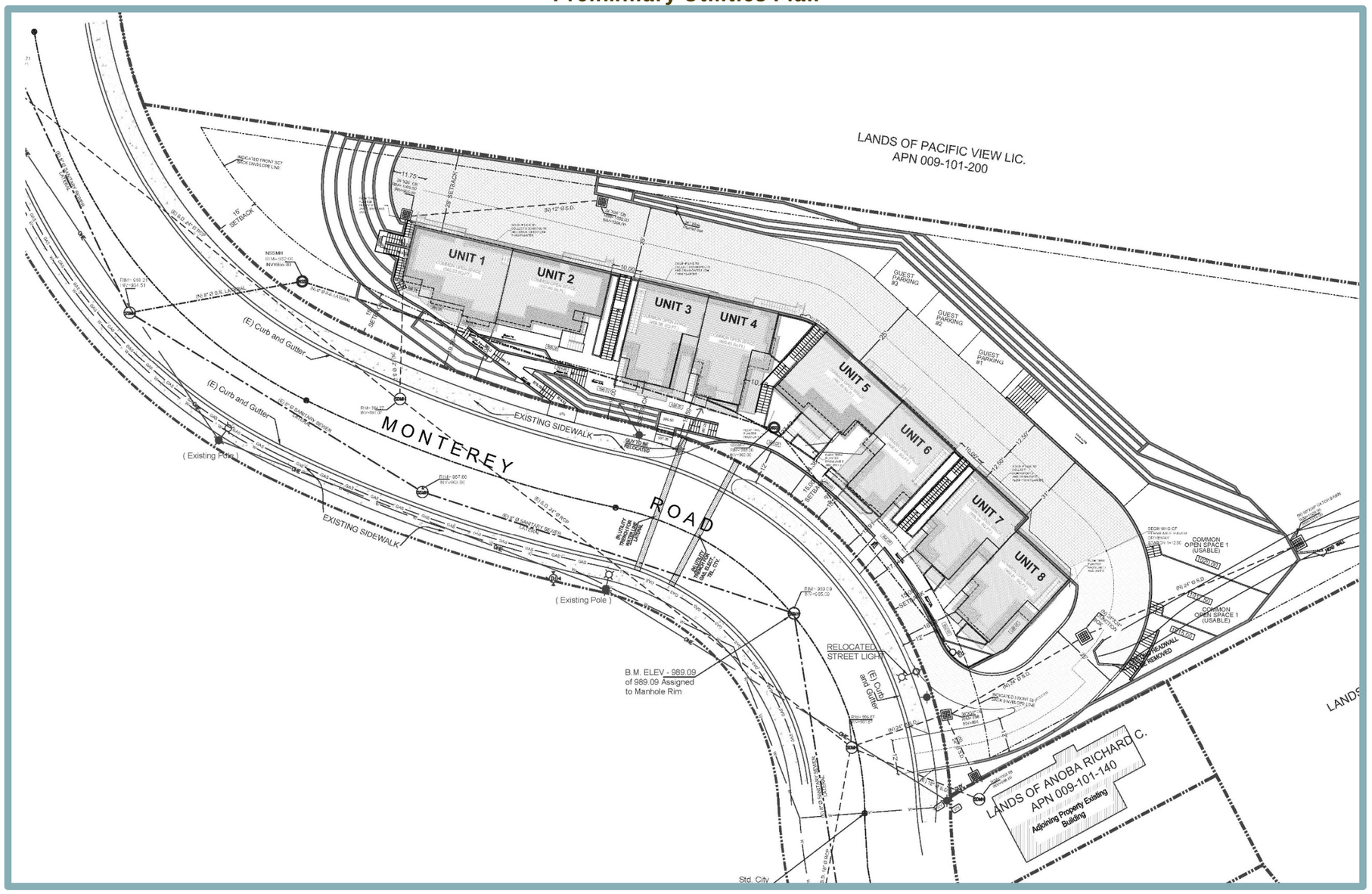
DOOR SCHEDULE

NUMBER	WIDTH	HEIGHT	TYPE	LOCATION	DESCRIPTION
D01	5'-6"	6'-8"	SLIDING	CLOSET M.B.	-
D02	2'-6"	6'-8"	HINGED	M.BEDROOM	-
D03	2'-6"	6'-8"	HINGED	M.BATH	-
D04	2'-6"	6'-8"	HINGED	HDCP BATH	-
D05	4'-0"	6'-8"	POCKET	BEDROOM #2	-
D06	2'-6"	6'-8"	POCKET	CL BEDROOM #2	-
D07	4'-0"	6'-8"	BIFOLD	LAUNDRY	-
D08	4'-0"	6'-8"	BIFOLD	LINEN	-
D09	2'-6"	6'-8"	HINGED	BEDROOM #1	-
D10	5'-0"	6'-8"	SLIDING	BEDROOM #1	-
D11	2'-6"	6'-8"	HINGED	ENTRY	-
D12	5'-0"	6'-8"	BIFOLD	GARAGE	-
D13	10'-0"	8'-0"	SLIDING	FOYER	-
D14	2'-6"	6'-8"	HINGED	COATS	-
D15	2'-6"	6'-8"	HINGED	POWDER	-
D16	3'-0"	6'-8"	HINGED	ENTRY	-
D17	5'-0"	6'-8"	BIFOLD	STORAGE	-
D18	5'-0"	6'-8"	BIFOLD	PRIVATE STORAGE	-
D19	5'-0"	6'-8"	BIFOLD	PRIVATE STORAGE	-
D20	10'-0"	7'-0"	GARAGE	GARAGE	-
D21	2'-6"	6'-8"	HINGED	ENTRY	-
D22	2'-6"	6'-8"	POCKET	STAIR	-
D23	2'-6"	6'-8"	HINGED	GARAGE - STAIR	-
D24	2'-6"	6'-8"	HINGED	BEDROOM #3	-
D25	2'-4"	6'-8"	POCKET	BATH	-
D26	5'-0"	6'-8"	SLIDING	BEDROOM #3	-
DP	2'-4"	6'-8"	POCKET	PANTRY	-

WINDOWS SCHEDULE

NUMBER	WIDTH	HEIGHT	TYPE	LOCATION	DESCRIPTION
W01	6'-0"	5'-8"	SLD	M.BEDROOM	EGRESS
W02	6'-0"	5'-8"	SLD	BEDROOM #2	EGRESS
W03	3'-0"	2'-0"	SLD	BEDROOM #1	-
W04	3'-0"	2'-0"	SLD	FAMILY	-
W05	2'-6"	3'-0"	SLD	FAMILY	-
W06	9'-0"	5'-8"	TRIPLE SLD	GREAT ROOM	-
W07	2'-0"	2'-0"	FIXED	STAIRS	TEMPERED
W08	3'-0"	2'-0"	SLD	BATH	-
W09	6'-0"	5'-8"	SLD	PRIVATE STORAGE	-
W10	3'-0"	6'-0"	FIX	STAIR	TEMPERED
W11	3'-0"	6'-0"	FIX	FAMILY	-

Figure 5
Preliminary Utilities Plan



A tiered retaining wall, with each tier being five feet in height, would also be placed at the project frontage and would extend halfway across the site. The tiered area would be vegetated and landscaped and would direct stormwater falling on the site to the appropriate treatment facility. Additionally, the northwestern corner of the site along Monterey Road would be planted with shrubs and plants around the edges of the project site. All irrigation on the project site would be in accordance with Section 8-7.03 of the Pacifica Municipal Code, which requires all outdoor irrigation comply with the California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO). Finally, the walkway between the buildings would be made of decomposed granite and the driveway circulating the site would be made of permeable pavers or brick. The landscaping plans can be seen in Figure 6.

Construction Details

For the purposes of this analysis, construction is assumed to begin in April 2020 and occur over an approximately 18-month period. Because the site does not contain any existing structures, demolition would not be required. However, the project would require the removal of up to 23 heritage trees and 34 non-protected trees. Any of the 23 heritage trees to be removed would require a tree removal permit. The project would include site preparation, grading, paving, and building construction. During the most intense construction phase, seven pieces of off-road construction equipment would be used on-site, including rubber-tired dozers, tractors, forklifts, and cranes. Throughout the construction process, up to 13 construction workers would be employed on the site at one time. While the exact timing and length of each phase cannot be determined at this time, the following phase lengths have been assumed for the purposes of this analysis based on available project information:

- Site preparation: two weeks;
- Grading: two months;
- Paving: one week; and
- Building construction: 14 months.

A total of 0.7-acres of land would be graded as a result of construction activities. During site preparation, a total of 100 cubic yards (CY) of material would be exported. During grading, a total of 3,000 CY of material would be exported.

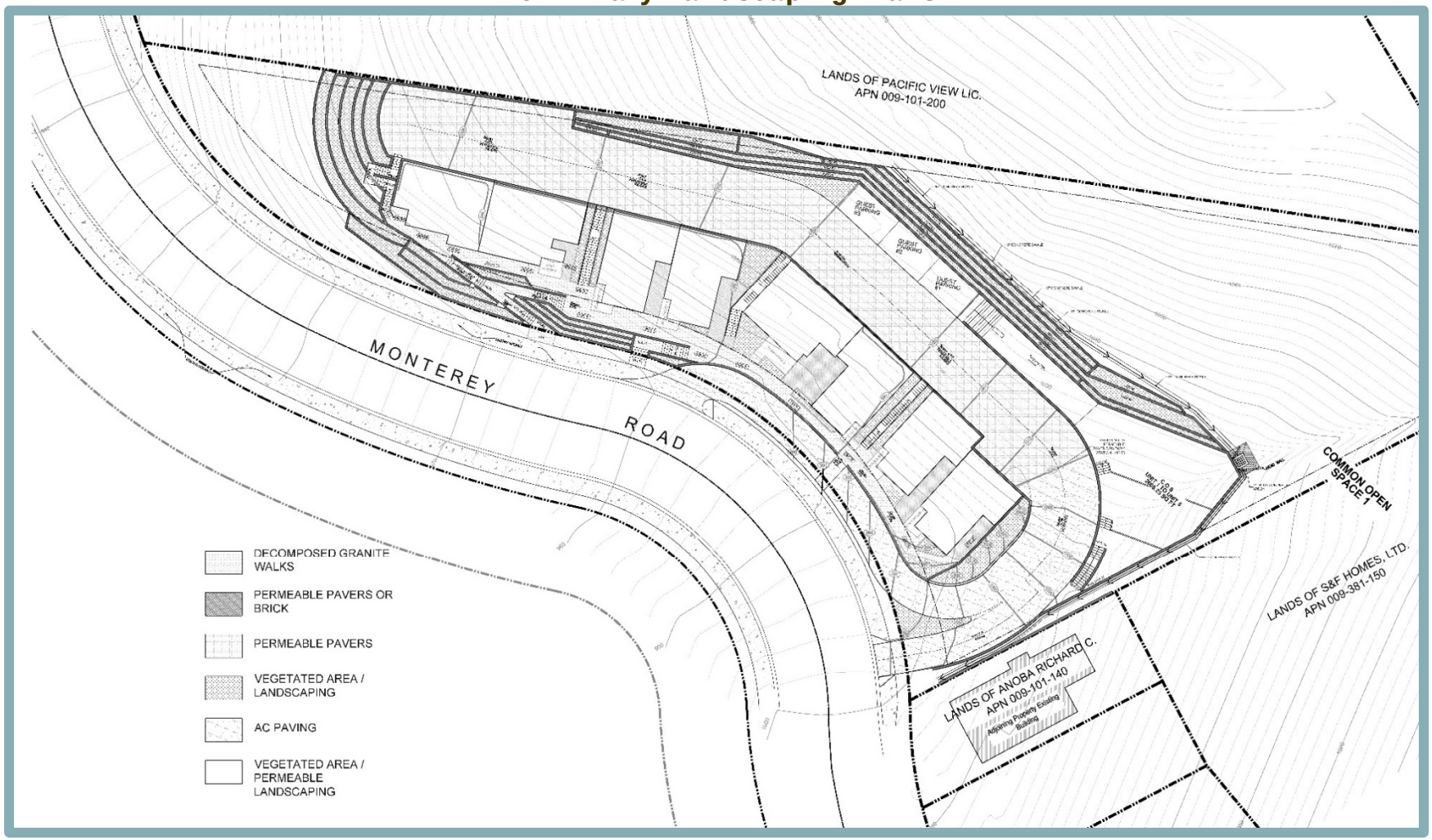
Construction equipment used for construction activities would likely include, but would not be limited to, bulldozers, loaded trucks, auger/drill rigs, jackhammers, vibratory hammers, vibratory compactors/rollers, graders, tractors/loaders/backhoes, cranes, forklifts, cement and mortar mixers, pavers, excavators, scrapers, generators, and air compressors.

Discretionary Actions

The proposed project would require City approval of the following:

- Tentative Subdivision Map;
- Site Development Permit;
- Logging Operations; and
- Removal of 23 Heritage Trees.

Figure 6
Preliminary Landscaping Plans



G. ENVIRONMENTAL CHECKLIST

The following Checklist contains the environmental checklist form presented in Appendix G of the CEQA Guidelines. The checklist form is used to evaluate the impacts of the proposed project. A discussion follows each environmental issue identified in the checklist. For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant, and for which no mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared.

Less Than Significant with Mitigation Incorporated: An impact that requires mitigation to reduce the impact to a less-than-significant level.

Less-Than-Significant Impact: Any impact that would not be considered significant under CEQA relative to existing standards.

No Impact: The project would not have any impact.

I. AESTHETICS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?	☐	☐	✖	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	✖	☐
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	✖	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	✖	☐

Discussion

a. Examples of typical scenic vistas would include mountain ranges, ridgelines, or bodies of water as viewed from a highway, public space, or other area designated for the express purpose of viewing and sightseeing. In general, a project's impact to a scenic vista would occur if development of the project would substantially change or remove a scenic vista. Policy 3 in the Community Design Element of the City's General Plan sets the goal of protecting the City's irreplaceable scenic and visual amenities, but does not define or identify specific scenic vistas. The project site is located in an existing residential neighborhood, and is currently designated for buildout with residential uses per the General Plan. Furthermore, development of the site as proposed would not obstruct views of any scenic resources such as the ridgeline located to the south of the site or the Pacific Ocean to the west. Therefore, the proposed project would not have a substantial adverse effect on a scenic vista, and a ***less-than-significant*** impact would occur.

b. The City does not contain an Officially Designated Scenic Highway.[1] SR 1, which is located approximately 0.75 of a mile west of the project site, is an Eligible State Scenic Highway, but is not officially designated. Furthermore, the project site is not visible from SR 1 due to the distance and existing development between the site and SR 1. Thus, the proposed project would not substantially damage scenic resources, including, but not limited to, trees rock outcroppings, and historic buildings within a State Scenic Highway. As such, a ***less-than-significant*** impact would occur.

c. The project site is located within an urbanized area of the City and is surrounded by existing single- and multi-family residential development, as well as vacant land. All surrounding land uses are designated Low or Medium density residential and are zoned R-3. Currently the site is vacant and covered in trees, grasses, and coastal shrubbery. The proposed project would include construction of eight townhouses and associated improvements on a 1.2-acre parcel designated Low Density Residential by the City's

[1] California Scenic Highway Mapping System. *San Mateo County*. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/. Accessed June 2018.

General Plan and zoned R-3. Per the General Plan, the Low Density Residential designation allows for development of three to nine dwelling units/acre. Thus, construction of eight units on the 1.2-acre parcel would be consistent with the General Plan density. Development of the of the proposed project and associated changes to the visual character and quality of the site have been anticipated by the City and analyzed in the General Plan EIR. Pursuant to Public Resources Code Section 21083.3, if a project is consistent with the land use designation, the project need only be analyzed by any peculiar circumstances. Based on the current site plans, the project is within the scope of what has been anticipated by the City, based on the General Plan. As analyzed for the Westview-Pacific Highland area, residential units have been anticipated for development between Monterey Road and the rear of the single-family lots on Heathcliff Drive. Consistent with the plans for the area, innovative design plans have been implemented in order to minimize the height, building mass, and retaining walls to the extent feasible. As discussed above, the retaining wall to the rear of the buildings would reach a maximum height of 11 feet, which would be required in order to adequately facilitate stormwater drainage on the project site. The height of the retaining wall would not obstruct views of the slope. Additionally, most of the desired views in the area would be of the Pacific Ocean to the west. The proposed project would not obstruct any surrounding structures' views of the Pacific Ocean. Currently, the primary view of the project site from Monterey Road consists of vegetation, trees, and shrubbery (see Figure 7 and Figure 8). The proposed project has been designed to step into the hillside, and the existing views of the hill behind the proposed buildings would remain. The proposed views of the project looking east across Monterey Road as well as the building design are shown in Figure 9 and Figure 10.

The R-3 zoning designation permits duplexes and multiple family dwelling as permitted uses per Section 9-4.601 of the Municipal Code. The surrounding area is occupied by single- and multi-family residences, which demonstrates that the proposed development is consistent with the surrounding neighborhood. Thus, upon development of the proposed project, the site would be developed with townhouses, which is consistent with the General Plan land use designation (Low Density Residential), as well as the zoning (R-3). Because the project is consistent with the General Plan, the development of the project has been generally analyzed by the General Plan EIR and anticipated by the City.

Given that the project site is located within an urbanized area and the proposed residential development would not conflict with applicable zoning and other regulations governing scenic quality, a ***less-than-significant*** impact would occur.

d. The project site is currently undeveloped and covered with dense vegetation. Sources of light and glare do not exist on the project site. Therefore, development of the proposed project would introduce new sources of light and glare where none currently exist. Sources of light would include, but would not be limited to, illuminated signage, exterior and interior lighting associated with the proposed townhouses, and vehicle headlights along Monterey Road. The new structures would include westerly-facing windows which could reflect light and create glare in the surrounding area. However, the structures would be set back from the street by at least 15 feet and would not directly face the entrance of any surrounding residence. Furthermore, because existing residential uses surround the project site to the south and west, the increase in light and glare sources would be consistent with the existing setting and would not be expected to result in significant adverse effects to daytime and nighttime views in the area.

Figure 7
Current View of Site from Southern Monterey Road

Figure 8
Current View of Site from Northern Monterey Road

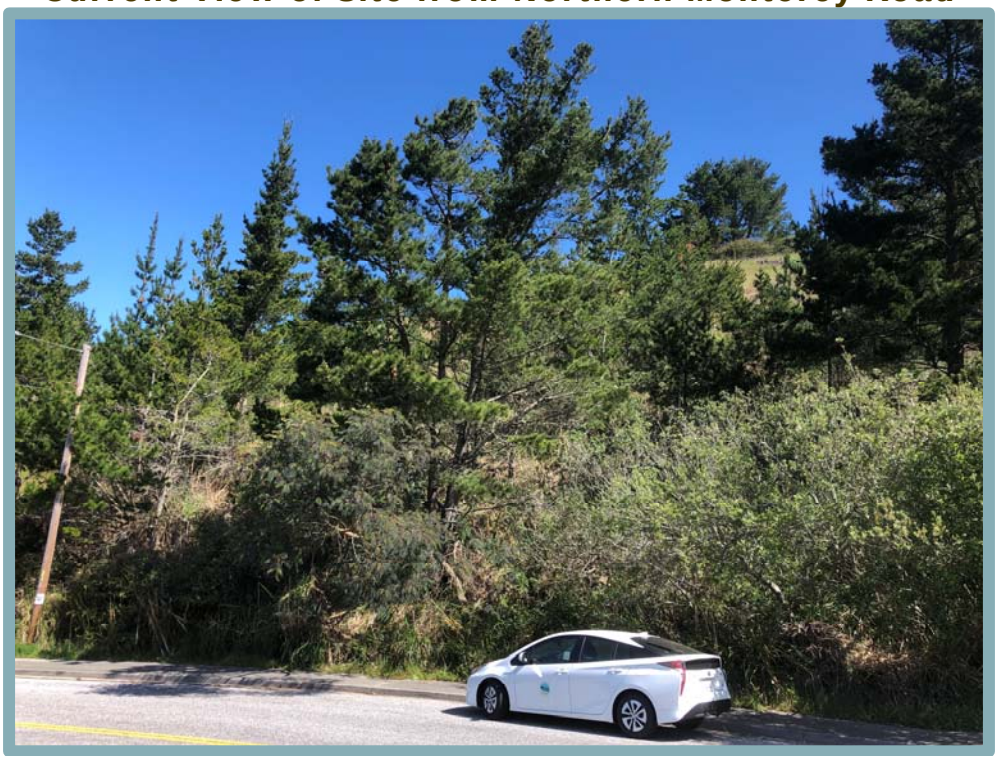


Figure 9
Proposed View of Project Site from Monterey Road

Figure 10
Proposed Building Design

In addition, the Pacifica Design Guidelines require that exterior lighting is subdued and enhances building design.[2] The Guidelines prohibit use of lighting that creates glare for occupants or neighbors, and require that large areas requiring illumination are lit with low, shielded fixtures. Compliance with the Pacifica Design Guidelines would ensure that the project would not introduce sources of light or glare that would pose a hazard or nuisance to neighboring development. As such, a ***less-than-significant*** impact would occur related to the creation of a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

[2] City of Pacifica. *Design Guidelines* [pg. 3]. Revised April 1990.

II. AGRICULTURE AND FOREST RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	✖
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	✖
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	✖
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	✖
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	✖

Discussion

a,e. Per the California Department of Conservation Farmland Mapping and Monitoring Program, the project site consists of Urban and Built-Up Land.[3] Furthermore, the site is not zoned or designated in the General Plan for agriculture uses. The project site is not under a Williamson Act contract, and is not currently used for agriculture. Based on the above, development of the proposed project and future buildout of the site would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use, or involve other changes in the existing environment which, due to their location or nature, could individually or cumulatively result in loss of Farmland to non-agricultural use. Therefore, the proposed project would have ***no impact***.

b. Currently, the project site is designated Low Density Residential per the City's General Plan and is zoned R-3. Thus, the City has anticipated development of the site with residential uses. The site is not under a Williamson Act contract and is not zoned for agricultural uses. Therefore, buildout of the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract, and ***no impact*** would occur.

c,d. As defined by Public Resources Code section 12220[g], forest land is considered land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and allows for management of one or more forest resource. While the project site is not actively used as forest land, the area does contain up to 80 trees, including Monterey pine and arroyo willow, which are native to the San Francisco Bay Area. Because the site could potentially support 10 percent native tree cover, the forest

[3] California Department of Conservation. *San Mateo County Important Farmland 2014.* Published February 2018. Available at: https://www.conservation.ca.gov/dlrp/fmmp/Pages/SanMateo.aspx.

land definition could apply. However, the site has not been zoned, designated, or planned for use as forest land. Therefore, development of the site with residential uses would not conflict with an existing zoning for forest land. Furthermore, the site is not currently used or planned for use as a lumber or timberland production zone. Therefore, the project would not conflict with existing zoning for Timberland Production (as defined by Government Code section 51104[g]). Thus, the proposed project would have ***no impact*** with regard to conversion of forest land or any potential conflict with forest land, timberland, or Timberland Production zoning.

III. AIR QUALITY. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	✖	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	✖	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	✖	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	✖	☐

Discussion

a,b. The City of Pacifica is located in the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The SFBAAB area is currently designated as a nonattainment area for the State and federal ozone, State and federal fine particulate matter 2.5 microns in diameter ($PM_{2.5}$), and State respirable particulate matter 10 microns in diameter (PM_{10}) ambient air quality standards (AAQS). The SFBAAB is designated attainment or unclassified for all other AAQS. It should be noted that on January 9, 2013, the U.S. Environmental Protection Agency (USEPA) issued a final rule to determine that the Bay Area has attained the 24-hour $PM_{2.5}$ federal AAQS. Nonetheless, the Bay Area must continue to be designated as nonattainment for the federal $PM_{2.5}$ AAQS until such time as the BAAQMD submits a redesignation request and a maintenance plan to the USEPA, and the USEPA approves the proposed redesignation.

In compliance with regulations, due to the nonattainment designations of the area, the BAAQMD periodically prepares and updates air quality plans that provide emission reduction strategies to achieve attainment of the AAQS, including control strategies to reduce air pollutant emissions through regulations, incentive programs, public education, and partnerships with other agencies. The current air quality plans are prepared in cooperation with the Metropolitan Transportation Commission and the Association of Bay Area Governments (ABAG).

The most recent federal ozone plan is the 2001 Ozone Attainment Plan, which was adopted on October 24, 2001 and approved by the California Air Resources Board (CARB) on November 1, 2001. The plan was submitted to the USEPA on November 30, 2001 for review and approval. The most recent State ozone plan is the 2017 Clean Air Plan, adopted on April 19, 2017. The 2017 Clean Air Plan was developed as a multi-pollutant plan that provides an integrated control strategy to reduce ozone, PM, toxic air contaminants (TACs), and greenhouse gases (GHGs). Although a plan for achieving the State PM_{10} standard is not required, the BAAQMD has prioritized measures to reduce PM in developing the control strategy for the 2017 Clean Air Plan. The control strategy serves as the backbone of the BAAQMD's current PM control program.

The aforementioned air quality plans contain mobile source controls, stationary source controls, and transportation control measures to be implemented in the region to attain the State and federal AAQS within the SFBAAB. Adopted BAAQMD rules and regulations, as well as thresholds of significance, have been developed with the intent to ensure

continued attainment of AAQS, or to work towards attainment of AAQS for which the area is currently designated nonattainment, consistent with applicable air quality plans. The BAAQMD's established significance thresholds associated with development projects for emissions of the ozone precursors reactive organic gases (ROG) and oxides of nitrogen (NO_x), as well as for PM_{10}, and $PM_{2.5}$, expressed in pounds per day (lbs/day) and tons per year (tons/yr), are listed in Table 2. By exceeding the BAAQMD's mass emission thresholds for operational emissions of ROG, NO_X, PM_{10}, or PM_{25}, a project would be considered to conflict with or obstruct implementation of the BAAQMD's air quality planning efforts.

Table 2
BAAQMD Thresholds of Significance

Pollutant	Construction	Operational	
	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (tons/year)
ROG	54	54	10
NO_x	54	54	10
PM_{10} (exhaust)	82	82	15
$PM_{2.5}$ (exhaust)	54	54	10

Source: BAAQMD, CEQA Guidelines, May 2017.

The proposed project's construction and operational emissions were quantified using the California Emissions Estimator Model (CalEEMod) software version 2016.3.2 – a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions, including GHG emissions, from land use projects. The model applies inherent default values for various land uses, including construction data, trip generation rates, vehicle mix, trip length, average speed, compliance with the California Building Standards Code (CBSC), etc. Where project-specific information is available, such information should be applied in the model. Accordingly, the proposed project's modeling assumes the following project and/or site-specific information:

- Construction would begin in April 2020;
- Construction would occur over an approximately 16-month period;
- The CO_2 intensity factor was adjusted to reflect PG&E's progress towards the State renewable portfolio standards goal by the operational year (anticipated to be 2021);
- A total of 0.7 acres of land would be graded;
- A total of 100 CY of material would be exported during site prep and 3,000 CY during grading;
- Project would exceed Title 24 by 15 percent;
- 24kWh of on-site renewable energy would be used;
- Water conservation strategies would be applied to 30 percent of indoor and 60 percent of outdoor water use; and
- The proposed project's required compliance with the 2016 Building Energy Efficiency Standards listed in the California Building Standards Code was assumed.

The proposed project's estimated emissions associated with construction and operations are presented and discussed in further detail below. A discussion of the proposed project's

contribution to cumulative air quality conditions is provided below as well. All CalEEMod results are included as an appendix to this IS/MND.

Construction Emissions

According to the CalEEMod results, the proposed project would result in maximum unmitigated construction criteria air pollutant emissions as shown in Table 3. As shown in the table, the proposed project's construction emissions would be below the applicable thresholds of significance for NO_X, ROG, PM_{10}, and $PM_{2.5}$.

Table 3
Maximum Unmitigated Construction Emissions (lbs/day)

Pollutant	Proposed Project Emissions	Threshold of Significance	Exceeds Threshold?
ROG	2.96	54	**NO**
NO_X	18.69	54	**NO**
PM_{10} (exhaust)	0.91	82	**NO**
PM_{10} (fugitive)	5.36	None	**N/A**
$PM_{2.5}$ (exhaust)	0.88	54	**NO**
$PM_{2.5}$ (fugitive)	2.92	None	**N/A**

Source: CalEEMod, June 2019 (see Appendix).

All projects under the jurisdiction of the BAAQMD are required to implement all of the BAAQMD's Basic Construction Mitigation Measures, which include the following:

1. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
2. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
3. All vehicle speeds on unpaved roads shall be limited to 15 mph.
4. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
5. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
6. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
7. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

The proposed project's required implementation of the BAAQMD's Basic Construction Mitigation Measures listed above would help to further minimize construction-related emissions.

Even without consideration of BAAQMD's Basic Construction Mitigation Measures, as shown in Table 3, construction of the proposed project would result in emissions of criteria air pollutants below BAAQMD's thresholds of significance. Consequently, the proposed project would not conflict with air quality plans during project construction.

Operational Emissions

According to the CalEEMod results, the proposed project would result in maximum unmitigated operational criteria air pollutant emissions as shown in Table 4. As shown in the table, the proposed project's operational emissions would be below the applicable thresholds of significance.

Table 4
Unmitigated Maximum Operational Emissions

Pollutant	Proposed Project Emissions		Threshold of Significance		Exceeds Threshold?
	lbs/day	tons/yr	lbs/day	tons/yr	
ROG	0.71	0.08	54	10	**NO**
NO_X	0.67	0.10	54	10	**NO**
PM_{10} (exhaust)	0.31	0.00	82	15	**NO**
PM_{10} (fugitive)	0.36	0.08	None	None	**N/A**
$PM_{2.5}$ (exhaust)	0.31	0.00	54	10	**NO**
$PM_{2.5}$ (fugitive)	0.10	0.02	None	None	**N/A**

Source: CalEEMod, June 2019 (see Appendix).

Because the proposed project's operational emissions would be below the applicable thresholds of significance, the proposed project would not be considered to conflict with air quality plans during project operations.

Cumulative Emissions

Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By nature, air pollution is largely a cumulative impact. A single project is not sufficient in size to, by itself, result in nonattainment of AAQS. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. The thresholds of significance presented in Table 2 represent the levels at which a project's individual emissions of criteria air pollutants or precursors would result in a cumulatively considerable contribution to the SFBAAB's existing air quality conditions. If a project exceeds the significance thresholds presented in Table 2, the proposed project's emissions would be cumulatively considerable, resulting in significant adverse cumulative air quality impacts to the region's existing air quality conditions. Because the proposed project would not result in emissions above the applicable thresholds of significance for ROG, NO_X, PM_{10}, or $PM_{2.5,}$ the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

Conclusion

As stated previously, the applicable regional air quality plans include the 2001 Ozone Attainment Plan and the 2017 Clean Air Plan. Because the proposed project would not result in construction-related or operational emissions of criteria air pollutants in excess of BAAQMD's thresholds of significance, conflicts with or obstruction of the implementation of regional air quality plans would not occur. In addition, the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. Thus, a ***less-than-significant*** impact would result.

c. Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, and/or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Sensitive receptors are typically defined as facilities where sensitive receptor population groups (i.e., children, the elderly, the acutely ill, and the chronically ill) are likely to be located. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics. The nearest existing sensitive receptors would be the single-family residences located south of the site and the multi-family apartment complex across Monterey Road to the west.

The major pollutant concentrations of concern are localized carbon monoxide (CO) emissions and toxic air contaminant (TAC) emissions, which are addressed in further detail below.

Localized CO Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. High levels of localized CO concentrations are only expected where background levels are high, and traffic volumes and congestion levels are high. Emissions of CO are of potential concern, as the pollutant is a toxic gas that results from the incomplete combustion of carbon-containing fuels such as gasoline or wood.

As discussed above, construction of the proposed project would use a maximum of seven pieces of off-road equipment and require a total of 13 construction workers in the most intense phase. Because the number of trips associated with construction would not be significant, and would occur over a relatively short period of time, project construction would not result in substantial increases in localized concentrations of CO. Additionally, BAAQMD does not require analysis of localized concentrations of CO during the construction phase. Thus, the following discussion focuses on operational emissions.

In order to provide a conservative indication of whether a project would result in localized CO emissions that would exceed the applicable threshold of significance, the BAAQMD has established screening criteria for localized CO emissions. According to BAAQMD, a proposed project would result in a less-than-significant impact related to localized CO emission concentrations if all of the following conditions are true for the project:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads

or highways, regional transportation plan, and local congestion management agency plans;
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; and
- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, underpass, etc.).

As discussed in Section XVII, Transportation, given that the project would generate fewer than 100 peak hour trips and would be consistent with the site's current General Plan land use designation, the project would not conflict with the San Mateo County Congestion Management Program (CMP).[4] In addition, the California Department of Transportation (Caltrans) performed traffic counts for the State Highway System in 2017. The results determined that the nearby Monterey Road and SR 1 intersection experiences traffic volumes ranging from 3,000 to 4,200 trips per peak hour, which is far below BAAQMD's threshold of 44,000 vehicles per hour.[5] Thus, the minimal number of trips generated by the proposed project would not increase traffic volumes at an affected intersection to more than 44,000 vehicles per hour. Furthermore, areas where vertical and/or horizontal mixing is limited due to tunnels, underpasses, or similar features do not exist in the project area. As such, the proposed project would not be expected to expose sensitive receptors to substantial concentrations of localized CO.

TAC Emissions

Another category of environmental concern is TACs. The CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (Handbook) provides recommended setback distances for sensitive land uses from major sources of TACs, including, but not limited to, freeways and high traffic roads, distribution centers, and rail yards. The CARB has identified diesel particulate matter (DPM) from diesel-fueled engines as a TAC; thus, high volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Health risks associated with TACs are a function of both the concentration of emissions and the duration of exposure, where the higher the concentration and/or the longer the period of time that a sensitive receptor is exposed to pollutant concentrations would correlate to a higher health risk.

The proposed townhouses would not involve any land uses or operations that would be considered major sources of TACs, including DPM. As such, the project would not generate any substantial pollutant concentrations during operations. However, short-term, construction-related activities could result in the generation of TACs, specifically DPM, from on-road haul trucks and off-road equipment exhaust emissions. Construction is temporary and occurs over a relatively short duration in comparison to the operational lifetime of the proposed project. Health risks are typically associated with exposure to high concentrations of TACs over extended periods of time (e.g., 30 years or greater), whereas the construction period associated with the proposed project would likely be limited to one to two years. Furthermore, the CARB only considers land uses that involve constant and long-term heavy-duty truck traffic of over 100 trucks per day to pose a potential risk to

[4] City/County Association of Governments. *San Mateo County Congestion Management Program*. January 12, 2018.

[5] California Department of Transportation. *2016 Traffic Volumes on the California State Highway System.* Available at: http://www.dot.ca.gov/trafficops/census/docs/2016_aadt_volumes.pdf. Accessed June 2019.

nearby receptors. Haul trucks would only be used during the two-year construction period and would be much less than 100 trucks per day.

All construction equipment and operation thereof would be regulated per the In-Use Off-Road Diesel Vehicle Regulation, which is intended to help reduce emissions associated with off-road diesel vehicles and equipment, including DPM. Project construction would also be required to comply with all applicable BAAQMD rules and regulations, particularly associated with permitting of air pollutant sources. In addition, construction equipment would operate intermittently throughout the day and only on portions of the site at a time.

Due to the temporary nature of construction and the relatively short duration of potential exposure to associated emissions, the potential for any one sensitive receptor in the area to be exposed to concentrations of pollutants for a substantially extended period of time would be low. Therefore, construction of the proposed project would not be expected to expose nearby sensitive receptors to substantial pollutant concentrations.

Conclusion

Based on the above discussion, the proposed project would not expose any sensitive receptors to substantial concentrations of localized CO or TACs during construction or operation. Therefore, the proposed project would result in a ***less-than-significant*** impact related to the exposure of sensitive receptors to substantial pollutant concentrations.

d. Emissions such as those leading to odors have the potential to adversely affect sensitive receptors within the project area. Pollutants of principal concern include emissions leading to odors, emission of dust, or emissions considered to constitute air pollutants. Air pollutants have been discussed in section “a” through “d” above. Therefore, the following discussion focuses on emissions of odors and dust.

Per the BAAQMD CEQA Guidelines, odors are generally regarded as an annoyance rather than a health hazard.[6] Manifestations of a person’s reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The presence of an odor impact is dependent on a number of variables including: the nature of the odor source; the frequency of odor generation; the intensity of odor; the distance of odor source to sensitive receptors; wind direction; and sensitivity of the receptor.

Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative analysis to determine the presence of a significant odor impact is difficult. Typical odor-generating land uses include, but are not limited to, wastewater treatment plants, landfills, and composting facilities. The proposed project would not introduce any such land uses and is not located in the vicinity of any such existing or planned land uses.

Construction activities often include diesel fueled equipment and heavy-duty trucks, which could create odors associated with diesel fumes that may be considered objectionable. However, as discussed above, construction activities would be temporary, and hours of operation for construction equipment would be restricted per Section 8-7.5.07 of the Pacifica Municipal Code. Project construction would also be required to comply with all

[6] Bay Area Air Quality Management District. *California Environmental Quality Act Air Quality Guidelines* [pg. 7-1. May 2017.

applicable BAAQMD rules and regulations, particularly associated with permitting of air pollutant sources. The aforementioned regulations would help to minimize emissions, including emissions leading to odors. Accordingly, substantial objectionable odors would not be expected to occur during construction activities.

It should be noted that BAAQMD regulates objectionable odors through Regulation 7, Odorous Substances, which does not become applicable until the Air Pollution Control Officer (APCO) receives odor complaints from ten or more complainants within a 90-day period. Once effective, Regulation 7 places general limitation on odorous substances and specific emission limitations on certain odorous compounds, which remain effective until such time that citizen complaints have been received by the APCO for one year. The limits of Regulation 7 become applicable again when the APCO receives odor complaints from five or more complainants within a 90-day period. Thus, although not anticipated, if odor complaints are made after the proposed project is developed, the BAAQMD would ensure that such odors are addressed and any potential odor effects reduced to less than significant.

As noted previously, all projects under the jurisdiction of BAAQMD are required to implement the BAAQMD's Basic Construction Mitigation Measures. The aforementioned measures would act to reduce construction related dust, such as the watering of exposed surfaces, covering of haul trucks, and reduction of truck speed on unpaved roads, which would ensure that construction of the proposed project does not result in substantial emissions of dust. Following project construction, the project site would not include any exposed topsoil. Thus, project operations would not include any substantial sources of dust.

For the aforementioned reasons, construction and operation of the proposed project would not result in emissions (such as those leading to odors) adversely affecting a substantial number of people, and a ***less-than-significant*** impact would result.

IV. BIOLOGICAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	✖	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	✖	☐	☐
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 resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of 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, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	✖

Discussion

The following discussion is based on a Biological Resources Assessment prepared for the proposed project by WRA, Inc. (see Appendix B)[7]

a. The project site is currently undeveloped, and consists primarily of trees and non-native shrubbery. A depressional drainage feature consisting mostly of arroyo willow thickets is located on the southern portion of the site. The site is located on a western facing hillside with elevations ranging from 325 to 461 feet above mean sea level and is surrounded by residential development to the south, vacant land to the north and east, and multi-family residences to the west, across Monterey Road.

According to the Biological Resources Assessment, the project site is comprised of four biological communities, including non-native annual grassland, Monterey pine forest, arroyo willow thicket, and an ephemeral drainage ditch. The Biological Resources Assessment also identified 93 special-status plant and 43 special-status wildlife species as having been documented in the vicinity of the project site.

[7] WRA, Inc. *Biological Resources Assessment, Vista Mar Development, Pacifica, San Mateo County, California.* August 2019.

Special-status species include the following:

- Plant and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the federal and State Endangered Species Acts. Both acts afford protection to listed and proposed species;
- 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;
- U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern;
- Sensitive species included in USFWS Recovery Plans; and
- CDFW special-status invertebrates.

Although CDFW Species of Special Concern generally do not have special legal status, they are given special consideration under CEQA. In addition to regulations for special-status species, most birds in the U.S., including non-status species, are protected by the Migratory Bird Treaty Act (MBTA) of 1918. Under the MBTA, destroying active nests, eggs, and young is illegal. In addition, plant species on California Native Plant Society (CNPS) Lists 1 and 2 are considered special-status plant species and are protected under CEQA.

As part of the biological report prepared for the proposed project, WRA, Inc. conducted a search of published records of special-status plant and wildlife species for the South San Francisco USGS 7.5-minute quadrangle, in which the project site occurs, and the surrounding Montara Mountain quadrangle, using the California Natural Diversity Data Base (CNDDB) Rarefind 5 application. The intent of the database review was to identify documented occurrences of special-status species in the vicinity of the project area, to determine their locations relative to the project site, and for use in the field assessment of habitats suitable for special-status species within the site. In addition, WRA, Inc. conducted a site visit in July of 2019. The results of the CNDDB search and site visit are discussed below.

Special-status Plant Species

Based on review of the project site and surrounding area, 93 special-status plant species have been documented in the vicinity. However, the project site has low potential to support any special-status plant species documented in the area due to the absence of specific soil types (i.e., serpentine soils), absence of suitable habitat (i.e., chaparral, grassland, and coastal salt marsh), dominance of invasive non-native species, and location of the site outside of the geographic range or distribution of special-status species. Additionally, none were observed during the site visit. Thus, the proposed project would not adversely impact special-status plant species.

Special-status Wildlife Species

Of the 43 special-status wildlife species that have been documented within the project vicinity, the following five were considered to have moderate or high potential to occur in the project region: Hoary bat, San Francisco dusky-footed woodrat, Mission blue butterfly, white-tailed kite, and Allen's hummingbird. The remaining 38 species are considered to be unlikely or not possible to occur on the project site based on habitat features, such as the location of the site outside of the species' historical range, the lack of suitable aquatic habitat, lack of suitable foraging or nesting habitat, and lack of a den or cave development area.

Hoary Bat (Western Bat Working Group Medium Potential)

The hoary bat (*Lasiurus cinereus*) is highly associated with forested habitats in the western United States, particularly in the Pacific Northwest. The bats are a solitary species and roost primarily in the foliage of both coniferous and deciduous trees. Roosts are typically 10 to 30 feet above the ground. Hoary bats are thought to be highly migratory; however, wintering sites and migratory routes have not been well-documented. The species was recorded approximately 1.5 miles from the project site in 1955. However, recent occurrences have not been documented in the vicinity, indicating that the species may not currently be present in the area. While the project site contains coniferous trees that may be suitable for roosting, the hoary bat typically likes to roost in more densely forested areas. Thus, the project site would not provide significant value as a roost site, and the project would not impact the species.

San Francisco Dusky-footed Woodrat (CDFW Species of Special Concern)

The San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) is a California Species of Special Concern. The species inhabits coastal sage-scrub, pinyon-juniper, dense chaparral, oak and riparian woodlands, and mixed conifer forests where a well-developed understory is present. Suitable habitat for the San Francisco dusky-footed woodrat is present throughout most of the project site. While woodrats were not observed during the site visit, the species has moderate potential to occur on-site within the Monterey pine forest and arroyo willow thickets communities due to the presence of nest building materials and location of the project site within the known breeding range of the species. Thus, development of the proposed project and removal of on-site trees could impact the San Francisco dusky-footed woodrat.

Mission Blue Butterfly (USFWS Endangered)

Two CNDDB occurrences of the Mission blue butterfly (*Icaricia icarioides missionensis*) have been recorded within one mile of the project site, including a sighting on Milagra Ridge, approximately 0.5-mile south of the site. The proposed project does not currently have potential to directly or indirectly impact Mission blue butterfly through take or destruction of larval host plants; however, the potential may be increased substantially if either nectar or larval host plants become present in the non-native grasslands or if numbers and densities of lupine increase substantially. If the changes become evident, the proposed project may have the potential to impact larval host plants of the species, and may result in a significant impact to the mission blue butterfly.

Nesting and Migratory Birds

Nesting birds, including raptors, are protected by California Fish and Game Code Section 3503. Raptors, passerines, non-passerine land birds, and waterfowl are further protected under the Federal MBTA of 1918. The MBTA prohibits the take, possession, purchase, sale, or bartering of any migratory bird, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations. All migratory bird species are protected by the MBTA. Any disturbance that causes direct injury, death, nest abandonment, or forced fledging of migratory birds, is restricted under the MBTA. Any removal of active nests during the breeding season or any disturbance that results in the abandonment of nestlings is considered a ‘take’ of the species under federal law. White-tailed kite and other nesting birds could potentially occur on the project site. Such species are discussed in greater detail below.

White-tailed Kite (CDFW Fully Protected)

White-tailed kites (*Elanus leucurus*) occur in low-elevation grassland, agricultural areas, wetlands, oak woodland, and savannah habitats. White-tailed kites primarily feed on small mammals, although birds, reptiles, amphibians, and insects are also taken. Nest trees range from small shrubs to large trees. Although white-tailed kite was not observed on the site during a site visit conducted by WRA, the Monterey pines on the project site provide suitable nesting habitat and the scrub habitat adjacent to the project site provides foraging habitat. As such, the species has a moderate potential to occur on-site and be adversely impacted by the proposed project.

Allen's Hummingbird (USFWS Bird of Conservation Concern)

Allen's hummingbird (*Selasphorus sasin*) is a summer resident along the majority of California's coast and is a year-round resident in portions of coastal Southern California and the Channel Islands. Breeding occurs in association with the coastal fog belt, and typical habitats used include coastal scrub, riparian, woodland and forest edges, and eucalyptus and cypress groves.

The project site is within the breeding range of the Allen's hummingbird and contains potential habitat. Thus, Allen's hummingbird has moderate potential to occur within the arroyo willow thickets, and Monterey pine forest communities.

Conclusion

Per the Biological Resources Assessment, special-status plant species are not expected to occur on-site, and, thus, would not be impacted by the proposed project. However, a number of special-status wildlife species, including San Francisco dusky-footed woodrat, Mission blue butterfly, and nesting and migratory birds (including, but not limited to, white-tailed kite and Allen's hummingbird), have the potential to occupy the project site. Therefore, a *potentially significant* impact regarding a substantial adverse effect on species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or the USFWS could occur. However, such impacts can be reduced to a ***less-than-significant*** level with the implementation of mitigation measures.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

San Francisco Dusky-footed Woodrat

IV-1(a). *Not more than 30 days prior to initiation of ground-disturbance or vegetation removal, a qualified biologist shall conduct pre-construction surveys for all active woodrat stick nests that would be directly impacted by the proposed project. Surveys shall include all suitable habitat types within the ground disturbance footprint. Any stick nests within the construction area shall be flagged and avoided during project activity to the extent feasible. The results of the pre-construction surveys shall be submitted to the City of Pacifica Planning Department and the CDFW not less than one week prior to initiation of ground disturbance. If nest structures are not encountered during the survey, further action is not required.*

IV-1(b). *If nest avoidance is not feasible, the nest structure shall be dismantled by a qualified biologist. Nest material shall be moved to suitable adjacent*

areas (i.e. woodland, scrub, or chaparral). If young are encountered during the dismantling process, the dismantling process shall cease and material shall be placed back on the nest, and remain undisturbed for a minimum of two weeks to give the young time to mature and leave on their own accord. After the young have left the nest, the dismantling process shall resume. If construction does not occur within 30 days of the most recent pre-construction survey, additional surveys shall be required prior to construction. The biologist shall submit a written summary of the dismantling efforts, as well as any subsequent surveys, to the City of Pacifica Planning Department upon initiation of ground-disturbing activities.

Mission Blue Butterfly

IV-2. *Prior to initiation of ground-disturbing activities, a qualified biologist shall survey the project site for larval host plants (i.e. silver lupine, summer lupine, and manycolored lupine) to determine the number and location of host plants present. If Mission blue butterfly or larval host plants are not present in suitable densities, as determined by the qualified biologist, within the project site, further action is not necessary. If suitable habitat is identified during the habitat assessment, informal or formal consultation with the USFWS shall be required to develop avoidance and minimization measures specific to Mission blue butterfly. Mitigation and minimization measures may include, but not be limited to, protocol level surveys for Mission blue butterfly to determine the presence/absence of the species on the project site, implementation of a 50-foot no-disturbance buffer around larval host plants during the adult flight period (late March to early June), translocation of host plants outside of the adult flight period into portions of the project site that would not be impacted, managing the remaining portions of the project site, removal of encroaching trees and invasive species, or planting of larval host species outside of the project site. The results of the pre-construction surveys and proof of mitigation, if necessary, shall be submitted to the City of Pacifica Planning Department.*

Nesting and Migratory Birds

IV-3. *If construction, tree removal, and/or tree trimming activities are proposed during the bird nesting season (February 1 through August 31), a pre-construction survey for nesting and migratory birds, including raptors, shall be conducted by a qualified biologist within 250 feet of the construction area no more than 14 days prior to initiation of construction activities. If active bird nests are not found, further action is not required. If active bird nests are found, a work exclusion zone shall be established around each nest by the qualified biologist. Established exclusion zones shall remain in place until all young in the nest have fledged or the nest otherwise becomes inactive. Appropriate exclusion zone sizes shall be determined by a qualified biologist. Alternatively, the applicant may delay construction activities until active bird nests are no longer present within 300 feet of the construction area. Results of the preconstruction surveys shall be submitted to the City of Pacifica Planning Department.*

b,c. Sensitive biological communities include habitats that fulfill special functions or have special values, such as wetlands, streams, or riparian habitat. The habitats are protected under federal regulations, such as the Clean Water Act (CWA), and State regulations,

such as the Porter-Cologne Act and the CDFW Streambed Alteration Act. The project site was surveyed as part of the Biological Resources Assessment to determine if any wetlands and/or waters potentially under the jurisdiction of the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), or CDFW were present. The wetlands assessment was based primarily on the presence of wetland plant indicators, as well as indicators of wetland hydrology and wetland soils. The preliminary waters assessment was based primarily on the presence of unvegetated, ponded areas or flowing water, areas vegetated with hydrophytic plant species, or evidence indicating the presence of waters such as a high water mark or a defined drainage course. In addition, the project site was evaluated for the presence of other sensitive biological communities, including riparian areas, sensitive plant communities recognized by CDFW, and habitats potentially supporting rare, endangered, and unique species as recognized by the City of Pacifica.

Per the Biological Resources Assessment, approximately 173 feet of an ephemeral drainage ditch flows east to west in the southeastern portion of the project site. The ditch originates outside of the eastern border of the site and flows into a storm drain and surrounding concrete headwall in the southern portion of the site. The area directly upstream of the storm drain has been altered and is armored with riprap. A trace amount of water was observed in the low-flow channel of the stream at the time of the site visit. The channel of the stream ranges from two to five feet in width and is mainly unvegetated. The banks of the stream are dominated by arroyo willow, Himalayan blackberry, and pampas grass. The proposed project would permanently impact 96 feet of the on-site ephemeral drainage ditch. Areas mapped as ephemeral drainage ditch may be considered jurisdictional under Sections 404 and 401 of the CWA and Section 1602 of the California Fish and Game Code and, thus, the drainage ditch would likely be considered Waters of the U.S. or Waters of the State.

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFW under Sections 1600-1616 of the California Fish and Game Code. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term “stream”, which includes creeks and rivers, is defined in the California Code of Regulations 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.” 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. 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. Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

In addition to containing potentially jurisdictional waters, approximately 0.26 acres of arroyo willow thickets would be disturbed during project construction. The arroyo willow thickets typically occur on stream banks and benches, slope seeps, and stringers along drainages throughout cismontane California. The arroyo willow thickets on the project site occur along both sides of the ephemeral drainage ditch and extend out from the banks. Therefore, portions of the arroyo willow thickets would be subject to CDFW jurisdiction as riparian vegetation.

Based on the above, because the ephemeral ditch could be considered jurisdictional waters, the removal of arroyo willow thickets along the stream would constitute removal

of riparian vegetation. Thus, the project would be required to obtain a Lake and Streambed Alteration Agreement prior to construction. Furthermore, because 96 feet of the ephemeral drainage would be permanently impacted, the project could violate requirements of the USACE, RWQCB, or CDFW if the proper permits are not obtained. Therefore, the proposed project could have a *potentially significant* impact related to substantial adverse effects on riparian habitat or other sensitive natural communities, or on State or federally protected wetlands through direct removal, filling, hydrological interruption, or other means. However, such impacts can be reduced to a ***less-than-significant*** level with the implementation of mitigation measures.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

IV-4. *Notify USACE. Prior to initiation of construction activities, the applicant shall retain a qualified biologist to conduct a formal wetland delineation. If the ephemeral ditch is determined to be jurisdictional Water of the U.S. and State, and the impact cannot be avoided, the applicant shall obtain a permit authorization to fill wetlands under Section 404 of the federal CWA (Section 404 Permit) from USACE. In addition, a Water Quality Certification or waiver pursuant to Section 401 of the CWA must be obtained for Section 404 permit actions. The results of the wetland delineation and Section 404 permit actions shall be submitted to the Planning Department prior to initiation of construction activities.*

IV-5. *Notify Regional Water Quality Control Board. Prior to initiation of construction activities, the project applicant shall submit to the San Francisco Bay Regional Water Quality Control Board an application for Clean Water Act Section 401 Water Quality Certification and/or Waste Discharge Requirements for Projects Involving Discharge of Dredged and/or Fill Material to Waters of the State. Proof of permit compliance shall be submitted to the Planning Department.*

IV-6. *Notify CDFW. Prior to initiating construction activities, the project applicant shall notify CDFW of the intentions of the project to determine if a Lake or Streambed Alteration Agreement is required. If not, no further action is required. If CDFW determines the project will alter a river, stream, or lake, the applicant shall obtain a Lake and Streambed Alteration Agreement and implement all necessary actions required by the CDFW. Proof of compliance shall be submitted to the Planning Department.*

d. Environmental corridors are segments of land that provide a link between different habitats while also providing cover. Habitat loss, fragmentation, and degradation have the potential to alter the use and viability of wildlife movement corridors (i.e., linear habitats that naturally connect and provide passage between two or more otherwise distinct larger habitats or habitat fragments). The suitability of a habitat as a wildlife movement corridor is related to, among other factors, the habitat corridor's dimensions (length and width), topography, vegetation, exposure to human influence, and the species in question.

The project site is not considered a wildlife corridor, though local wildlife may move through. The surrounding area is largely fragmented due to the presence of existing

residential development, including roads. The location of the project site adjacent to developed areas and at the edge of open space further indicates that other movement corridors would remain present after development of the site. Therefore, the proposed project would not interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors and a ***less-than-significant*** impact would occur.

e. Title 4, 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. In general, heritage trees are defined as any trees within the City, exclusive of eucalyptus, which have a trunk with a circumference of fifty inches (approximately sixteen inches in diameter) or more, measured at twenty-four inches above the natural grade. Sections 4-12.02 and 4-12.03 of the Municipal Code provide a complete definition of a heritage tree. Per Sections 4-12.07 and 4-12.08 of the Municipal Code, tree protection plans are required when engaging in new construction within the drip-line of a heritage tree. The plan must be prepared by a qualified arborist, horticulturist, landscape architect or other qualified person.

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.

The City of Pacifica also defines logging operations as any removal, destruction, or harvesting of 20 or more trees within one year from any parcel. In reference to logging operations, a tree is defined as any tree six inches in diameter as measured at 12 inches from the ground. City of Pacifica Ordinance Number 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 the 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.

Based on the above, given that the proposed tree removal activity would occur in conjunction with a City permit requiring City Council approval, the proposed project is exempt from the logging prohibitions established by Ordinance Number 636-C.S. The proposed tree removal activity would be evaluated and approved or denied by the City concurrently with other permits requested for the proposed project.

An arborist report was prepared for the proposed project (see Appendix C) and identified a total of 80 trees within or directly adjacent to the project site.[8] Four tree species were identified and surveyed on the site, including plume acacia (*Albizia lophantha*), Monterey pine (*Pinus radiata*), California wax myrtle (*Morella californica*), and arroyo willow (*Salix*

[8] WRA, Inc. *Arborist Survey Report Vista Mar Development*. August 2019.

lasiolepis). Of the trees surveyed, 26 are considered heritage trees as defined by the Municipal Code. Development of the project would require removal of 23 heritage trees and 34 non-heritage trees as defined by the City. A total of three heritage trees would remain on the project site. The heritage trees range from 50.2 inches to 216.7 inches in circumference. The overall condition, health, and structure of the trees ranged from poor to good, with most trees ranking fair in all three categories. A total of 73 percent of surveyed trees ranked fair in general conditions.

The removal of 34 trees defined by the City's logging operations ordinance would require evaluation at a public hearing in conjunction with required City permits, pursuant to Ordinance No. 636.-C.S. of the Municipal Code. Furthermore, the removal of 23 heritage trees would require a permit as well as potential replacement tree plantings. Thus, a *potentially significant* impact could occur. However, adherence to the Tree Removal Ordinance and Ordinance No. 636-C.S. would ensure that the removal of heritage and non-heritage trees would be performed in accordance with proper procedures. Therefore, with implementation of the mitigation measure, the proposed project would have a ***less-than-significant*** impact related to conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

IV-7. *Per the Arborist Report prepared for the proposed project, the project applicant shall implement the following Tree Preservation Guidelines measures:*

- *All construction activity (grading, filling, paving, landscaping, etc.) shall respect the root protection zone (RPZ) around all trees within the vicinity of the project area that are to be preserved. The PRZ shall be a distance of 1.0 times the dripline radius measured from the trunk of the tree;*
- *Temporary protective fencing shall be installed around the dripline of existing trees prior to commencement of any construction activity conducted within 25 feet of the tree canopy;*
- *Drainage shall not be allowed to pond around the base of any tree;*
- *An ISA-Certified Arborist or tree specialist shall be retained to perform any necessary pruning of trees during construction activity;*
- *Construction materials or heavy equipment shall not be stored within the RPZ of preserve trees;*
- *Roots exposed, as a result of construction activities, shall be covered with wet burlap to avoid desiccation, and shall be buried as soon as practicable.*

The above measures shall be included in the notes on construction drawings subject to review and approval by the City's Planning Department.

f. Adopted Habitat Conservation Plans or Natural Conservation Community Plans covering the project site do not exist. Therefore, the proposed project would not conflict with the provisions of such a plan, and ***no impact*** would occur.

V. CULTURAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	✖	☐	☐
b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?	☐	✖	☐	☐
c. Disturb any human remains, including those interred outside of dedicated cemeteries.	☐	✖	☐	☐

Discussion

a-c. Historical resources are typically features that are associated with the lives of historically important persons and/or historically significant events, that embody the distinctive characteristics of a type, period, region or method of construction, or that have yielded, or may be likely to yield, information important to the pre-history or history of the local area, California, or the nation. Examples of typical historical resources include, but are not limited to, buildings, farmsteads, rail lines, bridges, and trash scatters containing objects such as colored glass and ceramics.

Currently, the project site is vacant and undeveloped. Thus, the site does not contain any permanent structures which could be considered historical resources pursuant to Section 15064.5 of the CEQA Guidelines. The State Office of Historic Preservation Property Directory does not list recorded buildings or structures adjacent to the project site. According to the Pacifica General Plan, the only federal and State listed historic resource within the area is the Historic Sanchez Adobe, which is located 4.4 miles south of the project site.

Based on the above, the project site does not contain any existing permanent structures or any other above-ground resources that could be considered historic. However, the potential exists for previously unknown historic-era subsurface resources to occur on the project site. If present, such resources could be adversely affected by ground-disturbing activities associated with project construction.

A records search of the California Historic Resources Information System (CHRIS) was performed on June 28, 2019 by the Northwest Information Center (NWIC) for cultural resource site records and survey reports within the project area. According to the records search, the project site does not contain any documented archaeological resources. The State Office of Historic Preservation Historic Property Directory, which includes listings of the California State Points of Historical Interest, and the National Register of Historic Places, does not list recorded buildings or structures within or adjacent to the project site.

The NWIC also stated that historic-period activity within the project area does not exist. Based on a review of historical literature and maps, the NWIC concluded that the project site has a low potential for unrecorded archeological resources to occur.[9]

In addition, a search of the Native American Heritage Commission (NAHC) Sacred Lands File search did not yield any information regarding the presence of Tribal Cultural

[9] Northwest Information Center. *Record search results for the proposed Vista Mar Project.* June 28, 2019.

Resources within the project site or the immediate area.[10] Per the results of the CHRIS record search, based on the environmental setting of the site and the dissimilarity with environmental factors associated with known Native American sites, the potential for unrecorded Native American resources to occur in the project area is low.

Nonetheless, the possibility exists that previously undiscovered archaeological or paleontological resources, including human remains, could be uncovered during ground-disturbing activities associated with construction of the proposed project. Therefore, the project could result in a *potentially significant* impact with respect to causing a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5 and/or disturbing human remains. However, the impact would be ***less-than-significant*** with implementation of mitigation measures.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

V-1. *In the event of the accidental discovery or recognition of any human remains, further excavation or disturbance of the find or any nearby area reasonably suspected to overlie adjacent human remains shall not occur until compliance with the provisions of CEQA Guidelines Section 15064.5(e)(1) and (2) has occurred. The Guidelines specify that in the event of the discovery of human remains other than in a dedicated cemetery, no further excavation at the site or any nearby area suspected to contain human remains shall occur until the County Coroner has been notified to determine if an investigation into the cause of death is required. If the Coroner determines that the remains are Native American, then, within 24 hours, the Coroner must notify the Native American Heritage Commission, which in turn will notify the most likely descendants who may recommend treatment of the remains and any grave goods. If the Native American Heritage Commission is unable to identify a most likely descendant or most likely descendant fails to make a recommendation within 24 hours after notification by the Native American Heritage Commission, or the landowner or his authorized agent rejects the recommendation by the most likely descendant and mediation by the Native American Heritage Commission fails to provide a measure acceptable to the landowner, then the landowner or his authorized representative shall rebury the human remains and grave goods with appropriate dignity at a location on the property not subject to further disturbances. If human remains are encountered, a copy of the resulting County Coroner report noting any written consultation with the Native American Heritage Commission shall be submitted as proof of compliance to the City of Pacifica Planning Department.*

The requirements of this mitigation measure shall be included via notation on all project improvement plans and building permit plans for review and approval by the City of Pacifica Planning Department.

[10] Native American Heritage Commission. *Vista Mar Project, City of Pacifica; San Francisco South USGS Quadrangle, San Mateo County.* May 30, 2019.

V-2. *If any potentially historic resources, prehistoric or historic artifacts, or other indications of cultural deposits, such as historic privy pits or trash deposits, are found once ground disturbing activities are underway, all work within the vicinity of the find(s) shall cease and the find(s) shall be immediately evaluated by a qualified archaeologist. If the find is determined to be a historical or unique archaeological resource, contingency funding and a time allotment to allow for implementation of avoidance measures or appropriate mitigation shall be made available (CEQA Guidelines Section 15064.5). Work may continue on other parts of the project site while historical or unique archaeological resource mitigation takes place (Public Resources Code Sections 21083 and 21087).*

The requirements of this mitigation measure shall be included via notation on all project improvement plans and building permit plans for review and approval by the City of Pacifica Planning Department.

VI. ENERGY. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	✖	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	✖	☐

Discussion

a,b. The main forms of available energy supply are electricity, natural gas, and oil. A description of the 2019 California Green Building Standards Code and the Building Energy Efficiency Standards, with which the proposed project would be required to comply, as well as discussions regarding the proposed project's potential effects related to energy demand during construction and operations are provided below.

California Green Building Standards Code

The 2019 California Green Building Standards Code, otherwise known as the CALGreen Code (CCR Title 24, Part 11), is a portion of the California Building Standards Code (CBSC), which will become effective on January 1, 2020. The purpose of the CALGreen Code is to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices. The provisions of the code apply to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure throughout California. Requirements of the CALGreen Code include, but are not limited to, the following measures:

- Compliance with relevant regulations related to future installation of Electric Vehicle charging infrastructure in residential and non-residential structures;
- Indoor water use consumption is reduced through the establishment of maximum fixture water use rates;
- Outdoor landscaping must comply with the California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), or a local ordinance, whichever is more stringent, to reduce outdoor water use;
- Diversion of 65 percent of construction and demolition waste from landfills;
- Mandatory use of low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particle board; and
- For some single-family and low-rise residential development developed after January 1, 2020, mandatory on-site solar energy systems capable of producing 100 percent of the electricity demand created by the residence(s). Certain residential developments, including those developments that are subject to substantial shading, rendering the use of on-site solar photovoltaic systems infeasible, are exempted from the foregoing requirement.

Building Energy Efficiency Standards

The 2019 Building Energy Efficiency Standards is a portion of the CBSC, which expands upon energy efficiency measures from the 2016 Building Energy Efficiency Standards. Energy reductions relative to previous Building Energy Efficiency Standards are achieved through various regulations including requirements for the use of high efficacy lighting, improved water heating system efficiency, and high-performance attics and walls.

One of the improvements included within the 2019 Building Energy Efficiency Standards is the requirement that low-rise residential developments include on-site solar energy systems capable of producing 100 percent of the electricity demanded by the residences. In order to meet the requirements of the State, the proposed project would include installation of solar panels on the rooftops of each townhouse in order to provide 100 percent of electricity demand.

Construction Energy Use

Construction of the proposed project would involve on-site energy demand and consumption related to use of oil in the form of gasoline and diesel fuel for construction worker vehicle trips, hauling and materials delivery truck trips, and operation of off-road construction equipment. In addition, diesel-fueled portable generators may be necessary to provide additional electricity demands for temporary on-site lighting, welding, and for supplying energy to areas of the sites where energy supply cannot be met via a hookup to the existing electricity grid. Project construction would not involve the use of natural gas appliances or equipment.

In addition, all construction equipment and operation thereof would be regulated per the CARB In-Use Off-Road Diesel Vehicle Regulation. The In-Use Off-Road Diesel Vehicle Regulation is intended to reduce emissions from in-use, off-road, heavy-duty diesel vehicles in California by imposing limits on idling, requiring all vehicles to be reported to CARB, restricting the addition of older vehicles into fleets, and requiring fleets to reduce emissions by retiring, replacing, or repowering older engines, or installing exhaust retrofits. The In-Use Off-Road Diesel Vehicle Regulation would subsequently help to improve fuel efficiency and reduce GHG emissions. Technological innovations and more stringent standards are being researched, such as multi-function equipment, hybrid equipment, or other design changes, which could help to reduce demand on oil and emissions associated with construction.

The CARB has recently prepared the *2017 Climate Change Scoping Plan Update* (2017 Scoping Plan),[11] which builds upon previous efforts to reduce GHG emissions and is designed to continue to shift the California economy away from dependence on fossil fuels. Appendix B of the 2017 Scoping Plan includes examples of local actions (municipal code changes, zoning changes, policy directions, and mitigation measures) that would support the State's climate goals. The examples provided include, but are not limited to, enforcing idling time restrictions for construction vehicles, utilizing existing grid power for electric energy rather than operating temporary gasoline/diesel-powered generators, and increasing use of electric and renewable fuel-powered construction equipment. The regulation described above, with which the proposed project must comply, would be consistent with the intention of the 2017 Scoping Plan and the recommended actions included in Appendix B of the 2017 Scoping Plan.

[11] California Air Resources Board. *The 2017 Climate Change Scoping Plan Update.* January 20, 2017.

Based on the above, the temporary increase in energy use occurring during construction of the proposed project would not result in a significant increase in peak or base demands or require additional capacity from local or regional energy supplies. In addition, the proposed project would be required to comply with all applicable regulations related to energy conservation and fuel efficiency, which would help to reduce the temporary increase in demand.

Operational Energy Use

Following implementation of the proposed project, PG&E would provide electricity and natural gas to the project site. Energy use associated with operation of the proposed project would be typical of residential uses, requiring electricity and natural gas for interior and exterior building lighting, heating, ventilation, and air conditioning (HVAC), electronic equipment, machinery, refrigeration, appliances, security systems, and more. Maintenance activities during operations, such as landscape maintenance, would involve the use of electric or gas-powered equipment. In addition to on-site energy use, the proposed project would result in transportation energy use associated with vehicle trips generated by the proposed townhouses.

The proposed residential project would be subject to all relevant provisions of the most recent update of the CBSC, including the Building Energy Efficiency Standards. Adherence to the most recent CALGreen Code and the Building Energy Efficiency Standards would ensure that the proposed structures would consume energy efficiently through the incorporation of such features as efficient water heating systems, high performance attics and walls, and high efficacy lighting. Required compliance with the CBSC would ensure that the building energy use associated with the proposed project would not be wasteful, inefficient, or unnecessary. In addition, electricity supplied to the project by PG&E would comply with the State's Renewable Portfolio Standard (RPS), which requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020 and to 60 percent by 2030. Thus, a portion of the energy consumed during project operations would originate from renewable sources.

With regard to transportation energy use, the proposed project would comply with all applicable regulations associated with vehicle efficiency and fuel economy. In addition, as discussed in Section XVII, Transportation, of this Initial Study, the project site is located within close proximity to Sunset Ridge Elementary School and a variety of commercial uses, including a supermarket, bank, mail center, and fitness gym, which are located approximately 0.6-mile west of the site, across SR 1. The site's proximity to such uses could reduce VMT and, consequently, fuel consumption associated with the proposed townhouses.

Conclusion

Based on the above, construction and operation of the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Thus, a ***less-than-significant*** impact would occur.

VII. GEOLOGY AND SOILS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	✖	☐
ii. Strong seismic ground shaking?	☐	☐	✖	☐
iii. Seismic-related ground failure, including liquefaction?	☐	✖	☐	☐
iv. Landslides?	☐	✖	☐	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	✖	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	✖	☐	☐
d. Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	✖	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	✖
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	✖	☐	☐

Discussion

The following discussion is based on a Geotechnical Investigation prepared for the proposed project by GeoForensics, Inc.[12] and a Geotechnical Peer Review performed by Geocon Consultants, Inc. (see Appendix D).[13]

ai-ii. According to the Geotechnical Investigation, the greater San Francisco Bay Area is recognized by geologists and seismologists as one of the most active seismic regions in the United States. Three major fault zones pass through the Bay Area in a northwest direction which have produced approximately 12 earthquakes per century strong enough to cause structural damage. The faults causing such earthquakes are part of the San Andreas Fault System, a major rift in the earth's crust that extends for at least 700 miles along western California. The San Andreas Fault System includes the San Andreas,

[12] GeoForensics, Inc. *Geotechnical Investigation for Proposed New Townhouses.* Updated September 2, 2014.
[13] Geocon Consultants, Inc. *Proposed Vista Mar Townhome Development Monterey Road Pacifica, California Geotechnical Peer Review*. June 24, 2019.

Hayward, and Calaveras Fault Zones. The Geotechnical Investigation determined that the lack of mapped active fault traces through the site suggest that the potential for primary rupture due to fault offset on the property is low. Nonetheless, given the vicinity of the project site to the San Andreas Fault System, the site is likely to be subject to very strong to violent ground shaking due to a major earthquake in one of the above-listed fault zones.

However, the proposed townhouses and associated improvements would be designed in accordance with the adopted edition of the California Building Standards Code (CBSC) requirements in place at the time of building permit application. Structures built according to the seismic design provisions of current building codes should be able to: 1) resist minor earthquakes without damage; 2) resist moderate earthquakes without structural damage, but with some non-structural damage; and 3) resist major earthquakes without collapse, but with some structural, as well as non-structural damage. Given the project's adherence to the CRC requirements, the proposed project would not expose people or structures to substantial adverse effects including the risk of loss, injury, or death involving the rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zone Map, or strong seismic ground shaking. Therefore, the proposed project would have a ***less-than-significant*** impact.

aiii,aiv.

c. The proposed project's potential effects related to liquefaction, landslides, lateral spreading, and subsidence/settlement are discussed in detail below.

Liquefaction

Liquefaction most commonly occurs during earthquake shaking in loose, fine sands and silty sands associated with a high ground water table. Based upon the subsurface investigation, the proposed building site is underlain by resistant materials at shallow depths. Although ground water was encountered in the vicinity of the proposed building site, the Geotechnical Report determined that liquefaction-related risks are low on the project site.

Landslide and Debris Flow

Seismically-induced landslides are triggered by earthquake ground shaking. The risk of landslide hazard is greatest in areas with steep, unstable slopes. The project site and the surrounding area are moderately to steeply sloping; however, the site is underlain by competent, resistant native material at relatively shallow depths. Therefore, according to the Geotechnical Report, the hazard due to large-scale seismically-induced land sliding is relatively low. As with any slope, shallow sloughing of the steeper site slopes could occur during earthquake shaking. The proposed improvements should not be affected by any such sloughing, as they will be supported by the competent native materials on the site.

While the project site is not at risk for impacts by landslides, the swale which passes along the southern side of the project site and extends up to a hillside area is filled with colluvial material, and has been liberated in the past in the form of a small debris flow which has traveled down the slope and been deposited out in Monterey Road [While the proposed project would not increase the amount of debris relative to existing conditions, the threat from debris flow down the ravine remains high, and threatens development within or around the swale area. As such, the Geotechnical Investigation recommends that the swale be addressed by either avoiding the area entirely or alternatively deflecting potential debris. In order to safely bypass any proposed development within the area of the swale,

the Geotechnical Investigation recommends the access driveway be designed to accept and convey debris flow materials out on the street as has occurred in the past. The proposed project would include a debris flow deflection wall, in accordance with the recommendations in the Geotechnical Investigation, which would extend along the driveway and be between four and six feet high. The retaining wall behind the proposed structures would also be constructed to a height which would deflect debris to the appropriate swale and catch basin, thus reducing any adverse effects associated with potential debris flow. Additionally, as discussed in Section X, Hydrology and Water Quality, the proposed swales and catch basins would adequately treat stormwater prior to discharge into the City waterways.

Lateral Spreading

Lateral spreading is associated with terrain near free faces such as excavations, channels, or open bodies of water. Spreading may occur when a weak layer of material, such as a sensitive silt or clay, loses shear strength as a result of ground shaking. Such conditions were not encountered on the proposed building site. Therefore, the hazard due to lateral spreading is considered very low based on the Geotechnical Investigation.

Subsidence/Settlement

Ground subsidence may occur when poorly consolidated soils densify as a result of earthquake shaking. Because the project site is underlain at shallow depths by resistant materials, the hazard due to ground subsidence is considered to be low.

Slope Stability

Based on the peer review performed for the proposed project, the slope stability analysis of the site should be performed to confirm that an adequate factor of safety against instability is applied. Additionally, exploratory borings may be required to extend through the entire depth of the soil to the proposed cut depths. Thus, the full conditions at the cut depth are not entirely known. Without a slope stability analysis or additional exploratory borings, development of the retaining wall on the eastern border could be impacted.

Conclusion

Based on the above discussion, the proposed project would not result in potential hazards or risks related to liquefaction, landslides, lateral spreading, or subsidence/settlement. However, because the swale on the project site has historically been subject to debris flow, the threat remains high. Additionally, the stability of the slope and the soil conditions at the cut depth have not been fully analyzed. Therefore, the project could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving being located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project. Thus, a *potentially significant* impact could occur. However, such impacts can be reduced to a ***less-than-significant*** level with the implementation of mitigation measures.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

VII-1. *All improvement and building plans for the proposed development shall be designed by a Civil and Structural Engineer and reviewed and approved by the City of Pacifica Building Division prior to issuance of grading and*

building permits to ensure that all geotechnical recommendations specified in the Geotechnical Investigation prepared for the proposed project, including that project design does not impede or limit conveyance of debris flows, are properly incorporated and utilized in the project design.

VII-2. *Prior to issuance of grading permits, the applicant shall retain a qualified geotechnical engineer to prepare slope stability calculations for the cut and fill slopes proposed for the project. Bedrock strength properties for the stability analyses may be determined from previous laboratory testing, by a testing on new site samples, or by using published values from similar bedrock materials identified in the various nearby State Seismic Hazard reports. All recommendations shall be applied to ensure achievement of stable slopes at a 2:1 gradient. The results of the slope stability calculations shall be reported to the City of Pacifica Building Division and any recommendations incorporated into the project plans.*

VII-3. *Prior to issuance of grading permits, a qualified geotechnical engineer shall observe all cuts to verify that conditions have not changed from the conditions reported in the Geotechnical Investigation prepared for the proposed project. The results of the observations shall be reported to the City of Pacifica Building Division and any changes shall be analyzed to determine the necessary revisions to the design plans.*

VII-4. *All unretained fills to be placed on slopes steeper than 6 to 1 (horizontal to vertical), shall be keyed and benched into competent native materials. Any retained fills shall be benched into competent native materials. The entire base of any keyway shall extend into competent bedrock materials, located approximately one to five feet below grade. The entire bases of all benches shall also extend into competent materials, as identified in the field by a qualified geotechnical engineer. Proof of incorporation of all fill requirements set forth in the Geotechnical Investigation and associated material shall be submitted to the City of Pacifica Building Division prior to issuance of grading and building permits.*

b. Issues related to erosion and degradation of water quality during construction are discussed in Section X, Hydrology and Water Quality, of this Initial Study, under question 'a'. As noted therein, the proposed project would not result in substantial soil erosion or the loss of topsoil. Thus, a ***less-than-significant*** impact would occur.

d. During exploratory borings conducted on the project site by GeoForensics, Inc., both Colluvium (Holocene) soil and Greenstone were determined to underlie the project site. Colluvium is a loose to firm clay and Greenstone is a dark green to red basaltic rock. As such, the Geotechnical Investigation determined that due to the relatively non-expansive nature and high strength of the bedrock, the foundations for the townhouses would not need to be modified. Thus, the proposed project would not be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code, creating a substantial direct or indirect risk to life or property and a ***less-than-significant*** impact would occur.

e. Sewer collection for the proposed project would be provided by a new six-inch sanitary sewer line connecting to the City's existing eight-inch sanitary sewer line located in Monterey Road to the west of the site. The construction or operation of septic tanks or

other alternative wastewater disposal systems is not included as part of the project. Therefore, ***no impact*** regarding the capability of soil to adequately support the use of septic tanks or alternative wastewater disposal systems would occur.

f. The City's General Plan does not identify the presence of any paleontological or unique geological resources within the City limits. As determined by the NWIC, areas surrounding the project site have been disturbed in the past, and the likelihood of discovering paleontological resources is low. Nonetheless, because the site has not been subject to prior disturbance, the potential does exist that excavation and construction on the project site could encounter previously unknown paleontological resources. Thus, if discovered during ground disturbing activities, the project could directly or indirectly destroy a unique paleontological resource or unique geologic feature and a *potentially significant* impact could occur. However, such impacts can be reduced to a ***less-than-significant*** level with the implementation of mitigation measure.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

VII-5. *In the event that paleontological resources, including individual fossils or assemblages of fossils, are encountered during construction activities all ground disturbing activities shall immediately halt and a qualified paleontologist shall be procured to evaluate the discovery and make treatment recommendations. The qualified paleontologist shall provide the City of Pacifica Planning Department with a report detailing the results for review and approval by City Planning staff prior to recommencing construction.*

VIII. GREENHOUSE GAS EMISSIONS. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	✖	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gasses?	☐	☐	✖	☐

Discussion

a,b. Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on Earth. An individual project's GHG emissions are at a micro-scale level relative to global emissions and effects to global climate change; however, an individual project could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact. As such, impacts related to emissions of GHG are inherently considered cumulative impacts.

Implementation of the proposed project would cumulatively contribute to increases of GHG emissions. Estimated GHG emissions attributable to future development would be primarily associated with increases of carbon dioxide (CO_2) and, to a lesser extent, other GHG pollutants, such as methane (CH_4) and nitrous oxide (N_2O) associated with area sources, mobile sources or vehicles, utilities (electricity and natural gas), water usage, wastewater generation, and the generation of solid waste. The primary source of GHG emissions for the project would be mobile source emissions. The common unit of measurement for GHG is expressed in terms of annual metric tons of CO_2 equivalents ($MTCO_2e$/yr).

The proposed project is located within the jurisdictional boundaries of BAAQMD. BAAQMD's approach to developing a threshold of significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions needed to move towards climate stabilization. If a project would generate GHG emissions above the threshold level, the project would be considered to generate significant GHG emissions and conflict with applicable GHG regulations. The BAAQMD threshold of significance for project-level operational GHG emissions is 1,100 $MTCO_2e$/yr.

GHG emissions resulting from construction and operation of the proposed project were modeled with CalEEMod using the same assumptions as discussed in Section III, Air Quality, of this IS/MND. The proposed project's required compliance with the current California Building Energy Efficiency Standards Code was assumed in the modeling. In addition, the CO_2 intensity factor within the model was adjusted to reflect the PG&E's anticipated CO_2 emissions factor for 2021. All modeling outputs are included in the appendix to this IS//MND.

Construction of the proposed project was anticipated to occur over approximately 16 months with total emissions of 381.27 $MTCO_2e$/yr. Operational emissions were

determined to equal 94.58 $MTCO_2e$/yr. Consequently, even if project operational and construction emissions were considered together, the total GHG emissions of 475.85 $MTCO_2e$/yr would be well below BAAQMD's threshold of 1,100 $MTCO_2e$/yr. Therefore, neither construction nor operation of the proposed project would be anticipated to result in significant emissions of GHGs.

It should be noted that the City of Pacifica has adopted a Climate Action Plan (CAP) that is intended to guide reduction of GHG emissions associated with existing operations and future development in the City.[14] The GHG inventory contained in the City's CAP was derived based on the land use designations and associated densities defined in the City's General Plan. Additionally, the CAP establishes a number of reduction measures, including the use of renewable energy, safe routes to school, and water conservation incentives. As discussed above, 24 kWh of energy used by the project would be generated by on-site renewable sources, the site is in walking distance of Sunset Ridge Elementary School, and water conservation strategies would be applied to meet a 30 percent reduction of indoor water and 60 percent outdoor. Because the proposed project would be consistent with the CAP's reduction measures and with the project site's existing General Plan land use designation, the project would be consistent with the GHG inventory contained in the CAP.

Based on the above, the proposed project would not be considered to generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs; and impacts would be considered ***less than significant***.

[14] City of Pacifica. *Climate Action Plan*. July 14, 2014.

IX. HAZARDS AND HAZARDOUS MATERIALS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	✖	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	☐	☐	✖	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	✖	☐
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	✖	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	✖	☐
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	✖	☐
g. Expose people or structures, either directly or indirectly, to the risk of loss, injury or death involving wildland fires?	☐	☐	✖	☐

Discussion

a. Residential land uses are not typically associated with the routine transport, use, disposal, or generation of substantial amounts of hazardous materials. Future residents may use common household cleaning products, fertilizers, and herbicides on-site, any of which could contain potentially hazardous chemicals; however, such products would be expected to be used in accordance with label instructions. Due to the regulations governing use of such products and the amount anticipated to be used on the site, routine use of such products would not represent a substantial risk to public health or the environment. Therefore, the project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, and a ***less-than-significant*** impact would occur.

b,d. The project site is currently undeveloped. The area does not contain existing habitable structures, and, thus, asbestos containing materials (ACMs) or lead-based paints do not occur on-site.

Given that the site has not been subject to previous development, the presence of septic systems, wells, above-ground storage tanks (ASTs), underground storage tanks (USTs), or other features related to uses of environmental concern are not likely to occur on-site.

Furthermore, the project site is not included in the California Department of Toxic Substances Control EnviroStor Database.[15] The Envirostor Database includes information provided by the Department of Toxic Substances Control (DTSC) and included in the State's Hazardous Waste and Substances Sites (Cortese) List, which is compiled pursuant to Government Code Section 65962.5.

Construction activities associated with the proposed project would involve the use of heavy-duty equipment, which would contain fuels, oils, and hydraulic fluid. In addition, various other products commonly associated with construction such as concrete, paints, and adhesives would be used on-site. Small quantities of potentially toxic substances (e.g., petroleum and other chemicals used to operate and maintain construction equipment) would be used and transported during construction activities at the project site. However, the project contractors would be required to comply with all California Health and Safety Codes and local County ordinances regulating the handling, storage, and transportation of hazardous and toxic materials. Significant risks to the public or workers are not expected with the assumption that such products would be used, transported, and disposed of properly in accordance with the handling instructions on their labels and in accordance with all applicable regulations.

The existing surrounding development consists of residential land uses, which are not typically associated with the use of significant quantities of hazardous materials. Thus, the project would not be subjected to any upset or accident conditions involving release of hazardous materials associated with nearby uses.

Overall, the proposed project would not create a significant hazard to the public or the environment through the use or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment, and is not located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Thus, a ***less-than-significant*** impact would occur.

c. The project site is located approximately 0.12-mile south of Sunset Ridge Elementary School. As discussed above, residential land uses are not typically associated with the use, disposal, or generation of substantial amounts of hazardous materials. Any hazardous materials associated with cleaning supplies or household materials would be regulated, used, and disposed of according to direction. Thus, although the project site is located within one-quarter mile of a school, the project would not create hazardous emissions or handle hazardous materials, substances, or waste and a ***less-than-significant*** impact would occur.

e. The nearest airport relative to the project site, San Francisco International Airport, is located approximately five miles southeast of the site. In addition, the project site is located approximately nine miles north of Half Moon Bay Airport. Per the Comprehensive Airport Land Use Plan for the Environs of San Francisco International Airport (SFO Plan), the project site does not lie within designated Safety Compatibility Zones or forecasted noise contours for the airport.[16] According to the San Mateo County Comprehensive Airport Land Use Compatibility Plan (ALUCP), the site is not located within an Airport Safety Zone

[15] California Department of Toxic Substances Control. *Hazardous Waste and Substances Site List*. Available at: http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm. Accessed June 2019.

[16] City/County Association of Governments of San Mateo County, California. *Comprehensive Airport Land Use Plan for the Environs of San Francisco International Airport.* July 2012.

for Half Moon Bay Airport, and, thus, would not be significantly affected by the airport.[17] Therefore, the proposed project would not result in a safety hazard for people residing or working in the project area, and a ***less-than-significant*** impact would occur.

f. Implementation of the proposed project would not result in any modifications to the existing roadway system and would not interfere with potential evacuation or response routes used by emergency response teams. Emergency vehicle access to the site would be provided by the proposed driveway with entrance from Monterey Road, circulating the proposed structures. In addition, the proposed project is consistent with the General Plan land use designation, and thus, the City has anticipated and accounted for any impacts associated with emergency response. Therefore, the proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, and a ***less-than-significant*** impact would occur.

g. Issues related to wildfire hazards are discussed in Section XX, Wildfire, of this IS/MND. As noted therein, the project site is not located within a Very High Fire Hazard Severity Zone.[18] In addition, the project site is located within an urbanized area of the City of Pacifica and is surrounded by existing development. Thus, the potential for wildland fires to reach the project site would be relatively limited. Therefore, the proposed project would not expose people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands, and a ***less-than-significant*** impact would occur.

[17] San Mateo County. *Comprehensive Airport Land Use Compatibility Plan.* December 1996.
[18] California Department of Forestry and Fire Protection. *San Mateo County, Very High Fire Hazard Severity Zones in LRA*. November 24, 2008.

X. HYDROLOGY AND WATER QUALITY. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	✖	☐	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	✖	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. Result in substantial erosion or siltation on- or off-site;	☐	✖	☐	☐
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	✖	☐	☐
iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	✖	☐	☐
iv. Impede or redirect flood flows?	☐	☐	✖	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	✖	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	✖	☐

Discussion

a. During the early stages of construction activities, topsoil would be exposed due to grading of the site. After grading and prior to overlaying the ground surface with impervious surfaces and structures or new landscaping which would stabilize the soil, the potential exists for wind and water erosion to discharge sediment and/or urban pollutants into stormwater runoff, which could adversely affect water quality. The State Water Resources Control Board (SWRCB) regulates stormwater discharges associated with construction activities where clearing, grading, or excavation results in a land disturbance of one or more acres per the General Construction Permit. The property area is 52,916 sf, or 1.2 acres. While the total area of land disturbed during construction is 0.82 acres, the entire site could be subject to disturbance from storage of equipment or crossing by employees. Therefore, construction activities would be subject to San Mateo County Municipal Regional Stormwater Permit requirements. The San Mateo Countywide Pollution Prevention Program provides a list of construction BMPs with which all projects involving construction within the County are required to comply.[19] Should the project applicant fail to implement best management practices (BMPs), pollutants from construction activities

[19] City/County Association of Governments of San Mateo County, San Mateo Countywide Water Pollution Prevention Program. *Construction Best Management Practices.* Available at: http://www.cityofpacifica.org/depts/planning/stormwater_compliance/default.asp. Accessed January 4, 2017.

could runoff into local waterways and degrade downstream water quality, particularly during heavy winter rain events.

Following completion of project buildout, the site would be largely covered with impervious surfaces and landscaped areas, and topsoil would no longer be exposed. As such, the potential for impacts to water quality would be reduced. In addition, as discussed in further detail below, the proposed project would include a series of catch basins throughout the site that would treat stormwater from all on-site impervious areas prior to discharge to the City's stormwater drainage system.

While implementation of the above would reduce impacts to water quality standards or waste discharge requirements, if the project applicant fails to implement appropriate construction BMPs or implement stormwater requirements, the proposed project could result in erosion or siltation, violate water quality standards or waste discharge requirements, and substantially degrade water quality. As such, a *potentially significant* impact could occur. However, the impact would be ***less-than-significant*** after implementation of the mitigation measure.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

X-1. *During construction, the contractor shall implement BMPs to reduce pollutants in stormwater discharges to the maximum extent practicable, which may include but are not necessarily limited to the following practices, or other BMPs identified in the California Stormwater Quality Association (CASQA) Construction BMP Handbook:*

- *Temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) shall be employed to control erosion from disturbed areas;*
- *Inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways shall be covered or treated with nontoxic soil stabilizers;*
- *Exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways shall be enclosed or covered;*
- *The contractor shall ensure that no earth or organic material will be deposited or placed where such materials may be directly carried into a stream, marsh, slough, lagoon, or body of standing water;*
- *The following types of materials shall not be rinsed or washed into the streets, shoulder areas, or gutters: concrete, solvents and adhesives, thinners, paints, fuels, sawdust, dirt, gasoline, asphalt and concrete saw slurry, and heavily chlorinated water; and*
- *Grass or other vegetative cover shall be established on the construction site as soon as possible after disturbance.*

The applicable BMPs shall be included via notation on the project Improvement Plans prior to review and approval by the City Engineer.

b,e. The proposed project would receive water service from the North Coast County Water District (NCCWD). The NCCWD does not currently rely on groundwater wells for water supply.[20] As such, groundwater supplies would not be used to serve the proposed project. Given that the project site is approximately 0.82-acres in size, and the project would only develop approximately 9,997 sf of the site with impervious surfaces, the impervious surfaces created by the project would not substantially interfere with infiltration of stormwater into local groundwater. Furthermore, the project would limit hardscape and use pervious pavement treatments, which would allow for natural infiltration of stormwater. Therefore, the proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level, and impacts would be ***less than significant***.

ci-iii. All municipalities within San Mateo County (and the County itself) are required to develop more restrictive surface water control standards for new development projects to comply with Provision C.3 of the Regional Water Quality Control Board (RWQCB) Municipal Regional Stormwater NPDES Permit order No. R2-2015-0049. The San Mateo Countywide Water Pollution Prevention Program developed a C.3 Stormwater Technical Guidance document for implementing the RWQCB Municipal Regional Stormwater NPDES Permit C.3 requirements, known as the C.3 Standards.[21] The City of Pacifica has adopted the County C.3 Standards as part of the City's NPDES General Permit requirements, which require new development and redevelopment projects that create or alter 10,000 or more sf of impervious area to contain and treat all stormwater runoff from the project site. Given that the proposed project would create approximately 10,000 sf of impervious area, the project would be considered a C.3-regulated project.

In compliance with the C.3 Stormwater Technical Guidance, the proposed project would include six catch basins. The six catch basins would be sized for treatment and flow control. In addition, the proposed project would include flow through planters which would treat and drain water from excess runoff areas to the public storm drains on the project site. Runoff from the impervious areas (building roofs, pavement, etc.) would be routed to either the catch basins or the flow through planters and would be treated prior to discharge. The flow through planters and catch basins would act as a filter, removing pollutants and debris from the stormwater throughout the infiltration process.

Per Section 6-12.207 of the Municipal Code, prior to issuance of a building permit, the City of Pacifica requires the applicant submit a complete checklist provided by the City to the City Engineer to ensure compliance with the requirements of NPDES Permit No. CAS612008.

While the basins and flow-through planters would be designed to control flow rate and ensure flooding would not occur, the size requirements of the basins have not yet been finalized. Thus, without final design of the LID Site Design Measures, the proposed project could substantially alter the existing drainage pattern of the site or area in a manner which would result in flooding on- or off-site, create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff. As such, a *potentially significant* impact could occur. However, such impacts can be reduced to a ***less-than-significant*** level with the implementation of mitigation measures.

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[20] North Coast County Water District. *20-Year Long-Term Water Master Plan.* February 2016.

[21] City/County Association of Governments of San Mateo County, San Mateo Countywide Water Pollution Prevention Program. *C.3 Stormwater Technical Guidance.* June 2016.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

X-2. *The applicant shall submit, with the application of building permits, a draft Stormwater Facilities and Maintenance Plan, including detailed maintenance requirements and a maintenance schedule for the review and approval by the City of Pacifica Engineering Division. The Stormwater Facilities and Maintenance Plan shall be recorded against the property and shall bind all future owners of the project site. The maintenance plan shall consist of and comply with the following elements and performance standards, at a minimum:*

- *Inlets and outlets shall be inspected for erosion or plugging;*
- *Clear any obstructions and remove accumulation of sediment. Examine rock or other materials used as a splash pad and replenish as necessary;*
- *Inspect slopes for evidence of erosion and correct as necessary;*
- *Examine vegetation to verify health and suitability for use as erosion control;*
- *Replenish mulch as necessary, remove fallen leaves and debris, prune large shrubs or trees, and mow turf areas;*
- *Abate any potential vectors by filling holes in the ground, in and around the swale, and by ensuring that water does not pool for longer than 48 hours following a storm;*
- *Mosquito larvicides shall be applied only when absolutely necessary and then only by a licensed contractor;*
- *Observe soil at the bottom of the filter for percolation throughout the system. If portions of the swale or filter do not drain within 48 hours after the end of the storm, the soil shall be tilled and replanted; and*
- *Examine the vegetation to ensure that it is healthy and dense enough to provide filtering and to protect soils from erosion. Replace dead plants and remove invasive vegetation.*

civ. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map number 06081C0038F, the project site is located within an Area of Minimal Flood Hazard (Zone X). The site is not classified as a Special Flood Hazard Area or otherwise located within a 100-year or 500-year floodplain. Therefore, development of the proposed project would not impede or redirect flood flows and a ***less-than-significant*** impact would occur.

d. As noted above, the project site is not located in a Special Flood Hazard Area. Thus, the proposed residential development would not be subject to substantial flooding risks. Tsunamis are defined as sea waves created by undersea fault movement as a result of an earthquake beneath the sea floor. The California Department of Conservation maintains Tsunami Inundation Maps for most populated areas along the California coastline. The maps are created by combining inundation results for a variety of different seismic source events. As such, the maps represent a worse-case scenario. According to the Tsunami Inundation Map for the San Francisco South Quadrangle, the project site is

not located in a Tsunami Inundation Area.[22] Furthermore, the City of Pacifica participates in a Community Alert Network (CAN) that, in the event of an emergency, alerts all citizens of the City who have enrolled in the program. A City-specific tsunami warning and informational brochure is distributed throughout the City. In addition, the City is listed as a TsunamiReady City by the National Weather Service.[23] TsunamiReady is a voluntary community recognition program that promotes tsunami hazard preparedness as an active collaboration among federal, State/territorial and local emergency management agencies, community leaders, and the public. The main goal of the program is to improve public safety before, during and after tsunami emergencies. Given that the City has extensively prepared for tsunami events, and the project site is not located in a Tsunami Inundation Area, the proposed project would be considered reasonably safe from tsunami hazards.

A seiche is a long-wavelength, large-scale wave action set up in a closed body of water such as a lake or reservoir, whose destructive capacity is not as great as that of tsunamis. Seiches are known to have occurred during earthquakes, but none have been recorded in the Bay Area. The project site is located approximately 3.8 miles north of the nearest closed body of water, San Andreas Lake, and, as such, would not be expected to be at risk of inundation from seiche.

Furthermore, residential land uses are not typically associated with the routine use of hazardous materials, and as such, the proposed project would not pose a risk related to the release of pollutants due to project inundation caused by flooding, tsunami or seiche, and a ***less-than-significant*** impact would occur.

[22] California Department of Conservation. *Tsunami Inundation Map for Emergency Planning, San Francisco South Quadrangle.* June 15, 2009.

[23] National Weather Service. *TsunamiReady in California.* Available at: http://www.tsunamiready.noaa.gov/tr-maps/ca-tr.shtml. Accessed July 15, 2019.

XI. LAND USE AND PLANNING. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Physically divide an established community?	☐	☐	✖	☐
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	✖	☐

Discussion

a. A project risks dividing an established community if the project would introduce infrastructure or alter land use so as to change the land use conditions in the surrounding community, or isolate an existing land use. Currently, the project site is bordered by existing single-family residential development to the south, a multi-family apartment complex across Monterey Road to the west, and vacant land to the north and east. The proposed townhouses would be consistent with the scale, type, and intensity of the existing residential uses in the project area. In addition, the project would not isolate an existing land use. As such, the proposed project would not physically divide an established community, and a ***less-than-significant*** impact would occur.

b. The project site is currently designated Low Density Residential per the City's General Plan and is zoned R-3. Per the General Plan, the Low Density Residential designation allows three to nine dwelling units/gross acre. Thus, the proposed project would be consistent with the existing land use designation. The proposed project would adhere to all requirements set forth in the City of Pacifica Municipal Code Section 9-4.602 which regulates development in the R-3 zoning area. Thus, the design and intended use of the proposed structures would conform with the type and intensity of uses anticipated for the site in the General Plan.

Because the proposed project is consistent with the City's General Plan land use designation, development of the site with the type and intensity of uses currently proposed has been anticipated and analyzed by the General Plan EIR at a program level. In addition, the General Plan contains several policies with the goal of protecting rare and endangered species, significant trees, and riparian habitats. Mitigation Measures IV-1 through IV-7 would ensure compliance with the General Plan's Conservation Element and all relevant policies related to protecting biological resources. In addition, the General Plan promotes the conservation of water and energy resources. Compliance with the City's water quality standards, as well as implementation of energy reduction strategies, on-site renewable energy production, and water conservation strategies would ensure that the project would not conflict with City policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect. Furthermore, as discussed throughout this IS/MND, the proposed project would not result in any significant environmental effects that cannot be mitigated to a less-than-significant level by the mitigation measures provided herein. Therefore, a ***less-than-significant*** impact would occur.

XII. MINERAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	✖
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	✖

Discussion

a,b. The State Division of Mines and Geology indicates that the project site does not contain any identified mineral resources of regional or Statewide significance (Mineral Resource Zone [MRZ] 2).[24] The adopted General Plan recognizes the existence of mineral resources at the Pacifica Quarry, but does not address mineral resources elsewhere in the City. Furthermore, the proposed project would be consistent with the adopted General Plan land use and zoning designations for the site. Therefore, construction of the proposed project would not result in the loss of any known mineral resources or result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan, and ***no impact*** would occur.

[24] State of California. Division of Mines and Geology. *Generalized Mineral Land Classification Map of the South San Francisco Bay Production—Consumption Region*. Published 1996.

XIII. NOISE. *Would the project result in:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	✖	☐	☐
b. Generation of excessive groundborne vibration or groundborne noise levels?	☐	✖	☐	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	✖	☐

Discussion

a. The following discussion is based on an Environmental Noise Assessment prepared for the proposed project by Saxelby Acoustics (see Appendix E).[25] The report analyzed construction noise and traffic noise level increases at the project site in comparison to the City's exterior and interior noise level standards.

Sensitive Noise Receptors

Some land uses are considered more sensitive to noise than others, and, thus, are referred to as sensitive noise receptors. Land uses often associated with sensitive noise receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise. In the vicinity of the project site, the nearest sensitive receptors include the existing single-family residences to the south, adjacent to the project site boundary. Additionally, the sensitive receptor Sunset Ridge Elementary School is located 0.12-mile north of the site. [

Existing Noise Environment

Per the Environmental Noise Assessment, the existing noise environment in the project area is primarily defined by local neighborhood traffic. To determine the existing noise environment at the site, continuous 24-hour recordings of the sound levels were made at three locations: within the southern portion of the site adjacent to the nearby multi-family residences (LT-1); within the western portion of the site adjacent to Monterey Road (LT-2); and northwest of the project site at the intersection of Hickey Boulevard and Monterey Road (ST-1) (see Figure 11). The measurements for LT-1 and LT-2 were made on April 30th through May 2nd 2019, and measurements for ST-1 were made on July 30th, 2018 using Larson-Davis Laboratories model 820 and 812 Precision Integrating Sound Level Meters.

[25] Saxelby Acoustics LLC. *Environmental Noise Assessment, Vista Mar Residential.* June 25, 2019.

Figure 11
Noise Measurement Sites

Source: Saxelby Acoustics, Inc. 2019.

The results of the measurements are summarized in Table 5, presented in terms of average hourly noise levels (L_{eq}) and Community Noise Equivalent Levels (CNEL). All noise level values are in decibels (dB). Traffic noise diminishes at a rate of three to six dB for each doubling of the distance from the source to the receiver. Thus, other locations on the site at greater distances from the roadways are assumed to experience lower noise levels. As shown in Table 5, the existing ambient noise levels at all three receptors range from 56 to 59 CNEL/L_{dn}.

Table 5
Summary of Existing Background Noise Measurement Data

Site	Date	Average Measures Hourly Noise Levels, dBA						
			Daytime (7:00AM-10:00PM)			Nighttime (10:00PM–7:00AM)		
		CNEL / L_{dn}	L_{eq}	L_{50}	L_{max}	L_{eq}	L_{50}	L_{max}
LT-1	4/30/19 – 5/1/19	58	54	46	71	51	38	69
	5/1/19 – 5/2/19	57/56	53	44	71	49	36	68
LT-2	4/30/19 – 5/1/19	59	55	47	72	52	41	70
	5/1/19 – 5/2/19	59/58	55	46	72	51	37	68
ST-1	7/30/18 – 9:15AM	N/A	64	51	84	N/A	N/A	N/A

Source: Saxelby Acoustics, Inc. 2019.

City Noise Standards

While the City of Pacifica General Plan does not explicitly establish a noise threshold for sensitive receptors, the City staff have historically used the 60 dB threshold as the test of significance when evaluating projects. The City of Pacifica is in the process of updating the General Plan; however, the General Plan Update and associated EIR have not yet been adopted.

Criteria for Short-Term Project-Related Noise Level Increases

Because the City has not established a threshold of significance for short-term construction or traffic noise, the Caltrans standard of a temporary increase of 12 dBA from existing conditions at the project site would result in a significant impact during construction.

Criteria for Long-Term Project-Related Noise Level Increases

Based upon recommendations made by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. Based on the FICON standards, the project would result in a significant impact under the following circumstances:

- Where existing ambient noise levels at sensitive receptors are less than 60 dB L_{dn}, a +5 dB L_{dn} increase is considered significant;
- Where existing ambient noise levels at sensitive receptors range from 60 to 65 dB L_{dn}, a +3 dB L_{dn} increase is considered significant; and
- Where existing ambient noise levels at sensitive receptors are greater than 65 dB L_{dn}, a +1.5 dB L_{dn} increase is considered significant.

Project Construction Noise

During the construction of the proposed project, heavy equipment would be used for grading, excavation, paving, and building construction, which would temporarily increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how the equipment is operated, and how well the equipment is maintained. In addition, noise exposure at any single point outside the project site would vary depending on the proximity of construction activities to that point. Standard construction equipment, such as graders, backhoes, loaders, and trucks, would be used on-site.

Table 6 shows maximum noise levels associated with typical construction equipment. Based on the table, activities involved in typical construction would generate maximum noise levels up to 85 dB at a distance of 50 feet. While hauling trips would be made throughout construction, the number of daily trips would be relatively limited and would be within what is normally anticipated by a construction site. The production of such noise is thus included as general construction noise and would not contribute to exceedance of construction noise standards.

As one increases the distance between equipment, or increases separation of areas with simultaneous construction activity, dispersion and distance attenuation reduce the effects of combining separate noise sources. The noise levels from a source decrease at a rate of approximately 6 dB per every doubling of distance from the noise source.

Based on the information presented in Table 6, site preparation and grading activities, which typically make use of compactors, dozers, and pneumatic tools, are anticipated to be the loudest phases of construction, with an average noise exposure of 83 dBA at a distance of 50 feet. Saxelby Acoustics modeled the noise levels at nearby sensitive receptors using the SoundPLAN noise model (see Figure 12).

Table 6
Construction Equipment Noise

Type of Equipment	Maximum Level, dB at 50 feet
Backhoe	78
Compactor	83
Compressor (air)	78
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Pneumatic Tools	85

Source: Federal Highway Administration, Roadway Construction Noise Model User's Guide, January 2006.

Table 7 shows a summary of the noise prediction results for each phase of project construction. Noise associated with construction activities would occur intermittently, and would be limited to the hours of 7:00 AM to 7:00 PM, Monday through Friday, and 9:00 AM to 5:00 PM on Saturdays and Sundays per Section 8-1.08 of the City's Municipal Code.

Figure 12
Predicted Construction Noise Levels

Source: Saxelby Acoustics, Inc. 2019

Table 7
Predicted Construction Noise Levels by Loudest Phases

Receiver (Use)	Measured Daytime Noise Level, Leq	Predicted Construction Noise Level, Leq	Change (dBA)
Site Preparation			
R1 (Residential)	56-59 dBA	61 dBA	+5
R2 (Residential)	56-59 dBA	67 dBA	+11
R3 (Residential)	56-59 dBA	68 dBA	+12
R4 (Residential)	56-59 dBA	76 dBA	+20
Grading			
R1 (Residential)	56-59 dBA	61 dBA	+5
R2 (Residential)	56-59 dBA	67 dBA	+11
R3 (Residential)	56-59 dBA	68 dBA	+12
R4 (Residential)	56-59 dBA	76 dBA	+20
Building Construction			
R1 (Residential)	56-59 dBA	60 dBA	+4
R2 (Residential)	56-59 dBA	66 dBA	+10
R3 (Residential)	56-59 dBA	67 dBA	+11
R4 (Residential)	56-59 dBA	75 dBA	+19
Paving			
R1 (Residential)	56-59 dBA	59 dBA	+3
R2 (Residential)	56-59 dBA	65 dBA	+9
R3 (Residential)	56-59 dBA	66 dBA	+10
R4 (Residential)	56-59 dBA	74 dBA	+18
Architectural Coating			
R1 (Residential)	56-59 dBA	52 dBA	+0
R2 (Residential)	56-59 dBA	58 dBA	+2
R3 (Residential)	56-59 dBA	59 dBA	+3
R4 (Residential)	56-59 dBA	67 dBA	+11

Note: As Measured at Sites LT-1 and LT-2

Source: Saxelby Acoustics, Inc. 2019.

As shown in Table 7, the proposed project would generate construction noise levels ranging between 52 and 76 dBA L_{eq} at the nearest sensitive receptors. Existing ambient noise levels were found to be between 56-59 dBA L_{dn} in the vicinity of the project site. Therefore, project construction could result in an increase in noise ranging from +3 to +20 dBA above existing ambient noise levels.

Noise would also be generated during the construction phase by increased truck traffic on area roadways. A project-generated noise source would be truck traffic associated with transport of heavy materials, removal of approximately 3,000 cubic yards of soil, and equipment to and from the construction site. The noise increase would be of short duration and only occur during daytime hours. Based upon the anticipated eight daytime trips per day, the L_{dn} noise level for truck haulage would be approximately 45 dBA L_{dn}.

While the City of Pacifica Noise Ordinance exempts construction activities from the noise standards, provided they take place between the specified hours, construction activities could result in periods of noise which exceed existing nose levels by 20 dBA, which is more than the Caltrans 12 dBA increase criteria. Therefore, construction could result in a short-term impact. However, with implementation of the mitigation, a temporary eight-foot

sound wall would be installed and would reduce construction noise levels to 52-67 dBA at the nearest sensitive receptors. With inclusion of the sound wall, the increase in construction noise would be limited to 11 dBA L_{dn}.

Project Operational Noise

As noted previously, the existing noise environment in the project area is primarily defined by traffic noise. As discussed in Section XVII, Transportation, of this IS/MND, the proposed project would generate approximately 76 total daily vehicle trips, with seven trips occurring during the AM peak hour and eight trips occurring during the PM peak hour. Such a relatively modest increase in traffic volumes would not cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

Per the Environmental Noise Assessment, based upon noise measurements conducted on the project site, exterior noise levels ranged between 56-59 dBA L_{dn}. The noise levels comply with the City of Pacifica existing General Plan standard of 60 dBA L_{dn}, and proposed General Plan update standard of 65 dBA L_{dn}. The proposed project would include typical residential noise which would be compatible with the adjacent existing single-family residential uses.

Conclusion

Based on the above, operation of the proposed project would not result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the City's General Plan and the Municipal Code. However, considering the potential for construction activities to result in temporary increases in ambient noise levels in the project area, a *potentially significant* impact could occur. However, the impact would be ***less-than-significant*** after implementation of the mitigation measure.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

XIII-1. *Prior to issuance of a grading permit, an eight-foot tall temporary sound wall shall be installed along the southeast boundary of the project site, adjacent to the existing residential use. The barrier shall consist of minimum 15/32-inch plywood or OSB. Alternate barriers or sound curtains having a sound transmission class rating of 25 would also be acceptable. Any barrier shall not include gaps between panels or under the barrier that could transmit sound. Proposed plans for the sound wall shall be submitted to the City Planning Department.*

XIII-2. *Prior to issuance of a grading permit, the project applicant shall prepare a construction noise management plan that identifies measures to be taken to minimize construction noise on surrounding sensitive land uses and include specific noise management measures to be included within the project plans and specifications, subject to review and approval by the City Planning Division. The project applicant shall demonstrate, to the satisfaction of the City, that the project complies with the following:*

- *Construction activities shall only take place between the hours limited 7:00 AM to 7:00 PM on weekdays, and 9:00 AM to 5:00 PM on Saturday and Sunday.*
- *All heavy construction equipment used on the proposed project shall be maintained in good operating condition, with all internal combustion, engine-driven equipment fitted with intake and exhaust mufflers that are in good condition.*
- *All mobile or fixed noise producing equipment used on the proposed project that is regulated for noise output by a local, state, or federal agency shall comply with such regulations while in the source of project activity.*
- *Where feasible, electrically-powered equipment shall be used instead of pneumatic or internal combustion powered equipment.*
- *All stationary noise-generating equipment shall be located as far away as possible from neighboring property lines.*
- *Signs prohibiting unnecessary idling of internal combustion engines shall be posted.*
- *A truck route haul plan shall be created to avoid. to the maximum extent feasible, residential areas.*
- *The use of noise-producing signals, including horns, whistles, alarms and bells shall be for safety warning purposes only.*
- *A noise complaint coordinator shall be retained amongst the construction crew to be responsible for responding to any local complaints about construction noise. When a complaint is received, the coordinator shall notify the City Planning Department within 24 hours of the complaint and determine the cause of the noise complaint and shall implement reasonable measures to resolve the compliant, as deemed acceptable by the City.*

b. Similar to noise, vibration involves a source, a transmission path, and a receiver. However, noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration depends on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration is measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of peak particle velocities (PPV) in inches per second (in/sec). Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of PPV.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 8, which was developed by Caltrans, shows the vibration levels that would normally be required to result in damage to structures. As shown in the table, the threshold for architectural damage to structures is 0.20 in/sec PPV and continuous vibrations of 0.10 in/sec PPV, or greater, would likely cause annoyance to sensitive receptors.

Table 8
Effects of Vibration on People and Buildings

PPV		Human Reaction	Effect on Buildings
mm/sec	in/sec		
0.15 to 0.30	0.006 to 0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10 to 15	0.4 to 0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: Caltrans. Transportation Related Earthborne Vibrations. TAV-02-01-R9601. February 20, 2002.

The proposed project would only cause elevated vibration levels during construction, as the proposed project would not involve any uses or operations that would generate substantial groundborne vibration. Although noise and vibration associated with the construction phases of the project would add to the noise environment in the immediate project vicinity, construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours. Because the proposed project would not cause continuous, long-term vibrations, the project would not be expected to result in extended annoyance to the nearby sensitive receptors.

The primary vibration-generating activities associated with the proposed project would occur during grading, placement of utilities, and construction of foundations. Table 9 shows the typical vibration levels produced by construction equipment at various distances. The most substantial source of groundborne vibrations associated with project construction would be the use of vibratory compactors. Use of vibratory compactors/rollers could be required during construction of the proposed driveway which would begin along Monterey Road and extend to the rear of the proposed townhouses.

Operation of vibratory compactors/rollers used for construction of the proposed driveway would occur within approximately seven feet from the adjacent single-family residence to the south. Thus, per the vibration levels shown in Table 9, groundborne vibrations could cause vibration in excess of 0.20 in/sec PPV, which would exceed the 0.10 in/sec PPV threshold established by Caltrans for annoyance to sensitive receptors.

Table 9
Vibration Levels for Various Construction Equipment

Type of Equipment	PPV at 25 feet (in/sec)	PPV at 50 feet (in/sec)
Large Bulldozer	0.089	0.029
Loaded Trucks	0.076	0.025
Small Bulldozer	0.003	0.000
Auger/drill Rigs	0.089	0.029
Jackhammer	0.035	0.011
Vibratory Hammer	0.070	0.023
Vibratory Compactor/roller	0.210	0.070

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

Based on the above, development of the proposed project could expose people to or generate excessive groundborne vibration or groundborne noise levels, and a *potentially significant* impact would occur. However, such impacts can be reduced to a ***less-than-significant*** level with the implementation of mitigation measures.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

XIII-2. *During construction of the proposed project, use of vibratory compactors/rollers shall not occur within 25 feet of the adjacent single-family residential use located southeast of the project site. This requirement shall be included via notation on the project grading plans prior to review and approval by the City of Pacifica Planning Department. Additionally, a pre-construction crack documentation and construction vibration monitoring report shall be conducted to ensure that construction vibrations do not cause damage to the adjacent single-family residence. The results of both shall be submitted for review and approval by the City of Pacifica Planning Department prior to issuance of grading permit, and any necessary minimization efforts applied during construction.*

c. As noted previously, the San Francisco International Airport is located approximately five miles southeast of the site. In addition, the project site is located approximately nine miles north of Half Moon Bay Airport. According to the San Mateo County ALUCP, the project site is not located within an Airport Safety Zone for Half Moon Bay Airport,[26] nor is the site covered by the forecasted noise contours specified by the SFO Plan for the San Francisco International Airport.[27] Given that the project site is not located within two miles of a public or private airport, the proposed project would not experience elevated noise levels associated with either airport, and a ***less-than-significant*** impact would occur related to exposing people residing or working in the project area to excessive noise levels associated with airports.

[26] San Mateo County. *Comprehensive Airport Land Use Compatibility Plan.* December 1996.
[27] City/County Association of Governments of San Mateo County, California. *Comprehensive Airport Land Use Plan for the Environs of San Francisco International Airport.* July 2012.

XIV. POPULATION AND HOUSING. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure)?	☐	☐	✖	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	✖	☐

Discussion

a. The proposed project would include the development of eight townhouses in an existing residential neighborhood. Development of the project would induce a modest amount of population growth in the area. In 2010, the average household size in the City was 2.65[28] Thus, the proposed project would be estimated to house approximately 21 residents, a portion of which could represent new residents in the City. Based on Public Resources Code Section 21083.3, if development of a project is consistent with the General Plan, the analysis of the project's impacts can be limited to effects which are peculiar to the project. Because the project site would be developed with a residential land use, which is consistent with the General Plan land use designation for the site, the impacts of the project related to population growth have been anticipated and analyzed in the associated General Plan EIR. Given that the project does not include any peculiar or unanticipated components, the project's induced population growth would not exceed what has been anticipated for the site by the City.

Therefore, the proposed project would result in a ***less-than-significant*** impact with respect to direct or indirect inducement of population growth in the area.

b. The project site is currently vacant and undeveloped, and thus, would not result in the displacement of any people or housing. In addition, the proposed project would introduce eight new residential units to the City. Therefore, the proposed project would not be considered to displace substantial numbers of existing people or housing, necessitating the construction of replacement housing, and a ***less-than-significant*** impact would occur.

[28] City of Pacifica. *Housing Element: 2015-2023 [pg. 7].* Adopted May 11, 2015.

XV. PUBLIC SERVICES.

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Fire protection?	☐	☐	✖	☐
b. Police protection?	☐	☐	✖	☐
c. Schools?	☐	☐	✖	☐
d. Parks?	☐	☐	✖	☐
e. Other Public Facilities?	☐	☐	✖	☐

Discussion

a. In 2003, the cities of Daly City, Brisbane, and Pacifica collaborated to form the North County Fire Authority (NCFA), a Joint Powers Authority agreement. The NCFA provides fire protection and medical emergency services in the City of Pacifica as well as the other two communities. Under the NCFA, fire stations and fire companies are strategically located throughout the three communities, which provide rapid assistance for medical, fire or other hazardous situations. The nearest fire station relative to the project site is the Pacifica Fire Department located at 616 Edgemar Avenue, which is located approximately one mile southwest of the project site. Due to the close proximity of the station to the project site, response times at the site would be relatively quick. In addition, the project would be required to comply with all NCFA standard conditions of approval related to provision of the California Fire Code.

Because the NCFA would provide adequate fire protection services to proposed project, and because the proposed project would be required to include adequate fire safety design elements, the project would result in a ***less-than-significant*** impact with respect to the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection services.

b. The Pacifica Police Department provides police protection services throughout the City, including the project site, which would continue to be served by the Police Department following project implementation. The proposed project would include a relatively modest amount of development, and, thus, would not have a significant impact on existing police protection resources. Therefore, the project would result in a ***less-than-significant*** impact with respect to the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection services.

c. The project site is located within the Pacifica School District and the Jefferson Union High School District. Because the proposed project would include eight residential units, the project applicant would be required to pay the appropriate school district impact fees. Proposition 1A/Senate Bill No. 50 prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "[…] legislative or

adjudicative act…involving …the planning, use, or development of real property" (Government Code 65996(b)). Satisfaction of the Proposition 1A/Senate Bill No. 50 statutory requirements by a developer is deemed to be "full and complete mitigation."

Development of the proposed project would be limited to a total of eight residences and, thus, would not add a substantial number of new students to area schools. For example, the estimated student yield factor for the Jefferson Union High School District is 0.2 students/unit.[29] Thus, development of eight townhouses would add approximately 1.6 high school-aged students to the District's existing enrollment. As such, increased demand for school facilities associated with construction of the proposed project would be accommodated by existing schools within the City. Furthermore, the proposed project and would comply with Proposition 1A/Senate Bill No. 50 through the payment of school impact fees. As such, the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered school facilities and a ***less-than-significant*** impact would occur with respect to schools in the project area.

d. The proposed project would involve the development of eight residential dwelling units on 1.2 acres of land. The project would not include dedicated park areas. Per Section 10-1.803 of the Pacifica Municipal Code, the project applicant would be required to dedicate Park Land to the City. The dedication would ensure that the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered park facilities. Therefore, a ***less-than-significant*** impact would occur in regard to parks.

e. The City contains two public libraries: the Pacifica-Sharp Park Library and the Pacifica-Sanchez Library. The libraries constitute two branches of the San Mateo County Library (SMCL) system. Per a 1999 Joint Powers Authority (JPA) agreement, the City is responsible for funding maintenance of the two libraries. The proposed project includes a total of eight residential dwelling units. Consequently, the project would not result in a substantial increase in demand for library services, and a ***less-than-significant*** impact would occur in regard to libraries or other public facilities.

[29] Jefferson Union High School District. *Level I Developer Fee Study.* June 12, 2018.

XVI. RECREATION. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	✖	☐
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	✖	☐

Discussion

a,b. The proposed project would include development of eight residential units. Recreational or park facilities are not proposed as part of the proposed project. As discussed in Section XV, Public Services, of this IS/MND, Section 10-1.803 of the Pacifica Municipal Code requires the project applicant dedicate Park Land to the City. The dedication would ensure that the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered park facilities. Furthermore, because the proposed project would not be expected to substantially increase the use of existing parks or recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated, a ***less-than-significant*** impact would occur.

XVII. TRANSPORTATION. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	✖	☐
b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	✖	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	✖	☐
d. Result in inadequate emergency access?	☐	☐	✖	☐

Discussion

a. The Institute of Traffic Engineer's (ITE) *Trip Generation Handbook* was used to estimate weekday AM, PM, and daily trip generation forecasts for the proposed project.[30] As shown in Table 10 below, implementation of the proposed project would be expected to result in a total of 76 total daily vehicle trips, with seven trips occurring during the AM peak hour and eight trips occurring during the PM peak hour.

Table 10
Weekday Project Trip Generation Rates and Estimates

			AM Peak Hour				PM Peak Hour			
Units	Rate	Daily Trips	Rate	In	Out	Total	Rate	In	Out	Total
8	9.52	76	0.75	2	5	7	1.0	5	3	8

Source: Institute of Transportation Engineers, 2012.

Per the San Mateo County CMP, projects that would result in fewer than 100 peak hour trips are not subject to review by the Commission.[31] Given that the project would generate a maximum of eight peak hour trips and would be consistent with the site's current General Plan land use and zoning designations, the project would not conflict with the CMP.

The nearest transit stop to the project site is located approximately 0.2-mile away at the Monterey Road and Beaumont Boulevard bus stop. Regional access is provided by Samtrans, which runs line 140 with a stop at Monterey Road and Beaumont Boulevard. Regional access to the Bay Area is provided by Samtrans as well as BART, with several connections in the vicinity of the project site. Additionally, the proposed project would include connection of the driveway and access points to the pedestrian sidewalk along Monterey Road.

Due to the low number of project-generated trips, the project would not be expected to adversely impact levels of service at nearby signalized intersections or roadways. In addition, because the project is consistent with the site's current land use designation, traffic associated with development of the project site has been accounted for in the City's planning efforts and analyzed in the General Plan EIR. Furthermore, the proposed project would include connection to the existing sidewalk along Monterey Road and access to the

[30] Institute of Transportation Engineers. *Trip Generation Handbook, 9th Edition*. September 2012.
[31] Alameda County Transportation Commission. *2017 Congestion Management Program* [pg. 85]. December 2017.

regional transit facilities, thereby providing for pedestrian and public transportation connectivity with the surrounding area.

Therefore, the proposed project would not conflict with an applicable plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, and a ***less-than-significant*** impact would occur.

b. Section 15064.3 of the CEQA Guidelines provides specific considerations for evaluating a project's transportation impacts. Per Section 15064.3, analysis of vehicle miles traveled (VMT) attributable to a project is the most appropriate measure of transportation impacts. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in Section 15064.3(b)(2) regarding roadway capacity, a project's effect on automobile delay does not constitute a significant environmental impact under CEQA. It should be noted that currently, the provisions of Section 15064.3 apply only prospectively; determination of impacts based on VMT is not required Statewide until July 1, 2020.

The proposed project would include features to reduce overall VMT. Per Section 15064.3(b)(3), a lead agency may analyze a project's VMT qualitatively based on the availability of transit, proximity to destinations, etc. The project site is located approximately 0.2-mile from the Monterey Road and Beaumont Boulevard transit stop and is serviced by Samtrans which circulates the entire Bay Area Peninsula. Additionally, the site is located within close proximity to Sunset Ridge Elementary School and a variety of commercial uses, including a supermarket, bank, mail center, restaurants, and fitness gym, which are located approximately 0.6-mile west of the site, across SR 1. The site's proximity to such uses would reduce VMT associated with the proposed residences. In addition, given that the project would include only eight townhouses, traffic generated by the project would not have a substantial effect on the operation of local roadways and intersections.

Furthermore, as noted above, the proposed project would include a walkway with connection to existing sidewalk facilities along Monterey Road, thereby providing for increased pedestrian connectivity with the surrounding area.

Based on the above, the proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3(b), and a ***less-than-significant*** impact would occur.

c,d. The proposed project would not include any modifications to the existing circulation system in the project vicinity that would result in a traffic safety hazard. The proposed internal roadway would be designed to be consistent with all applicable City roadway engineering standards, and would not include sharp curves or create a dangerous intersection at the proposed connection to Monterey Road. In addition, the proposed residential uses would be compatible with the existing residential development in the project area.

Primary access to the project site would be provided by a new driveway with an entrance and separate exit along Monterey Road. The entrance and exit would be at least 12-feet wide. The driveway would circulate the entirety of the project site with widths between 12 and 25 feet. Although the project site is located along a curve of Monterey Road, the exit driveway would be located within visibility of cars traveling north on Monterey Road. The widths and entrances would meet the minimum width that can accommodate emergency

vehicles and sufficient access would be provided for emergency vehicles. The lane widths of the driveway would be reviewed by the City prior to issuance of the site development permit.

Based on the above, the project would not substantially increase hazards due to design features or incompatible uses, and emergency access to the site would be adequate. Therefore, the project would result in a ***less-than-significant*** impact.

XVIII. TRIBAL CULTURAL RESOURCES. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k).	☐	✖	☐	☐
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	✖	☐	☐

Discussion

a,b. A search of the NAHC Sacred Lands File did not yield any information regarding the presence of Tribal Cultural Resources within the project site or the immediate area.[32] In addition, per the results of the CHRIS record search, based on the environmental setting of the site and the dissimilarity with environmental factors associated with known Native American sites, the potential for unrecorded Native American resources to occur in the project area is low.[33]

Furthermore, the City of Pacifica has not received requests to be notified of development projects (pursuant to AB 52) from any Native American tribes in the project region and, thus, AB 52 project notification letters were not distributed by the City. The City, as a lead agency, has not identified any tribal resources on the site.

Given the relatively steep slope of the project site and the underlying bedrock deposits, the project site has a low potential for discovery of Native American resources. However, the possibility exists that previously undiscovered tribal cultural resources could be uncovered during ground-disturbing activities associated with construction of the proposed project. Therefore, the proposed project could result in a substantial adverse change in the significance of a tribal cultural resource, and a *potentially significant* impact could occur. However, such impacts can be reduced to a ***less-than-significant*** level with the implementation of mitigation measure.

[32] Native American Heritage Commission. *Vista Mar Project, City of Pacifica; San Francisco South USGS Quadrangle, San Mateo County.* May 30, 2019.

[33] Northwest Information Center. *Record search results for the proposed Vista Mar Project.* June 28, 2019.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

XVIII-1. Implement Mitigation Measures V-1 and V-2

XIX. UTILITIES AND SERVICE SYSTEMS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	✖	☐
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	✖	☐
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	✖	☐
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	✖	☐
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	✖	☐

Discussion

a-c. Sewer utilities for the proposed project would be provided by the City of Pacifica. The City's wastewater is treated at the Calera Creek Water Recycling Plant (CCWRP), located approximately two miles south of the project site. The plant's average discharge is 1.9 million gallons per day (mgd) to Calera Creek, which flows about one-half mile through constructed wetlands to the Pacific Ocean.[34] The CCWRP was designed to handle an annual average daily wastewater flow of 4.0 mgd, and is anticipated to have enough capacity to accommodate buildout of the General Plan. In addition, residents of the proposed townhouses would be required to pay an annual sewer charge based on water consumption rates for each unit, per Chapter 6 of the City Municipal Code. Such charges would help to ensure that adequate capacity is available to serve the project's demand for services. Sewer collection on the project site would be provided by a new six-inch sewer line connecting to the City's existing eight-inch sanitary sewer line located in Monterey Road.

As noted in Section IX, Hydrology and Water Quality, of this IS/MND, the proposed project would receive water service from the NCCWD. According to the 2015 Urban Water Management Plan (UWMP), the NCCWD is estimated to have sufficient water supplies to serve the City through the year 2036 to accommodate buildout of the General Plan.[35] Given that the proposed project would be consistent with the General Plan land use

[34] Regional Water Quality Control Board San Francisco Bay Region. *City of Pacifica, Calera Creek Water Recycling Plant and Wastewater Collection System, Pacifica, San Mateo County.* Available at: https://www.waterboards.ca.gov/sanfranciscobay/board_info/agendas/2017/April/7_ssr.pdf. April 12, 2017.

[35] North Coast County Water District. *2015 Urban Water Management Plan.* June 15, 2016.

designation, water demand associated with buildout of the project site with a multi-family residential use has been anticipated by the City and accounted for in regional planning efforts, including the 2015 UWMP. Accordingly, the proposed project would not require or result in the construction of new water facilities or the expansion of existing facilities, as sufficient water supplies are available to adequately serve the proposed project. In addition, the project would include an on-site stormwater collection and treatment system connecting to the City's existing 12- and 24-inch storm drains located in Monterey Road.

A new utility trench would be constructed across Monterey Road for connection to electricity, natural gas, and telecommunications utilities located within the immediate project vicinity.

Given that the proposed project is consistent with the site's current General Plan land use and zoning designations, standard utility improvements associated with development of the site have been anticipated by the City, and associated environmental effects have been analyzed in the General Plan EIR. Therefore, the project would result in a ***less-than-significant*** impact related to the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.

d,e. Solid waste collection services for the City are provided by Recology of the Coast, a Division of Recology. Services provided to the City by Recology include curbside pick-up of garbage, recyclables, and green waste. Solid waste is disposed of at the Ox Mountain Landfill. Per CalRecycle, as of 2015, Ox Mountain Landfill had 22,180,000 CY of remaining available capacity, or approximately 36.7 percent of the facility's maximum permitted capacity of 60,500,000 CY. The Landfill is planned for closure in 2034. The proposed project would generate solid waste associated with construction activities and project operations.

The proposed project would include the development of eight townhouses, and would be consistent with the project site's existing General Plan land use designation. As such, the project would generate a minimal amount of solid waste during operation. Construction debris would be disposed of in accordance with applicable federal, State, and local regulations and standards. All material exported during site preparation and grading activities would be off-hauled to Ox Mountain landfill.

Based on the above, the proposed project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs and would comply with federal, state, and local statutes and regulations related to solid waste. Thus, a ***less-than-significant*** impact would occur.

XX. WILDFIRE. *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	✖	☐
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	✖	☐
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	✖	☐
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	✖	☐

Discussion

a-d. According to the California Department of Forestry and Fire Protection (CAL FIRE) Fire and Resource Assessment Program, the project site is not located within or near a Very High Fire Hazard Severity Zone.[36] The project site is located within an urbanized area of the City of Pacifica, is surrounded by existing development, and is not located in or near a State Responsibility Area. While the project site is located among several trees present on the site, some trees and shrubs would be removed entirely, and the remaining would be maintained according to City procedures. In addition, the project is consistent with the site's current General Plan land use and zoning designations; thus, buildout of the site with a residential use and associated wildfire risk has been considered by the City. Thus, the proposed project would not be expected to be subject to or result in substantial adverse effects related to wildfires, and a ***less-than-significant*** impact would occur.

[36] California Department of Forestry and Fire Protection. *San Mateo County, Very High Fire Hazard Severity Zones in LRA*. November 24, 2008.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE.	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	✖	☐	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	✖	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	✖	☐

Discussion

a. As discussed in Section IV, Biological Resources, of this IS/MND, while the potential exists for San Francisco dusky-footed woodrat, Mission blue butterfly, and nesting and migratory birds protected by the MBTA to occur on-site, Mitigation Measures IV-1 through IV-3 would ensure that impacts to special-status species would be less-than-significant. While unlikely, the project could result in the uncovering of previously undiscovered archeological and/or paleontological resources during project construction. However, the proposed project would comply with applicable State and local regulations related to unintentional discovery, as discussed in Section V, Cultural Resources, of this IS/MND. Given compliance with Mitigation Measure V-1 and V-2, impacts to cultural resources would be less-than-significant. Therefore, the proposed project would not result in impacts associated with the following: 1) degrade the quality of the environment; 2) substantially reduce or impact the habitat of fish or wildlife species; 3) cause fish or wildlife populations to drop below self-sustaining levels; 4) threaten to eliminate a plant or animal community; 5) reduce the number or restrict the range of a rare or endangered plant or animal; or 6) eliminate important examples of the major periods of California history or prehistory. While the project could have a *potentially significant* impact related to degradation of the quality of the environment or reduction of a special-status species, implementation of the mitigation discussed throughout this IS/MND would ensure that the project would result in a ***less-than-significant*** impact.

b. The proposed project involves the development of a vacant lot in a developed area of the City of Pacifica. The proposed project would be consistent with the General Plan land use designation and zoning designation for the project site and, as such, the proposed project was included in the cumulative analysis of the City buildout per the City's General Plan. The project would not conflict with long-term environmental goals of the General Plan.

Applicable policies from the General Plan would be implemented as part of the proposed project, as well as the project-specific mitigation measures included in this IS/MND, to ensure any potential impacts of the proposed project would be individually limited and not cumulatively considerable. As demonstrated in this IS/MND, all potential environmental impacts that could occur as a result of project implementation would be reduced to less-than-significant levels with implementation of project-specific mitigation measures and compliance with applicable General Plan policies and the City's Municipal Code. Therefore, the proposed project does not have the potential to achieve short-term, to the disadvantage of long-term, environmental goals. In addition, when viewed in conjunction with other closely related past, present, or reasonably foreseeable future projects, the project would not result in impacts that are individually limited, but cumulatively considerable. As such, a **less than significant** impact would occur.

c. The proposed project could expose humans to hazards relating to water quality during construction and operation. In addition, the project could potentially expose neighboring noise-sensitive receptors to excess noise levels during construction. However, this IS/MND includes mitigation measures that would reduce any potential impacts to less-than-significant levels. Furthermore, the proposed project would be designed in accordance with all applicable building standards and codes to ensure adequate safety is provided for the future residents of the proposed project. Therefore, impacts related to environmental effects that could cause adverse effects on human beings would be ***less than significant***.

Appendix A

Air Quality and Greenhouse Gas Modeling Results

Vista Mar

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	8.00	Dwelling Unit	1.20	14,400.00	23

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	269.5	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - pg&e RPS

Land Use - applicant provided

Construction Phase - applicant provided

Grading - applicant

Woodstoves - applicant provided

Energy Use -

Mobile Land Use Mitigation -

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	11.00
tblConstructionPhase	NumDays	4.00	44.00
tblConstructionPhase	NumDays	10.00	6.00
tblConstructionPhase	NumDays	200.00	305.00
tblConstructionPhase	NumDays	10.00	305.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberWood	3.44	0.00
tblGrading	AcresOfGrading	16.50	0.70
tblGrading	AcresOfGrading	5.50	0.00
tblGrading	MaterialExported	0.00	3,000.00
tblGrading	MaterialExported	0.00	100.00
tblLandUse	LotAcreage	2.60	1.20
tblProjectCharacteristics	CO2IntensityFactor	641.35	269.5
tblTripsAndVMT	HaulingTripNumber	13.00	12.00

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					
2020	0.2400	1.6355	1.2495	2.3400e-003	0.1368	0.0823	0.2191	0.0728	0.0788	0.1516	0.0000	198.8916	198.8916	0.0377	0.0000	199.8349
2021	0.2336	1.2985	1.2626	2.1800e-003	3.2600e-003	0.0663	0.0696	8.8000e-004	0.0643	0.0652	0.0000	180.7420	180.7420	0.0291	0.0000	181.4699
Maximum	**0.2400**	**1.6355**	**1.2626**	**2.3400e-003**	**0.1368**	**0.0823**	**0.2191**	**0.0728**	**0.0788**	**0.1516**	**0.0000**	**198.8916**	**198.8916**	**0.0377**	**0.0000**	**199.8349**

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					
2020	0.2400	1.6355	1.2495	2.3400e-003	0.1368	0.0823	0.2191	0.0728	0.0788	0.1516	0.0000	198.8914	198.8914	0.0377	0.0000	199.8347
2021	0.2336	1.2985	1.2626	2.1800e-003	3.2600e-003	0.0663	0.0696	8.8000e-004	0.0643	0.0652	0.0000	180.7418	180.7418	0.0291	0.0000	181.4697
Maximum	**0.2400**	**1.6355**	**1.2626**	**2.3400e-003**	**0.1368**	**0.0823**	**0.2191**	**0.0728**	**0.0788**	**0.1516**	**0.0000**	**198.8914**	**198.8914**	**0.0377**	**0.0000**	**199.8347**

	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)
1	4-1-2020	6-30-2020	0.5926	0.5926
2	7-1-2020	9-30-2020	0.6349	0.6349
3	10-1-2020	12-31-2020	0.6425	0.6425
4	1-1-2021	3-31-2021	0.5782	0.5782
5	4-1-2021	6-30-2021	0.5845	0.5845
6	7-1-2021	9-30-2021	0.3718	0.3718
		Highest	0.6425	0.6425

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	0.0703	1.2100e-003	0.0783	7.0000e-005		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003	0.4100	0.3467	0.7567	2.0100e-003	0.0000	0.8084
Energy	1.8300e-003	0.0156	6.6400e-003	1.0000e-004		1.2600e-003	1.2600e-003		1.2600e-003	1.2600e-003	0.0000	25.8749	25.8749	1.1900e-003	5.1000e-004	26.0551
Mobile	0.0188	0.0923	0.2105	7.5000e-004	0.0650	6.8000e-004	0.0657	0.0174	6.4000e-004	0.0181	0.0000	68.9952	68.9952	2.5500e-003	0.0000	69.0589
Waste						0.0000	0.0000		0.0000	0.0000	1.9609	0.0000	1.9609	0.1159	0.0000	4.8580
Water						0.0000	0.0000		0.0000	0.0000	0.1654	0.4854	0.6507	0.0170	4.1000e-004	1.1994
Total	**0.0909**	**0.1091**	**0.2954**	**9.2000e-004**	**0.0650**	**5.3500e-003**	**0.0703**	**0.0174**	**5.3100e-003**	**0.0227**	**2.5362**	**95.7022**	**98.2384**	**0.1387**	**9.2000e-004**	**101.9797**

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	0.0703	1.2100e-003	0.0783	7.0000e-005		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003	0.4100	0.3467	0.7567	2.0100e-003	0.0000	0.8084
Energy	1.5700e-003	0.0134	5.7000e-003	9.0000e-005		1.0800e-003	1.0800e-003		1.0800e-003	1.0800e-003	0.0000	15.5227	15.5227	3.0000e-004	2.8000e-004	15.6149
Mobile	0.0183	0.0889	0.1999	7.0000e-004	0.0605	6.4000e-004	0.0611	0.0162	6.0000e-004	0.0168	0.0000	64.5895	64.5895	2.4200e-003	0.0000	64.6501
Waste						0.0000	0.0000		0.0000	0.0000	1.9609	0.0000	1.9609	0.1159	0.0000	4.8580
Water						0.0000	0.0000		0.0000	0.0000	0.1158	0.2976	0.4133	0.0119	2.9000e-004	0.7970
Total	**0.0901**	**0.1036**	**0.2839**	**8.6000e-004**	**0.0605**	**5.1300e-003**	**0.0656**	**0.0162**	**5.0900e-003**	**0.0213**	**2.4866**	**80.7565**	**83.2431**	**0.1325**	**5.7000e-004**	**86.7285**

	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	**0.79**	**5.09**	**3.89**	**6.52**	**6.90**	**4.11**	**6.70**	**6.94**	**4.14**	**6.24**	**1.96**	**15.62**	**15.26**	**4.43**	**38.04**	**14.96**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2020	4/15/2020	5	11	
2	Grading	Grading	4/16/2020	6/16/2020	5	44	
3	Paving	Paving	6/17/2020	6/24/2020	5	6	
4	Building Construction	Building Construction	6/25/2020	8/25/2021	5	305	
5	Architectural Coating	Architectural Coating	7/9/2020	9/8/2021	5	305	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.7

Acres of Paving: 0

Residential Indoor: 29,160; Residential Outdoor: 9,720; 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
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Site Preparation	3	8.00	0.00	12.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	375.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	3.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2020

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					0.0290	0.0000	0.0290	0.0159	0.0000	0.0159	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.9600e-003	0.1009	0.0424	9.0000e-005		4.5200e-003	4.5200e-003		4.1500e-003	4.1500e-003	0.0000	8.3196	8.3196	2.6900e-003	0.0000	8.3869
Total	**8.9600e-003**	**0.1009**	**0.0424**	**9.0000e-005**	**0.0290**	**4.5200e-003**	**0.0335**	**0.0159**	**4.1500e-003**	**0.0201**	**0.0000**	**8.3196**	**8.3196**	**2.6900e-003**	**0.0000**	**8.3869**

3.2 Site Preparation - 2020

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	5.0000e-005	1.7500e-003	3.5000e-004	0.0000	1.0000e-004	1.0000e-005	1.1000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.4598	0.4598	2.0000e-005	0.0000	0.4604
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.0000e-004	1.0800e-003	0.0000	3.5000e-004	0.0000	3.5000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.3046	0.3046	1.0000e-005	0.0000	0.3048
Total	**2.0000e-004**	**1.8500e-003**	**1.4300e-003**	**0.0000**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**1.2000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**0.7644**	**0.7644**	**3.0000e-005**	**0.0000**	**0.7652**

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					0.0290	0.0000	0.0290	0.0159	0.0000	0.0159	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.9600e-003	0.1009	0.0424	9.0000e-005		4.5200e-003	4.5200e-003		4.1500e-003	4.1500e-003	0.0000	8.3196	8.3196	2.6900e-003	0.0000	8.3868
Total	**8.9600e-003**	**0.1009**	**0.0424**	**9.0000e-005**	**0.0290**	**4.5200e-003**	**0.0335**	**0.0159**	**4.1500e-003**	**0.0201**	**0.0000**	**8.3196**	**8.3196**	**2.6900e-003**	**0.0000**	**8.3868**

3.2 Site Preparation - 2020

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	5.0000e-005	1.7500e-003	3.5000e-004	0.0000	1.0000e-004	1.0000e-005	1.1000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.4598	0.4598	2.0000e-005	0.0000	0.4604
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.0000e-004	1.0800e-003	0.0000	3.5000e-004	0.0000	3.5000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.3046	0.3046	1.0000e-005	0.0000	0.3048
Total	**2.0000e-004**	**1.8500e-003**	**1.4300e-003**	**0.0000**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**1.2000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**0.7644**	**0.7644**	**3.0000e-005**	**0.0000**	**0.7652**

3.3 Grading - 2020

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					0.0999	0.0000	0.0999	0.0547	0.0000	0.0547	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0297	0.3319	0.1420	3.1000e-004		0.0151	0.0151		0.0139	0.0139	0.0000	27.2571	27.2571	8.8200e-003	0.0000	27.4775
Total	**0.0297**	**0.3319**	**0.1420**	**3.1000e-004**	**0.0999**	**0.0151**	**0.1150**	**0.0547**	**0.0139**	**0.0685**	**0.0000**	**27.2571**	**27.2571**	**8.8200e-003**	**0.0000**	**27.4775**

3.3 Grading - 2020

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	1.5600e-003	0.0548	0.0110	1.5000e-004	3.1700e-003	1.8000e-004	3.3400e-003	8.7000e-004	1.7000e-004	1.0400e-003	0.0000	14.3695	14.3695	7.4000e-004	0.0000	14.3880
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	4.2000e-004	4.3200e-003	1.0000e-005	1.3900e-003	1.0000e-005	1.4000e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.2184	1.2184	3.0000e-005	0.0000	1.2192
Total	**2.1400e-003**	**0.0552**	**0.0153**	**1.6000e-004**	**4.5600e-003**	**1.9000e-004**	**4.7400e-003**	**1.2400e-003**	**1.8000e-004**	**1.4200e-003**	**0.0000**	**15.5879**	**15.5879**	**7.7000e-004**	**0.0000**	**15.6071**

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					0.0999	0.0000	0.0999	0.0547	0.0000	0.0547	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0297	0.3319	0.1420	3.1000e-004		0.0151	0.0151		0.0139	0.0139	0.0000	27.2571	27.2571	8.8200e-003	0.0000	27.4775
Total	**0.0297**	**0.3319**	**0.1420**	**3.1000e-004**	**0.0999**	**0.0151**	**0.1150**	**0.0547**	**0.0139**	**0.0685**	**0.0000**	**27.2571**	**27.2571**	**8.8200e-003**	**0.0000**	**27.4775**

3.3 Grading - 2020

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	1.5600e-003	0.0548	0.0110	1.5000e-004	3.1700e-003	1.8000e-004	3.3400e-003	8.7000e-004	1.7000e-004	1.0400e-003	0.0000	14.3695	14.3695	7.4000e-004	0.0000	14.3880
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	4.2000e-004	4.3200e-003	1.0000e-005	1.3900e-003	1.0000e-005	1.4000e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.2184	1.2184	3.0000e-005	0.0000	1.2192
Total	**2.1400e-003**	**0.0552**	**0.0153**	**1.6000e-004**	**4.5600e-003**	**1.9000e-004**	**4.7400e-003**	**1.2400e-003**	**1.8000e-004**	**1.4200e-003**	**0.0000**	**15.5879**	**15.5879**	**7.7000e-004**	**0.0000**	**15.6071**

3.4 Paving - 2020

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					
Off-Road	2.5200e-003	0.0254	0.0266	4.0000e-005		1.4100e-003	1.4100e-003		1.3000e-003	1.3000e-003	0.0000	3.5297	3.5297	1.1200e-003	0.0000	3.5577
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.5200e-003**	**0.0254**	**0.0266**	**4.0000e-005**		**1.4100e-003**	**1.4100e-003**		**1.3000e-003**	**1.3000e-003**	**0.0000**	**3.5297**	**3.5297**	**1.1200e-003**	**0.0000**	**3.5577**

3.4 Paving - 2020

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	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	9.0000e-005	9.6000e-004	0.0000	3.1000e-004	0.0000	3.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2700	0.2700	1.0000e-005	0.0000	0.2702
Total	**1.3000e-004**	**9.0000e-005**	**9.6000e-004**	**0.0000**	**3.1000e-004**	**0.0000**	**3.1000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.2700**	**0.2700**	**1.0000e-005**	**0.0000**	**0.2702**

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					
Off-Road	2.5200e-003	0.0254	0.0266	4.0000e-005		1.4100e-003	1.4100e-003		1.3000e-003	1.3000e-003	0.0000	3.5297	3.5297	1.1200e-003	0.0000	3.5577
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.5200e-003**	**0.0254**	**0.0266**	**4.0000e-005**		**1.4100e-003**	**1.4100e-003**		**1.3000e-003**	**1.3000e-003**	**0.0000**	**3.5297**	**3.5297**	**1.1200e-003**	**0.0000**	**3.5577**

3.4 Paving - 2020

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	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	9.0000e-005	9.6000e-004	0.0000	3.1000e-004	0.0000	3.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2700	0.2700	1.0000e-005	0.0000	0.2702
Total	**1.3000e-004**	**9.0000e-005**	**9.6000e-004**	**0.0000**	**3.1000e-004**	**0.0000**	**3.1000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.2700**	**0.2700**	**1.0000e-005**	**0.0000**	**0.2702**

3.5 Building Construction - 2020

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					
Off-Road	0.1381	1.0056	0.8968	1.5000e-003		0.0541	0.0541		0.0523	0.0523	0.0000	123.4487	123.4487	0.0229	0.0000	124.0216
Total	**0.1381**	**1.0056**	**0.8968**	**1.5000e-003**		**0.0541**	**0.0541**		**0.0523**	**0.0523**	**0.0000**	**123.4487**	**123.4487**	**0.0229**	**0.0000**	**124.0216**

3.5 Building Construction - 2020

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6000e-004	7.8500e-003	1.9700e-003	2.0000e-005	4.5000e-004	4.0000e-005	4.8000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.7804	1.7804	9.0000e-005	0.0000	1.7827
Worker	6.8000e-004	4.8000e-004	5.0100e-003	2.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	1.4123	1.4123	3.0000e-005	0.0000	1.4131
Total	**9.4000e-004**	**8.3300e-003**	**6.9800e-003**	**4.0000e-005**	**2.0600e-003**	**5.0000e-005**	**2.1000e-003**	**5.6000e-004**	**5.0000e-005**	**6.1000e-004**	**0.0000**	**3.1926**	**3.1926**	**1.2000e-004**	**0.0000**	**3.1958**

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					
Off-Road	0.1381	1.0056	0.8968	1.5000e-003		0.0541	0.0541		0.0523	0.0523	0.0000	123.4485	123.4485	0.0229	0.0000	124.0214
Total	**0.1381**	**1.0056**	**0.8968**	**1.5000e-003**		**0.0541**	**0.0541**		**0.0523**	**0.0523**	**0.0000**	**123.4485**	**123.4485**	**0.0229**	**0.0000**	**124.0214**

3.5 Building Construction - 2020

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6000e-004	7.8500e-003	1.9700e-003	2.0000e-005	4.5000e-004	4.0000e-005	4.8000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.7804	1.7804	9.0000e-005	0.0000	1.7827
Worker	6.8000e-004	4.8000e-004	5.0100e-003	2.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	1.4123	1.4123	3.0000e-005	0.0000	1.4131
Total	**9.4000e-004**	**8.3300e-003**	**6.9800e-003**	**4.0000e-005**	**2.0600e-003**	**5.0000e-005**	**2.1000e-003**	**5.6000e-004**	**5.0000e-005**	**6.1000e-004**	**0.0000**	**3.1926**	**3.1926**	**1.2000e-004**	**0.0000**	**3.1958**

3.5 Building Construction - 2021

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					
Off-Road	0.1532	1.1523	1.0900	1.8600e-003		0.0578	0.0578		0.0558	0.0558	0.0000	153.4077	153.4077	0.0274	0.0000	154.0924
Total	**0.1532**	**1.1523**	**1.0900**	**1.8600e-003**		**0.0578**	**0.0578**		**0.0558**	**0.0558**	**0.0000**	**153.4077**	**153.4077**	**0.0274**	**0.0000**	**154.0924**

3.5 Building Construction - 2021

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7000e-004	8.8300e-003	2.2000e-003	2.0000e-005	5.5000e-004	2.0000e-005	5.7000e-004	1.6000e-004	2.0000e-005	1.8000e-004	0.0000	2.1915	2.1915	1.1000e-004	0.0000	2.1942
Worker	7.8000e-004	5.4000e-004	5.6900e-003	2.0000e-005	2.0000e-003	1.0000e-005	2.0200e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.6934	1.6934	4.0000e-005	0.0000	1.6943
Total	**1.0500e-003**	**9.3700e-003**	**7.8900e-003**	**4.0000e-005**	**2.5500e-003**	**3.0000e-005**	**2.5900e-003**	**6.9000e-004**	**3.0000e-005**	**7.2000e-004**	**0.0000**	**3.8848**	**3.8848**	**1.5000e-004**	**0.0000**	**3.8885**

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					
Off-Road	0.1532	1.1523	1.0900	1.8600e-003		0.0578	0.0578		0.0558	0.0558	0.0000	153.4076	153.4076	0.0274	0.0000	154.0922
Total	**0.1532**	**1.1523**	**1.0900**	**1.8600e-003**		**0.0578**	**0.0578**		**0.0558**	**0.0558**	**0.0000**	**153.4076**	**153.4076**	**0.0274**	**0.0000**	**154.0922**

3.5 Building Construction - 2021

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7000e-004	8.8300e-003	2.2000e-003	2.0000e-005	5.5000e-004	2.0000e-005	5.7000e-004	1.6000e-004	2.0000e-005	1.8000e-004	0.0000	2.1915	2.1915	1.1000e-004	0.0000	2.1942
Worker	7.8000e-004	5.4000e-004	5.6900e-003	2.0000e-005	2.0000e-003	1.0000e-005	2.0200e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.6934	1.6934	4.0000e-005	0.0000	1.6943
Total	**1.0500e-003**	**9.3700e-003**	**7.8900e-003**	**4.0000e-005**	**2.5500e-003**	**3.0000e-005**	**2.5900e-003**	**6.9000e-004**	**3.0000e-005**	**7.2000e-004**	**0.0000**	**3.8848**	**3.8848**	**1.5000e-004**	**0.0000**	**3.8885**

3.6 Architectural Coating - 2020

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					
Archit. Coating	0.0419					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0153	0.1061	0.1154	1.9000e-004		6.9900e-003	6.9900e-003		6.9900e-003	6.9900e-003	0.0000	16.0855	16.0855	1.2500e-003	0.0000	16.1166
Total	**0.0571**	**0.1061**	**0.1154**	**1.9000e-004**		**6.9900e-003**	**6.9900e-003**		**6.9900e-003**	**6.9900e-003**	**0.0000**	**16.0855**	**16.0855**	**1.2500e-003**	**0.0000**	**16.1166**

3.6 Architectural Coating - 2020

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	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	1.5000e-004	1.5500e-003	0.0000	5.0000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.4000e-004	0.0000	0.4361	0.4361	1.0000e-005	0.0000	0.4364
Total	**2.1000e-004**	**1.5000e-004**	**1.5500e-003**	**0.0000**	**5.0000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4361**	**0.4361**	**1.0000e-005**	**0.0000**	**0.4364**

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					
Archit. Coating	0.0419					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0153	0.1061	0.1154	1.9000e-004		6.9900e-003	6.9900e-003		6.9900e-003	6.9900e-003	0.0000	16.0855	16.0855	1.2500e-003	0.0000	16.1166
Total	**0.0571**	**0.1061**	**0.1154**	**1.9000e-004**		**6.9900e-003**	**6.9900e-003**		**6.9900e-003**	**6.9900e-003**	**0.0000**	**16.0855**	**16.0855**	**1.2500e-003**	**0.0000**	**16.1166**

3.6 Architectural Coating - 2020

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	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	1.5000e-004	1.5500e-003	0.0000	5.0000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.4000e-004	0.0000	0.4361	0.4361	1.0000e-005	0.0000	0.4364
Total	**2.1000e-004**	**1.5000e-004**	**1.5500e-003**	**0.0000**	**5.0000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4361**	**0.4361**	**1.0000e-005**	**0.0000**	**0.4364**

3.6 Architectural Coating - 2021

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					
Archit. Coating	0.0595					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0196	0.1367	0.1627	2.7000e-004		8.4200e-003	8.4200e-003		8.4200e-003	8.4200e-003	0.0000	22.8516	22.8516	1.5700e-003	0.0000	22.8908
Total	**0.0791**	**0.1367**	**0.1627**	**2.7000e-004**		**8.4200e-003**	**8.4200e-003**		**8.4200e-003**	**8.4200e-003**	**0.0000**	**22.8516**	**22.8516**	**1.5700e-003**	**0.0000**	**22.8908**

3.6 Architectural Coating - 2021

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	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	1.9000e-004	2.0100e-003	1.0000e-005	7.1000e-004	0.0000	7.1000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5979	0.5979	1.0000e-005	0.0000	0.5982
Total	**2.7000e-004**	**1.9000e-004**	**2.0100e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.1000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5979**	**0.5979**	**1.0000e-005**	**0.0000**	**0.5982**

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					
Archit. Coating	0.0595					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0196	0.1367	0.1627	2.7000e-004		8.4200e-003	8.4200e-003		8.4200e-003	8.4200e-003	0.0000	22.8516	22.8516	1.5700e-003	0.0000	22.8908
Total	**0.0791**	**0.1367**	**0.1627**	**2.7000e-004**		**8.4200e-003**	**8.4200e-003**		**8.4200e-003**	**8.4200e-003**	**0.0000**	**22.8516**	**22.8516**	**1.5700e-003**	**0.0000**	**22.8908**

3.6 Architectural Coating - 2021

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	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	1.9000e-004	2.0100e-003	1.0000e-005	7.1000e-004	0.0000	7.1000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5979	0.5979	1.0000e-005	0.0000	0.5982
Total	**2.7000e-004**	**1.9000e-004**	**2.0100e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.1000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5979**	**0.5979**	**1.0000e-005**	**0.0000**	**0.5982**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Transit Accessibility

Improve Pedestrian Network

	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	0.0183	0.0889	0.1999	7.0000e-004	0.0605	6.4000e-004	0.0611	0.0162	6.0000e-004	0.0168	0.0000	64.5895	64.5895	2.4200e-003	0.0000	64.6501
Unmitigated	0.0188	0.0923	0.2105	7.5000e-004	0.0650	6.8000e-004	0.0657	0.0174	6.4000e-004	0.0181	0.0000	68.9952	68.9952	2.5500e-003	0.0000	69.0589

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	76.16	79.28	68.96	174,554	162,509
Total	76.16	79.28	68.96	174,554	162,509

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
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Kilowatt Hours of Renewable Electricity Generated

Percent of Electricity Use Generated with Renewable 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	-0.0029	-0.0029	0.0000	0.0000	-0.0030
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7.8064	7.8064	8.4000e-004	1.7000e-004	7.8792
NaturalGas Mitigated	1.5700e-003	0.0134	5.7000e-003	9.0000e-005		1.0800e-003	1.0800e-003		1.0800e-003	1.0800e-003	0.0000	15.5256	15.5256	3.0000e-004	2.8000e-004	15.6179
NaturalGas Unmitigated	1.8300e-003	0.0156	6.6400e-003	1.0000e-004		1.2600e-003	1.2600e-003		1.2600e-003	1.2600e-003	0.0000	18.0685	18.0685	3.5000e-004	3.3000e-004	18.1758

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					
Single Family Housing	338590	1.8300e-003	0.0156	6.6400e-003	1.0000e-004		1.2600e-003	1.2600e-003		1.2600e-003	1.2600e-003	0.0000	18.0685	18.0685	3.5000e-004	3.3000e-004	18.1758
Total		**1.8300e-003**	**0.0156**	**6.6400e-003**	**1.0000e-004**		**1.2600e-003**	**1.2600e-003**		**1.2600e-003**	**1.2600e-003**	**0.0000**	**18.0685**	**18.0685**	**3.5000e-004**	**3.3000e-004**	**18.1758**

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					
Single Family Housing	290940	1.5700e-003	0.0134	5.7000e-003	9.0000e-005		1.0800e-003	1.0800e-003		1.0800e-003	1.0800e-003	0.0000	15.5256	15.5256	3.0000e-004	2.8000e-004	15.6179
Total		**1.5700e-003**	**0.0134**	**5.7000e-003**	**9.0000e-005**		**1.0800e-003**	**1.0800e-003**		**1.0800e-003**	**1.0800e-003**	**0.0000**	**15.5256**	**15.5256**	**3.0000e-004**	**2.8000e-004**	**15.6179**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	63859.9	7.8064	8.4000e-004	1.7000e-004	7.8792
Total		**7.8064**	**8.4000e-004**	**1.7000e-004**	**7.8792**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	-24	-0.0029	0.0000	0.0000	-0.0030
Total		**-0.0029**	**0.0000**	**0.0000**	**-0.0030**

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	0.0703	1.2100e-003	0.0783	7.0000e-005		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003	0.4100	0.3467	0.7567	2.0100e-003	0.0000	0.8084
Unmitigated	0.0703	1.2100e-003	0.0783	7.0000e-005		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003	0.4100	0.3467	0.7567	2.0100e-003	0.0000	0.8084

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	0.0101					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0562					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.0900e-003	5.2000e-004	0.0189	6.0000e-005		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.4100	0.2497	0.6597	1.9200e-003	0.0000	0.7091
Landscaping	1.8000e-003	6.9000e-004	0.0595	0.0000		3.3000e-004	3.3000e-004		3.3000e-004	3.3000e-004	0.0000	0.0970	0.0970	9.0000e-005	0.0000	0.0994
Total	**0.0703**	**1.2100e-003**	**0.0783**	**6.0000e-005**		**3.4100e-003**	**3.4100e-003**		**3.4100e-003**	**3.4100e-003**	**0.4100**	**0.3467**	**0.7567**	**2.0100e-003**	**0.0000**	**0.8084**

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	0.0101					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0562					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.0900e-003	5.2000e-004	0.0189	6.0000e-005		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.4100	0.2497	0.6597	1.9200e-003	0.0000	0.7091
Landscaping	1.8000e-003	6.9000e-004	0.0595	0.0000		3.3000e-004	3.3000e-004		3.3000e-004	3.3000e-004	0.0000	0.0970	0.0970	9.0000e-005	0.0000	0.0994
Total	**0.0703**	**1.2100e-003**	**0.0783**	**6.0000e-005**		**3.4100e-003**	**3.4100e-003**		**3.4100e-003**	**3.4100e-003**	**0.4100**	**0.3467**	**0.7567**	**2.0100e-003**	**0.0000**	**0.8084**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.4133	0.0119	2.9000e-004	0.7970
Unmitigated	0.6507	0.0170	4.1000e-004	1.1994

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0.521232 / 0.328603	0.6507	0.0170	4.1000e-004	1.1994
Total		**0.6507**	**0.0170**	**4.1000e-004**	**1.1994**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0.364863 / 0.131441	0.4133	0.0119	2.9000e-004	0.7970
Total		**0.4133**	**0.0119**	**2.9000e-004**	**0.7970**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.9609	0.1159	0.0000	4.8580
Unmitigated	1.9609	0.1159	0.0000	4.8580

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	9.66	1.9609	0.1159	0.0000	4.8580
Total		**1.9609**	**0.1159**	**0.0000**	**4.8580**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	9.66	1.9609	0.1159	0.0000	4.8580
Total		**1.9609**	**0.1159**	**0.0000**	**4.8580**

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

Vista Mar

Bay Area AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	8.00	Dwelling Unit	1.20	14,400.00	23

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	269.5	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - pg&e RPS

Land Use - applicant provided

Construction Phase - applicant provided

Grading - applicant

Woodstoves - applicant provided

Energy Use -

Mobile Land Use Mitigation -

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	11.00
tblConstructionPhase	NumDays	4.00	44.00
tblConstructionPhase	NumDays	10.00	6.00
tblConstructionPhase	NumDays	200.00	305.00
tblConstructionPhase	NumDays	10.00	305.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberWood	3.44	0.00
tblGrading	AcresOfGrading	16.50	0.70
tblGrading	AcresOfGrading	5.50	0.00
tblGrading	MaterialExported	0.00	3,000.00
tblGrading	MaterialExported	0.00	100.00
tblLandUse	LotAcreage	2.60	1.20
tblProjectCharacteristics	CO2IntensityFactor	641.35	269.5
tblTripsAndVMT	HaulingTripNumber	13.00	12.00

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					
2020	2.9561	18.6874	15.1514	0.0256	5.3551	0.9077	6.1775	2.9193	0.8805	3.6759	0.0000	2,341.2829	2,341.2829	0.5456	0.0000	2,351.1722
2021	2.7130	15.2764	14.8369	0.0256	0.0396	0.7789	0.8185	0.0107	0.7553	0.7660	0.0000	2,340.0122	2,340.0122	0.3787	0.0000	2,349.4800
Maximum	**2.9561**	**18.6874**	**15.1514**	**0.0256**	**5.3551**	**0.9077**	**6.1775**	**2.9193**	**0.8805**	**3.6759**	**0.0000**	**2,341.2829**	**2,341.2829**	**0.5456**	**0.0000**	**2,351.1722**

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					
2020	2.9561	18.6874	15.1514	0.0256	5.3551	0.9077	6.1775	2.9193	0.8805	3.6759	0.0000	2,341.2829	2,341.2829	0.5456	0.0000	2,351.1722
2021	2.7130	15.2764	14.8369	0.0256	0.0396	0.7789	0.8185	0.0107	0.7553	0.7660	0.0000	2,340.0122	2,340.0122	0.3787	0.0000	2,349.4800
Maximum	**2.9561**	**18.6874**	**15.1514**	**0.0256**	**5.3551**	**0.9077**	**6.1775**	**2.9193**	**0.8805**	**3.6759**	**0.0000**	**2,341.2829**	**2,341.2829**	**0.5456**	**0.0000**	**2,351.1722**

	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	0.5845	0.0754	2.4596	6.1000e-003		0.2976	0.2976		0.2976	0.2976	42.9170	50.6002	93.5172	0.2027	9.1000e-004	98.8552
Energy	0.0100	0.0855	0.0364	5.5000e-004		6.9100e-003	6.9100e-003		6.9100e-003	6.9100e-003		109.1346	109.1346	2.0900e-003	2.0000e-003	109.7831
Mobile	0.1073	0.5412	1.2714	4.2900e-003	0.3890	3.9500e-003	0.3930	0.1041	3.7000e-003	0.1078		434.2279	434.2279	0.0166		434.6433
Total	**0.7017**	**0.7021**	**3.7673**	**0.0109**	**0.3890**	**0.3084**	**0.6974**	**0.1041**	**0.3082**	**0.4122**	**42.9170**	**593.9627**	**636.8796**	**0.2214**	**2.9100e-003**	**643.2816**

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	0.5845	0.0754	2.4596	6.1000e-003		0.2976	0.2976		0.2976	0.2976	42.9170	50.6002	93.5172	0.2027	9.1000e-004	98.8552
Energy	8.6000e-003	0.0735	0.0313	4.7000e-004		5.9400e-003	5.9400e-003		5.9400e-003	5.9400e-003		93.7759	93.7759	1.8000e-003	1.7200e-003	94.3331
Mobile	0.1046	0.5211	1.2103	4.0200e-003	0.3622	3.7100e-003	0.3659	0.0969	3.4700e-003	0.1004		406.4044	406.4044	0.0158		406.8004
Total	**0.6976**	**0.6700**	**3.7011**	**0.0106**	**0.3622**	**0.3072**	**0.6694**	**0.0969**	**0.3070**	**0.4039**	**42.9170**	**550.7805**	**593.6974**	**0.2204**	**2.6300e-003**	**599.9886**

	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	**0.58**	**4.58**	**1.76**	**3.20**	**6.90**	**0.39**	**4.02**	**6.90**	**0.39**	**2.03**	**0.00**	**7.27**	**6.78**	**0.48**	**9.62**	**6.73**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2020	4/15/2020	5	11	
2	Grading	Grading	4/16/2020	6/16/2020	5	44	
3	Paving	Paving	6/17/2020	6/24/2020	5	6	
4	Building Construction	Building Construction	6/25/2020	8/25/2021	5	305	
5	Architectural Coating	Architectural Coating	7/9/2020	9/8/2021	5	305	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.7

Acres of Paving: 0

Residential Indoor: 29,160; Residential Outdoor: 9,720; 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
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Site Preparation	3	8.00	0.00	12.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	375.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	3.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2020

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					5.2704	0.0000	5.2704	2.8966	0.0000	2.8966			0.0000			0.0000
Off-Road	1.6299	18.3464	7.7093	0.0172		0.8210	0.8210		0.7553	0.7553		1,667.4119	1,667.4119	0.5393		1,680.8937
Total	**1.6299**	**18.3464**	**7.7093**	**0.0172**	**5.2704**	**0.8210**	**6.0913**	**2.8966**	**0.7553**	**3.6519**		**1,667.4119**	**1,667.4119**	**0.5393**		**1,680.8937**

3.2 Site Preparation - 2020

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	9.2500e-003	0.3202	0.0669	8.5000e-004	0.0191	1.0400e-003	0.0201	5.2200e-003	9.9000e-004	6.2200e-003		91.2538	91.2538	4.8800e-003		91.3758
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0294	0.0208	0.2016	6.1000e-004	0.0657	4.3000e-004	0.0661	0.0174	3.9000e-004	0.0178		60.4852	60.4852	1.4800e-003		60.5222
Total	**0.0387**	**0.3410**	**0.2685**	**1.4600e-003**	**0.0848**	**1.4700e-003**	**0.0862**	**0.0227**	**1.3800e-003**	**0.0240**		**151.7391**	**151.7391**	**6.3600e-003**		**151.8980**

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					5.2704	0.0000	5.2704	2.8966	0.0000	2.8966			0.0000			0.0000
Off-Road	1.6299	18.3464	7.7093	0.0172		0.8210	0.8210		0.7553	0.7553	0.0000	1,667.4119	1,667.4119	0.5393		1,680.8937
Total	**1.6299**	**18.3464**	**7.7093**	**0.0172**	**5.2704**	**0.8210**	**6.0913**	**2.8966**	**0.7553**	**3.6519**	**0.0000**	**1,667.4119**	**1,667.4119**	**0.5393**		**1,680.8937**

3.2 Site Preparation - 2020

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	9.2500e-003	0.3202	0.0669	8.5000e-004	0.0191	1.0400e-003	0.0201	5.2200e-003	9.9000e-004	6.2200e-003		91.2538	91.2538	4.8800e-003		91.3758
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0294	0.0208	0.2016	6.1000e-004	0.0657	4.3000e-004	0.0661	0.0174	3.9000e-004	0.0178		60.4852	60.4852	1.4800e-003		60.5222
Total	**0.0387**	**0.3410**	**0.2685**	**1.4600e-003**	**0.0848**	**1.4700e-003**	**0.0862**	**0.0227**	**1.3800e-003**	**0.0240**		**151.7391**	**151.7391**	**6.3600e-003**		**151.8980**

3.3 Grading - 2020

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					4.5412	0.0000	4.5412	2.4857	0.0000	2.4857			0.0000			0.0000
Off-Road	1.3498	15.0854	6.4543	0.0141		0.6844	0.6844		0.6296	0.6296		1,365.7183	1,365.7183	0.4417		1,376.7609
Total	**1.3498**	**15.0854**	**6.4543**	**0.0141**	**4.5412**	**0.6844**	**5.2255**	**2.4857**	**0.6296**	**3.1153**		**1,365.7183**	**1,365.7183**	**0.4417**		**1,376.7609**

3.3 Grading - 2020

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	0.0723	2.5012	0.5223	6.6700e-003	0.1489	8.1200e-003	0.1570	0.0408	7.7700e-003	0.0486		712.9207	712.9207	0.0381		713.8731
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0294	0.0208	0.2016	6.1000e-004	0.0657	4.3000e-004	0.0661	0.0174	3.9000e-004	0.0178		60.4852	60.4852	1.4800e-003		60.5222
Total	**0.1017**	**2.5220**	**0.7239**	**7.2800e-003**	**0.2146**	**8.5500e-003**	**0.2232**	**0.0582**	**8.1600e-003**	**0.0664**		**773.4059**	**773.4059**	**0.0396**		**774.3953**

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					4.5412	0.0000	4.5412	2.4857	0.0000	2.4857			0.0000			0.0000
Off-Road	1.3498	15.0854	6.4543	0.0141		0.6844	0.6844		0.6296	0.6296	0.0000	1,365.7183	1,365.7183	0.4417		1,376.7609
Total	**1.3498**	**15.0854**	**6.4543**	**0.0141**	**4.5412**	**0.6844**	**5.2255**	**2.4857**	**0.6296**	**3.1153**	**0.0000**	**1,365.7183**	**1,365.7183**	**0.4417**		**1,376.7609**

3.3 Grading - 2020

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	0.0723	2.5012	0.5223	6.6700e-003	0.1489	8.1200e-003	0.1570	0.0408	7.7700e-003	0.0486		712.9207	712.9207	0.0381		713.8731
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0294	0.0208	0.2016	6.1000e-004	0.0657	4.3000e-004	0.0661	0.0174	3.9000e-004	0.0178		60.4852	60.4852	1.4800e-003		60.5222
Total	**0.1017**	**2.5220**	**0.7239**	**7.2800e-003**	**0.2146**	**8.5500e-003**	**0.2232**	**0.0582**	**8.1600e-003**	**0.0664**		**773.4059**	**773.4059**	**0.0396**		**774.3953**

3.4 Paving - 2020

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					
Off-Road	0.8402	8.4514	8.8758	0.0135		0.4695	0.4695		0.4328	0.4328		1,296.9461	1,296.9461	0.4111		1,307.2246
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8402**	**8.4514**	**8.8758**	**0.0135**		**0.4695**	**0.4695**		**0.4328**	**0.4328**		**1,296.9461**	**1,296.9461**	**0.4111**		**1,307.2246**

3.4 Paving - 2020

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	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0478	0.0338	0.3276	9.9000e-004	0.1068	6.9000e-004	0.1075	0.0283	6.4000e-004	0.0290		98.2885	98.2885	2.4000e-003		98.3486
Total	**0.0478**	**0.0338**	**0.3276**	**9.9000e-004**	**0.1068**	**6.9000e-004**	**0.1075**	**0.0283**	**6.4000e-004**	**0.0290**		**98.2885**	**98.2885**	**2.4000e-003**		**98.3486**

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					
Off-Road	0.8402	8.4514	8.8758	0.0135		0.4695	0.4695		0.4328	0.4328	0.0000	1,296.9461	1,296.9461	0.4111		1,307.2246
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8402**	**8.4514**	**8.8758**	**0.0135**		**0.4695**	**0.4695**		**0.4328**	**0.4328**	**0.0000**	**1,296.9461**	**1,296.9461**	**0.4111**		**1,307.2246**

3.4 Paving - 2020

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	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0478	0.0338	0.3276	9.9000e-004	0.1068	6.9000e-004	0.1075	0.0283	6.4000e-004	0.0290		98.2885	98.2885	2.4000e-003		98.3486
Total	**0.0478**	**0.0338**	**0.3276**	**9.9000e-004**	**0.1068**	**6.9000e-004**	**0.1075**	**0.0283**	**6.4000e-004**	**0.0290**		**98.2885**	**98.2885**	**2.4000e-003**		**98.3486**

3.5 Building Construction - 2020

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					
Off-Road	2.0305	14.7882	13.1881	0.0220		0.7960	0.7960		0.7688	0.7688		2,001.1595	2,001.1595	0.3715		2,010.4467
Total	**2.0305**	**14.7882**	**13.1881**	**0.0220**		**0.7960**	**0.7960**		**0.7688**	**0.7688**		**2,001.1595**	**2,001.1595**	**0.3715**		**2,010.4467**

3.5 Building Construction - 2020

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	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.9900e-003	0.1152	0.0311	2.7000e-004	6.7700e-003	5.7000e-004	7.3400e-003	1.9500e-003	5.4000e-004	2.4900e-003		28.4327	28.4327	1.5500e-003		28.4716
Worker	0.0110	7.8000e-003	0.0756	2.3000e-004	0.0246	1.6000e-004	0.0248	6.5400e-003	1.5000e-004	6.6800e-003		22.6820	22.6820	5.5000e-004		22.6958
Total	**0.0150**	**0.1230**	**0.1067**	**5.0000e-004**	**0.0314**	**7.3000e-004**	**0.0321**	**8.4900e-003**	**6.9000e-004**	**9.1700e-003**		**51.1147**	**51.1147**	**2.1000e-003**		**51.1674**

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					
Off-Road	2.0305	14.7882	13.1881	0.0220		0.7960	0.7960		0.7688	0.7688	0.0000	2,001.1595	2,001.1595	0.3715		2,010.4467
Total	**2.0305**	**14.7882**	**13.1881**	**0.0220**		**0.7960**	**0.7960**		**0.7688**	**0.7688**	**0.0000**	**2,001.1595**	**2,001.1595**	**0.3715**		**2,010.4467**

3.5 Building Construction - 2020

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	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.9900e-003	0.1152	0.0311	2.7000e-004	6.7700e-003	5.7000e-004	7.3400e-003	1.9500e-003	5.4000e-004	2.4900e-003		28.4327	28.4327	1.5500e-003		28.4716
Worker	0.0110	7.8000e-003	0.0756	2.3000e-004	0.0246	1.6000e-004	0.0248	6.5400e-003	1.5000e-004	6.6800e-003		22.6820	22.6820	5.5000e-004		22.6958
Total	**0.0150**	**0.1230**	**0.1067**	**5.0000e-004**	**0.0314**	**7.3000e-004**	**0.0321**	**8.4900e-003**	**6.9000e-004**	**9.1700e-003**		**51.1147**	**51.1147**	**2.1000e-003**		**51.1674**

3.5 Building Construction - 2021

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					
Off-Road	1.8125	13.6361	12.8994	0.0221		0.6843	0.6843		0.6608	0.6608		2,001.2200	2,001.2200	0.3573		2,010.1517
Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**		**0.6843**	**0.6843**		**0.6608**	**0.6608**		**2,001.2200**	**2,001.2200**	**0.3573**		**2,010.1517**

3.5 Building Construction - 2021

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	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2900e-003	0.1042	0.0280	2.7000e-004	6.7700e-003	2.3000e-004	7.0000e-003	1.9500e-003	2.2000e-004	2.1700e-003		28.1627	28.1627	1.4700e-003		28.1994
Worker	0.0102	6.9600e-003	0.0689	2.2000e-004	0.0246	1.6000e-004	0.0248	6.5400e-003	1.4000e-004	6.6800e-003		21.8861	21.8861	5.0000e-004		21.8985
Total	**0.0135**	**0.1112**	**0.0970**	**4.9000e-004**	**0.0314**	**3.9000e-004**	**0.0318**	**8.4900e-003**	**3.6000e-004**	**8.8500e-003**		**50.0488**	**50.0488**	**1.9700e-003**		**50.0979**

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					
Off-Road	1.8125	13.6361	12.8994	0.0221		0.6843	0.6843		0.6608	0.6608	0.0000	2,001.2200	2,001.2200	0.3573		2,010.1517
Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**		**0.6843**	**0.6843**		**0.6608**	**0.6608**	**0.0000**	**2,001.2200**	**2,001.2200**	**0.3573**		**2,010.1517**

3.5 Building Construction - 2021

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	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2900e-003	0.1042	0.0280	2.7000e-004	6.7700e-003	2.3000e-004	7.0000e-003	1.9500e-003	2.2000e-004	2.1700e-003		28.1627	28.1627	1.4700e-003		28.1994
Worker	0.0102	6.9600e-003	0.0689	2.2000e-004	0.0246	1.6000e-004	0.0248	6.5400e-003	1.4000e-004	6.6800e-003		21.8861	21.8861	5.0000e-004		21.8985
Total	**0.0135**	**0.1112**	**0.0970**	**4.9000e-004**	**0.0314**	**3.9000e-004**	**0.0318**	**8.4900e-003**	**3.6000e-004**	**8.8500e-003**		**50.0488**	**50.0488**	**1.9700e-003**		**50.0979**

3.6 Architectural Coating - 2020

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					
Archit. Coating	0.6647					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**0.9069**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.6 Architectural Coating - 2020

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	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.6800e-003	2.6000e-003	0.0252	8.0000e-005	8.2100e-003	5.0000e-005	8.2700e-003	2.1800e-003	5.0000e-005	2.2300e-003		7.5607	7.5607	1.8000e-004		7.5653
Total	**3.6800e-003**	**2.6000e-003**	**0.0252**	**8.0000e-005**	**8.2100e-003**	**5.0000e-005**	**8.2700e-003**	**2.1800e-003**	**5.0000e-005**	**2.2300e-003**		**7.5607**	**7.5607**	**1.8000e-004**		**7.5653**

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					
Archit. Coating	0.6647					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**0.9069**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.6 Architectural Coating - 2020

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	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.6800e-003	2.6000e-003	0.0252	8.0000e-005	8.2100e-003	5.0000e-005	8.2700e-003	2.1800e-003	5.0000e-005	2.2300e-003		7.5607	7.5607	1.8000e-004		7.5653
Total	**3.6800e-003**	**2.6000e-003**	**0.0252**	**8.0000e-005**	**8.2100e-003**	**5.0000e-005**	**8.2700e-003**	**2.1800e-003**	**5.0000e-005**	**2.2300e-003**		**7.5607**	**7.5607**	**1.8000e-004**		**7.5653**

3.6 Architectural Coating - 2021

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					
Archit. Coating	0.6647					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**0.8836**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.6 Architectural Coating - 2021

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	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.4100e-003	2.3200e-003	0.0230	7.0000e-005	8.2100e-003	5.0000e-005	8.2700e-003	2.1800e-003	5.0000e-005	2.2300e-003		7.2954	7.2954	1.7000e-004		7.2995
Total	**3.4100e-003**	**2.3200e-003**	**0.0230**	**7.0000e-005**	**8.2100e-003**	**5.0000e-005**	**8.2700e-003**	**2.1800e-003**	**5.0000e-005**	**2.2300e-003**		**7.2954**	**7.2954**	**1.7000e-004**		**7.2995**

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					
Archit. Coating	0.6647					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**0.8836**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.6 Architectural Coating - 2021

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	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.4100e-003	2.3200e-003	0.0230	7.0000e-005	8.2100e-003	5.0000e-005	8.2700e-003	2.1800e-003	5.0000e-005	2.2300e-003		7.2954	7.2954	1.7000e-004		7.2995
Total	**3.4100e-003**	**2.3200e-003**	**0.0230**	**7.0000e-005**	**8.2100e-003**	**5.0000e-005**	**8.2700e-003**	**2.1800e-003**	**5.0000e-005**	**2.2300e-003**		**7.2954**	**7.2954**	**1.7000e-004**		**7.2995**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Transit Accessibility

Improve Pedestrian Network

	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	0.1046	0.5211	1.2103	4.0200e-003	0.3622	3.7100e-003	0.3659	0.0969	3.4700e-003	0.1004		406.4044	406.4044	0.0158		406.8004
Unmitigated	0.1073	0.5412	1.2714	4.2900e-003	0.3890	3.9500e-003	0.3930	0.1041	3.7000e-003	0.1078		434.2279	434.2279	0.0166		434.6433

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	76.16	79.28	68.96	174,554	162,509
Total	76.16	79.28	68.96	174,554	162,509

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
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Kilowatt Hours of Renewable Electricity Generated

Percent of Electricity Use Generated with Renewable 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	8.6000e-003	0.0735	0.0313	4.7000e-004		5.9400e-003	5.9400e-003		5.9400e-003	5.9400e-003		93.7759	93.7759	1.8000e-003	1.7200e-003	94.3331
NaturalGas Unmitigated	0.0100	0.0855	0.0364	5.5000e-004		6.9100e-003	6.9100e-003		6.9100e-003	6.9100e-003		109.1346	109.1346	2.0900e-003	2.0000e-003	109.7831

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					
Single Family Housing	927.644	0.0100	0.0855	0.0364	5.5000e-004		6.9100e-003	6.9100e-003		6.9100e-003	6.9100e-003		109.1346	109.1346	2.0900e-003	2.0000e-003	109.7831
Total		**0.0100**	**0.0855**	**0.0364**	**5.5000e-004**		**6.9100e-003**	**6.9100e-003**		**6.9100e-003**	**6.9100e-003**		**109.1346**	**109.1346**	**2.0900e-003**	**2.0000e-003**	**109.7831**

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					
Single Family Housing	0.797095	8.6000e-003	0.0735	0.0313	4.7000e-004		5.9400e-003	5.9400e-003		5.9400e-003	5.9400e-003		93.7759	93.7759	1.8000e-003	1.7200e-003	94.3331
Total		**8.6000e-003**	**0.0735**	**0.0313**	**4.7000e-004**		**5.9400e-003**	**5.9400e-003**		**5.9400e-003**	**5.9400e-003**		**93.7759**	**93.7759**	**1.8000e-003**	**1.7200e-003**	**94.3331**

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	0.5845	0.0754	2.4596	6.1000e-003		0.2976	0.2976		0.2976	0.2976	42.9170	50.6002	93.5172	0.2027	9.1000e-004	98.8552
Unmitigated	0.5845	0.0754	2.4596	6.1000e-003		0.2976	0.2976		0.2976	0.2976	42.9170	50.6002	93.5172	0.2027	9.1000e-004	98.8552

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	0.0555					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3082					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.2008	0.0678	1.7989	6.0600e-003		0.2939	0.2939		0.2939	0.2939	42.9170	49.4118	92.3287	0.2016	9.1000e-004	97.6381
Landscaping	0.0200	7.6200e-003	0.6607	3.0000e-005		3.6500e-003	3.6500e-003		3.6500e-003	3.6500e-003		1.1884	1.1884	1.1500e-003		1.2171
Total	**0.5845**	**0.0754**	**2.4596**	**6.0900e-003**		**0.2975**	**0.2975**		**0.2975**	**0.2975**	**42.9170**	**50.6002**	**93.5172**	**0.2027**	**9.1000e-004**	**98.8552**

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	0.0555					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3082					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.2008	0.0678	1.7989	6.0600e-003		0.2939	0.2939		0.2939	0.2939	42.9170	49.4118	92.3287	0.2016	9.1000e-004	97.6381
Landscaping	0.0200	7.6200e-003	0.6607	3.0000e-005		3.6500e-003	3.6500e-003		3.6500e-003	3.6500e-003		1.1884	1.1884	1.1500e-003		1.2171
Total	**0.5845**	**0.0754**	**2.4596**	**6.0900e-003**		**0.2975**	**0.2975**		**0.2975**	**0.2975**	**42.9170**	**50.6002**	**93.5172**	**0.2027**	**9.1000e-004**	**98.8552**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

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

Vista Mar

Bay Area AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	8.00	Dwelling Unit	1.20	14,400.00	23

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	269.5	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - pg&e RPS

Land Use - applicant provided

Construction Phase - applicant provided

Grading - applicant

Woodstoves - applicant provided

Energy Use -

Mobile Land Use Mitigation -

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	11.00
tblConstructionPhase	NumDays	4.00	44.00
tblConstructionPhase	NumDays	10.00	6.00
tblConstructionPhase	NumDays	200.00	305.00
tblConstructionPhase	NumDays	10.00	305.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberWood	3.44	0.00
tblGrading	AcresOfGrading	16.50	0.70
tblGrading	AcresOfGrading	5.50	0.00
tblGrading	MaterialExported	0.00	3,000.00
tblGrading	MaterialExported	0.00	100.00
tblLandUse	LotAcreage	2.60	1.20
tblProjectCharacteristics	CO2IntensityFactor	641.35	269.5
tblTripsAndVMT	HaulingTripNumber	13.00	12.00

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					
2020	2.9551	18.6757	15.1540	0.0256	5.3551	0.9077	6.1775	2.9193	0.8805	3.6759	0.0000	2,344.6094	2,344.6094	0.5455	0.0000	2,354.4971
2021	2.7121	15.2738	14.8396	0.0256	0.0396	0.7789	0.8185	0.0107	0.7553	0.7660	0.0000	2,343.2423	2,343.2423	0.3787	0.0000	2,352.7085
Maximum	**2.9551**	**18.6757**	**15.1540**	**0.0256**	**5.3551**	**0.9077**	**6.1775**	**2.9193**	**0.8805**	**3.6759**	**0.0000**	**2,344.6094**	**2,344.6094**	**0.5455**	**0.0000**	**2,354.4971**

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					
2020	2.9551	18.6757	15.1540	0.0256	5.3551	0.9077	6.1775	2.9193	0.8805	3.6759	0.0000	2,344.6094	2,344.6094	0.5455	0.0000	2,354.4971
2021	2.7121	15.2738	14.8396	0.0256	0.0396	0.7789	0.8185	0.0107	0.7553	0.7660	0.0000	2,343.2423	2,343.2423	0.3787	0.0000	2,352.7085
Maximum	**2.9551**	**18.6757**	**15.1540**	**0.0256**	**5.3551**	**0.9077**	**6.1775**	**2.9193**	**0.8805**	**3.6759**	**0.0000**	**2,344.6094**	**2,344.6094**	**0.5455**	**0.0000**	**2,354.4971**

	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	0.5845	0.0754	2.4596	6.1000e-003		0.2976	0.2976		0.2976	0.2976	42.9170	50.6002	93.5172	0.2027	9.1000e-004	98.8552
Energy	0.0100	0.0855	0.0364	5.5000e-004		6.9100e-003	6.9100e-003		6.9100e-003	6.9100e-003		109.1346	109.1346	2.0900e-003	2.0000e-003	109.7831
Mobile	0.1239	0.5161	1.2605	4.5800e-003	0.3890	3.9200e-003	0.3929	0.1041	3.6700e-003	0.1078		463.8067	463.8067	0.0163		464.2133
Total	**0.7184**	**0.6770**	**3.7564**	**0.0112**	**0.3890**	**0.3084**	**0.6974**	**0.1041**	**0.3081**	**0.4122**	**42.9170**	**623.5415**	**666.4585**	**0.2211**	**2.9100e-003**	**672.8516**

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	0.5845	0.0754	2.4596	6.1000e-003		0.2976	0.2976		0.2976	0.2976	42.9170	50.6002	93.5172	0.2027	9.1000e-004	98.8552
Energy	8.6000e-003	0.0735	0.0313	4.7000e-004		5.9400e-003	5.9400e-003		5.9400e-003	5.9400e-003		93.7759	93.7759	1.8000e-003	1.7200e-003	94.3331
Mobile	0.1212	0.4979	1.1918	4.2900e-003	0.3622	3.6800e-003	0.3659	0.0969	3.4500e-003	0.1003		434.1488	434.1488	0.0155		434.5350
Total	**0.7142**	**0.6467**	**3.6826**	**0.0109**	**0.3622**	**0.3072**	**0.6693**	**0.0969**	**0.3069**	**0.4038**	**42.9170**	**578.5248**	**621.4418**	**0.2200**	**2.6300e-003**	**627.7232**

	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	**0.57**	**4.47**	**1.96**	**3.29**	**6.90**	**0.39**	**4.02**	**6.90**	**0.39**	**2.03**	**0.00**	**7.22**	**6.75**	**0.50**	**9.62**	**6.71**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2020	4/15/2020	5	11	
2	Grading	Grading	4/16/2020	6/16/2020	5	44	
3	Paving	Paving	6/17/2020	6/24/2020	5	6	
4	Building Construction	Building Construction	6/25/2020	8/25/2021	5	305	
5	Architectural Coating	Architectural Coating	7/9/2020	9/8/2021	5	305	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.7

Acres of Paving: 0

Residential Indoor: 29,160; Residential Outdoor: 9,720; 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
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Site Preparation	3	8.00	0.00	12.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	375.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	3.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2020

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					5.2704	0.0000	5.2704	2.8966	0.0000	2.8966			0.0000			0.0000
Off-Road	1.6299	18.3464	7.7093	0.0172		0.8210	0.8210		0.7553	0.7553		1,667.4119	1,667.4119	0.5393		1,680.8937
Total	**1.6299**	**18.3464**	**7.7093**	**0.0172**	**5.2704**	**0.8210**	**6.0913**	**2.8966**	**0.7553**	**3.6519**		**1,667.4119**	**1,667.4119**	**0.5393**		**1,680.8937**

3.2 Site Preparation - 2020

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	9.0000e-003	0.3125	0.0621	8.7000e-004	0.0191	1.0200e-003	0.0201	5.2200e-003	9.8000e-004	6.2000e-003		92.8128	92.8128	4.6400e-003		92.9288
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0278	0.0168	0.2146	6.6000e-004	0.0657	4.3000e-004	0.0661	0.0174	3.9000e-004	0.0178		65.6621	65.6621	1.5800e-003		65.7017
Total	**0.0368**	**0.3293**	**0.2767**	**1.5300e-003**	**0.0848**	**1.4500e-003**	**0.0862**	**0.0227**	**1.3700e-003**	**0.0240**		**158.4749**	**158.4749**	**6.2200e-003**		**158.6305**

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					5.2704	0.0000	5.2704	2.8966	0.0000	2.8966			0.0000			0.0000
Off-Road	1.6299	18.3464	7.7093	0.0172		0.8210	0.8210		0.7553	0.7553	0.0000	1,667.4119	1,667.4119	0.5393		1,680.8937
Total	**1.6299**	**18.3464**	**7.7093**	**0.0172**	**5.2704**	**0.8210**	**6.0913**	**2.8966**	**0.7553**	**3.6519**	**0.0000**	**1,667.4119**	**1,667.4119**	**0.5393**		**1,680.8937**

3.2 Site Preparation - 2020

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	9.0000e-003	0.3125	0.0621	8.7000e-004	0.0191	1.0200e-003	0.0201	5.2200e-003	9.8000e-004	6.2000e-003		92.8128	92.8128	4.6400e-003		92.9288
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0278	0.0168	0.2146	6.6000e-004	0.0657	4.3000e-004	0.0661	0.0174	3.9000e-004	0.0178		65.6621	65.6621	1.5800e-003		65.7017
Total	**0.0368**	**0.3293**	**0.2767**	**1.5300e-003**	**0.0848**	**1.4500e-003**	**0.0862**	**0.0227**	**1.3700e-003**	**0.0240**		**158.4749**	**158.4749**	**6.2200e-003**		**158.6305**

3.3 Grading - 2020

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					4.5412	0.0000	4.5412	2.4857	0.0000	2.4857			0.0000			0.0000
Off-Road	1.3498	15.0854	6.4543	0.0141		0.6844	0.6844		0.6296	0.6296		1,365.7183	1,365.7183	0.4417		1,376.7609
Total	**1.3498**	**15.0854**	**6.4543**	**0.0141**	**4.5412**	**0.6844**	**5.2255**	**2.4857**	**0.6296**	**3.1153**		**1,365.7183**	**1,365.7183**	**0.4417**		**1,376.7609**

3.3 Grading - 2020

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	0.0703	2.4413	0.4852	6.7800e-003	0.1489	7.9800e-003	0.1569	0.0408	7.6300e-003	0.0484		725.0996	725.0996	0.0363		726.0065
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0278	0.0168	0.2146	6.6000e-004	0.0657	4.3000e-004	0.0661	0.0174	3.9000e-004	0.0178		65.6621	65.6621	1.5800e-003		65.7017
Total	**0.0981**	**2.4581**	**0.6998**	**7.4400e-003**	**0.2146**	**8.4100e-003**	**0.2230**	**0.0582**	**8.0200e-003**	**0.0663**		**790.7617**	**790.7617**	**0.0379**		**791.7081**

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					4.5412	0.0000	4.5412	2.4857	0.0000	2.4857			0.0000			0.0000
Off-Road	1.3498	15.0854	6.4543	0.0141		0.6844	0.6844		0.6296	0.6296	0.0000	1,365.7183	1,365.7183	0.4417		1,376.7609
Total	**1.3498**	**15.0854**	**6.4543**	**0.0141**	**4.5412**	**0.6844**	**5.2255**	**2.4857**	**0.6296**	**3.1153**	**0.0000**	**1,365.7183**	**1,365.7183**	**0.4417**		**1,376.7609**

3.3 Grading - 2020

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	0.0703	2.4413	0.4852	6.7800e-003	0.1489	7.9800e-003	0.1569	0.0408	7.6300e-003	0.0484		725.0996	725.0996	0.0363		726.0065
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0278	0.0168	0.2146	6.6000e-004	0.0657	4.3000e-004	0.0661	0.0174	3.9000e-004	0.0178		65.6621	65.6621	1.5800e-003		65.7017
Total	**0.0981**	**2.4581**	**0.6998**	**7.4400e-003**	**0.2146**	**8.4100e-003**	**0.2230**	**0.0582**	**8.0200e-003**	**0.0663**		**790.7617**	**790.7617**	**0.0379**		**791.7081**

3.4 Paving - 2020

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					
Off-Road	0.8402	8.4514	8.8758	0.0135		0.4695	0.4695		0.4328	0.4328		1,296.9461	1,296.9461	0.4111		1,307.2246
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8402**	**8.4514**	**8.8758**	**0.0135**		**0.4695**	**0.4695**		**0.4328**	**0.4328**		**1,296.9461**	**1,296.9461**	**0.4111**		**1,307.2246**

3.4 Paving - 2020

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	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0452	0.0274	0.3488	1.0700e-003	0.1068	6.9000e-004	0.1075	0.0283	6.4000e-004	0.0290		106.7010	106.7010	2.5700e-003		106.7652
Total	**0.0452**	**0.0274**	**0.3488**	**1.0700e-003**	**0.1068**	**6.9000e-004**	**0.1075**	**0.0283**	**6.4000e-004**	**0.0290**		**106.7010**	**106.7010**	**2.5700e-003**		**106.7652**

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					
Off-Road	0.8402	8.4514	8.8758	0.0135		0.4695	0.4695		0.4328	0.4328	0.0000	1,296.9461	1,296.9461	0.4111		1,307.2246
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8402**	**8.4514**	**8.8758**	**0.0135**		**0.4695**	**0.4695**		**0.4328**	**0.4328**	**0.0000**	**1,296.9461**	**1,296.9461**	**0.4111**		**1,307.2246**

3.4 Paving - 2020

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	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0452	0.0274	0.3488	1.0700e-003	0.1068	6.9000e-004	0.1075	0.0283	6.4000e-004	0.0290		106.7010	106.7010	2.5700e-003		106.7652
Total	**0.0452**	**0.0274**	**0.3488**	**1.0700e-003**	**0.1068**	**6.9000e-004**	**0.1075**	**0.0283**	**6.4000e-004**	**0.0290**		**106.7010**	**106.7010**	**2.5700e-003**		**106.7652**

3.5 Building Construction - 2020

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					
Off-Road	2.0305	14.7882	13.1881	0.0220		0.7960	0.7960		0.7688	0.7688		2,001.1595	2,001.1595	0.3715		2,010.4467
Total	**2.0305**	**14.7882**	**13.1881**	**0.0220**		**0.7960**	**0.7960**		**0.7688**	**0.7688**		**2,001.1595**	**2,001.1595**	**0.3715**		**2,010.4467**

3.5 Building Construction - 2020

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	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.7900e-003	0.1140	0.0272	2.8000e-004	6.7700e-003	5.6000e-004	7.3300e-003	1.9500e-003	5.3000e-004	2.4800e-003		29.1708	29.1708	1.4400e-003		29.2067
Worker	0.0104	6.3100e-003	0.0805	2.5000e-004	0.0246	1.6000e-004	0.0248	6.5400e-003	1.5000e-004	6.6800e-003		24.6233	24.6233	5.9000e-004		24.6381
Total	**0.0142**	**0.1203**	**0.1077**	**5.3000e-004**	**0.0314**	**7.2000e-004**	**0.0321**	**8.4900e-003**	**6.8000e-004**	**9.1600e-003**		**53.7941**	**53.7941**	**2.0300e-003**		**53.8449**

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					
Off-Road	2.0305	14.7882	13.1881	0.0220		0.7960	0.7960		0.7688	0.7688	0.0000	2,001.1595	2,001.1595	0.3715		2,010.4467
Total	**2.0305**	**14.7882**	**13.1881**	**0.0220**		**0.7960**	**0.7960**		**0.7688**	**0.7688**	**0.0000**	**2,001.1595**	**2,001.1595**	**0.3715**		**2,010.4467**

3.5 Building Construction - 2020

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	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.7900e-003	0.1140	0.0272	2.8000e-004	6.7700e-003	5.6000e-004	7.3300e-003	1.9500e-003	5.3000e-004	2.4800e-003		29.1708	29.1708	1.4400e-003		29.2067
Worker	0.0104	6.3100e-003	0.0805	2.5000e-004	0.0246	1.6000e-004	0.0248	6.5400e-003	1.5000e-004	6.6800e-003		24.6233	24.6233	5.9000e-004		24.6381
Total	**0.0142**	**0.1203**	**0.1077**	**5.3000e-004**	**0.0314**	**7.2000e-004**	**0.0321**	**8.4900e-003**	**6.8000e-004**	**9.1600e-003**		**53.7941**	**53.7941**	**2.0300e-003**		**53.8449**

3.5 Building Construction - 2021

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					
Off-Road	1.8125	13.6361	12.8994	0.0221		0.6843	0.6843		0.6608	0.6608		2,001.2200	2,001.2200	0.3573		2,010.1517
Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**		**0.6843**	**0.6843**		**0.6608**	**0.6608**		**2,001.2200**	**2,001.2200**	**0.3573**		**2,010.1517**

3.5 Building Construction - 2021

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	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.1000e-003	0.1033	0.0244	2.7000e-004	6.7700e-003	2.2000e-004	6.9900e-003	1.9500e-003	2.1000e-004	2.1600e-003		28.8959	28.8959	1.3600e-003		28.9298
Worker	9.6500e-003	5.6400e-003	0.0737	2.4000e-004	0.0246	1.6000e-004	0.0248	6.5400e-003	1.4000e-004	6.6800e-003		23.7588	23.7588	5.3000e-004		23.7721
Total	**0.0128**	**0.1090**	**0.0981**	**5.1000e-004**	**0.0314**	**3.8000e-004**	**0.0318**	**8.4900e-003**	**3.5000e-004**	**8.8400e-003**		**52.6546**	**52.6546**	**1.8900e-003**		**52.7018**

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					
Off-Road	1.8125	13.6361	12.8994	0.0221		0.6843	0.6843		0.6608	0.6608	0.0000	2,001.2200	2,001.2200	0.3573		2,010.1517
Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**		**0.6843**	**0.6843**		**0.6608**	**0.6608**	**0.0000**	**2,001.2200**	**2,001.2200**	**0.3573**		**2,010.1517**

3.5 Building Construction - 2021

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	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.1000e-003	0.1033	0.0244	2.7000e-004	6.7700e-003	2.2000e-004	6.9900e-003	1.9500e-003	2.1000e-004	2.1600e-003		28.8959	28.8959	1.3600e-003		28.9298
Worker	9.6500e-003	5.6400e-003	0.0737	2.4000e-004	0.0246	1.6000e-004	0.0248	6.5400e-003	1.4000e-004	6.6800e-003		23.7588	23.7588	5.3000e-004		23.7721
Total	**0.0128**	**0.1090**	**0.0981**	**5.1000e-004**	**0.0314**	**3.8000e-004**	**0.0318**	**8.4900e-003**	**3.5000e-004**	**8.8400e-003**		**52.6546**	**52.6546**	**1.8900e-003**		**52.7018**

3.6 Architectural Coating - 2020

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					
Archit. Coating	0.6647					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**0.9069**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.6 Architectural Coating - 2020

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	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.4800e-003	2.1000e-003	0.0268	8.0000e-005	8.2100e-003	5.0000e-005	8.2700e-003	2.1800e-003	5.0000e-005	2.2300e-003		8.2078	8.2078	2.0000e-004		8.2127
Total	**3.4800e-003**	**2.1000e-003**	**0.0268**	**8.0000e-005**	**8.2100e-003**	**5.0000e-005**	**8.2700e-003**	**2.1800e-003**	**5.0000e-005**	**2.2300e-003**		**8.2078**	**8.2078**	**2.0000e-004**		**8.2127**

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					
Archit. Coating	0.6647					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**0.9069**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.6 Architectural Coating - 2020

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	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.4800e-003	2.1000e-003	0.0268	8.0000e-005	8.2100e-003	5.0000e-005	8.2700e-003	2.1800e-003	5.0000e-005	2.2300e-003		8.2078	8.2078	2.0000e-004		8.2127
Total	**3.4800e-003**	**2.1000e-003**	**0.0268**	**8.0000e-005**	**8.2100e-003**	**5.0000e-005**	**8.2700e-003**	**2.1800e-003**	**5.0000e-005**	**2.2300e-003**		**8.2078**	**8.2078**	**2.0000e-004**		**8.2127**

3.6 Architectural Coating - 2021

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					
Archit. Coating	0.6647					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**0.8836**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.6 Architectural Coating - 2021

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	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.2200e-003	1.8800e-003	0.0246	8.0000e-005	8.2100e-003	5.0000e-005	8.2700e-003	2.1800e-003	5.0000e-005	2.2300e-003		7.9196	7.9196	1.8000e-004		7.9240
Total	**3.2200e-003**	**1.8800e-003**	**0.0246**	**8.0000e-005**	**8.2100e-003**	**5.0000e-005**	**8.2700e-003**	**2.1800e-003**	**5.0000e-005**	**2.2300e-003**		**7.9196**	**7.9196**	**1.8000e-004**		**7.9240**

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					
Archit. Coating	0.6647					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**0.8836**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.6 Architectural Coating - 2021

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	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.2200e-003	1.8800e-003	0.0246	8.0000e-005	8.2100e-003	5.0000e-005	8.2700e-003	2.1800e-003	5.0000e-005	2.2300e-003		7.9196	7.9196	1.8000e-004		7.9240
Total	**3.2200e-003**	**1.8800e-003**	**0.0246**	**8.0000e-005**	**8.2100e-003**	**5.0000e-005**	**8.2700e-003**	**2.1800e-003**	**5.0000e-005**	**2.2300e-003**		**7.9196**	**7.9196**	**1.8000e-004**		**7.9240**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Transit Accessibility

Improve Pedestrian Network

	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	0.1212	0.4979	1.1918	4.2900e-003	0.3622	3.6800e-003	0.3659	0.0969	3.4500e-003	0.1003		434.1488	434.1488	0.0155		434.5350
Unmitigated	0.1239	0.5161	1.2605	4.5800e-003	0.3890	3.9200e-003	0.3929	0.1041	3.6700e-003	0.1078		463.8067	463.8067	0.0163		464.2133

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	76.16	79.28	68.96	174,554	162,509
Total	76.16	79.28	68.96	174,554	162,509

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
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Kilowatt Hours of Renewable Electricity Generated

Percent of Electricity Use Generated with Renewable 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	8.6000e-003	0.0735	0.0313	4.7000e-004		5.9400e-003	5.9400e-003		5.9400e-003	5.9400e-003		93.7759	93.7759	1.8000e-003	1.7200e-003	94.3331
NaturalGas Unmitigated	0.0100	0.0855	0.0364	5.5000e-004		6.9100e-003	6.9100e-003		6.9100e-003	6.9100e-003		109.1346	109.1346	2.0900e-003	2.0000e-003	109.7831

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					
Single Family Housing	927.644	0.0100	0.0855	0.0364	5.5000e-004		6.9100e-003	6.9100e-003		6.9100e-003	6.9100e-003		109.1346	109.1346	2.0900e-003	2.0000e-003	109.7831
Total		**0.0100**	**0.0855**	**0.0364**	**5.5000e-004**		**6.9100e-003**	**6.9100e-003**		**6.9100e-003**	**6.9100e-003**		**109.1346**	**109.1346**	**2.0900e-003**	**2.0000e-003**	**109.7831**

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					
Single Family Housing	0.797095	8.6000e-003	0.0735	0.0313	4.7000e-004		5.9400e-003	5.9400e-003		5.9400e-003	5.9400e-003		93.7759	93.7759	1.8000e-003	1.7200e-003	94.3331
Total		**8.6000e-003**	**0.0735**	**0.0313**	**4.7000e-004**		**5.9400e-003**	**5.9400e-003**		**5.9400e-003**	**5.9400e-003**		**93.7759**	**93.7759**	**1.8000e-003**	**1.7200e-003**	**94.3331**

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	0.5845	0.0754	2.4596	6.1000e-003		0.2976	0.2976		0.2976	0.2976	42.9170	50.6002	93.5172	0.2027	9.1000e-004	98.8552
Unmitigated	0.5845	0.0754	2.4596	6.1000e-003		0.2976	0.2976		0.2976	0.2976	42.9170	50.6002	93.5172	0.2027	9.1000e-004	98.8552

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	0.0555					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3082					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.2008	0.0678	1.7989	6.0600e-003		0.2939	0.2939		0.2939	0.2939	42.9170	49.4118	92.3287	0.2016	9.1000e-004	97.6381
Landscaping	0.0200	7.6200e-003	0.6607	3.0000e-005		3.6500e-003	3.6500e-003		3.6500e-003	3.6500e-003		1.1884	1.1884	1.1500e-003		1.2171
Total	**0.5845**	**0.0754**	**2.4596**	**6.0900e-003**		**0.2975**	**0.2975**		**0.2975**	**0.2975**	**42.9170**	**50.6002**	**93.5172**	**0.2027**	**9.1000e-004**	**98.8552**

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	0.0555					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3082					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.2008	0.0678	1.7989	6.0600e-003		0.2939	0.2939		0.2939	0.2939	42.9170	49.4118	92.3287	0.2016	9.1000e-004	97.6381
Landscaping	0.0200	7.6200e-003	0.6607	3.0000e-005		3.6500e-003	3.6500e-003		3.6500e-003	3.6500e-003		1.1884	1.1884	1.1500e-003		1.2171
Total	**0.5845**	**0.0754**	**2.4596**	**6.0900e-003**		**0.2975**	**0.2975**		**0.2975**	**0.2975**	**42.9170**	**50.6002**	**93.5172**	**0.2027**	**9.1000e-004**	**98.8552**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

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

Vista Mar

Bay Area AQMD Air District, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	1	No Change	0.00
Cement and Mortar Mixers	Diesel	No Change	0	1	No Change	0.00
Cranes	Diesel	No Change	0	1	No Change	0.00
Forklifts	Diesel	No Change	0	1	No Change	0.00
Generator Sets	Diesel	No Change	0	1	No Change	0.00
Graders	Diesel	No Change	0	2	No Change	0.00
Pavers	Diesel	No Change	0	1	No Change	0.00
Paving Equipment	Diesel	No Change	0	1	No Change	0.00
Rollers	Diesel	No Change	0	1	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	2	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	4	No Change	0.00
Welders	Diesel	No Change	0	3	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	3.48500E-002	2.42730E-001	2.78050E-001	4.50000E-004	1.54100E-002	1.54100E-002	0.00000E+000	3.89371E+001	3.89371E+001	2.81000E-003	0.00000E+000	3.90075E+001
Cement and Mortar Mixers	1.30000E-004	8.30000E-004	6.90000E-004	0.00000E+000	3.00000E-005	3.00000E-005	0.00000E+000	1.03110E-001	1.03110E-001	1.00000E-005	0.00000E+000	1.03380E-001
Cranes	4.92900E-002	5.82290E-001	2.33550E-001	6.60000E-004	2.38100E-002	2.19100E-002	0.00000E+000	5.79767E+001	5.79767E+001	1.87500E-002	0.00000E+000	5.84454E+001
Forklifts	1.55400E-002	1.40900E-001	1.34210E-001	1.70000E-004	1.02300E-002	9.42000E-003	0.00000E+000	1.53596E+001	1.53596E+001	4.97000E-003	0.00000E+000	1.54838E+001
Generator Sets	5.73400E-002	5.04090E-001	5.63340E-001	1.00000E-003	2.75200E-002	2.75200E-002	0.00000E+000	8.61941E+001	8.61941E+001	4.60000E-003	0.00000E+000	8.63092E+001
Graders	1.04700E-002	1.39160E-001	3.99200E-002	1.50000E-004	4.45000E-003	4.09000E-003	0.00000E+000	1.28274E+001	1.28274E+001	4.15000E-003	0.00000E+000	1.29311E+001
Pavers	5.90000E-004	6.32000E-003	6.52000E-003	1.00000E-005	3.10000E-004	2.80000E-004	0.00000E+000	9.29290E-001	9.29290E-001	3.00000E-004	0.00000E+000	9.36800E-001
Paving Equipment	6.20000E-004	6.42000E-003	7.60000E-003	1.00000E-005	3.20000E-004	3.00000E-004	0.00000E+000	1.07373E+000	1.07373E+000	3.50000E-004	0.00000E+000	1.08241E+000
Rollers	5.50000E-004	5.46000E-003	4.97000E-003	1.00000E-005	3.50000E-004	3.20000E-004	0.00000E+000	6.05020E-001	6.05020E-001	2.00000E-004	0.00000E+000	6.09920E-001
Rubber Tired Dozers	2.30100E-002	2.41520E-001	8.80500E-002	1.80000E-004	1.18300E-002	1.08800E-002	0.00000E+000	1.59962E+001	1.59962E+001	5.17000E-003	0.00000E+000	1.61255E+001
Tractors/Loaders/ Backhoes	2.83700E-002	2.85930E-001	3.22770E-001	4.40000E-004	1.75700E-002	1.61600E-002	0.00000E+000	3.87867E+001	3.87867E+001	1.25400E-002	0.00000E+000	3.91004E+001
Welders	1.46510E-001	7.03060E-001	7.96190E-001	1.17000E-003	3.65100E-002	3.65100E-002	0.00000E+000	8.61109E+001	8.61109E+001	1.18900E-002	0.00000E+000	8.64082E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	3.48500E-002	2.42730E-001	2.78050E-001	4.50000E-004	1.54100E-002	1.54100E-002	0.00000E+000	3.89371E+001	3.89371E+001	2.81000E-003	0.00000E+000	3.90074E+001
Cement and Mortar Mixers	1.30000E-004	8.30000E-004	6.90000E-004	0.00000E+000	3.00000E-005	3.00000E-005	0.00000E+000	1.03110E-001	1.03110E-001	1.00000E-005	0.00000E+000	1.03380E-001
Cranes	4.92900E-002	5.82290E-001	2.33550E-001	6.60000E-004	2.38100E-002	2.19100E-002	0.00000E+000	5.79766E+001	5.79766E+001	1.87500E-002	0.00000E+000	5.84454E+001
Forklifts	1.55400E-002	1.40900E-001	1.34210E-001	1.70000E-004	1.02300E-002	9.42000E-003	0.00000E+000	1.53596E+001	1.53596E+001	4.97000E-003	0.00000E+000	1.54837E+001
Generator Sets	5.73400E-002	5.04080E-001	5.63330E-001	1.00000E-003	2.75200E-002	2.75200E-002	0.00000E+000	8.61940E+001	8.61940E+001	4.60000E-003	0.00000E+000	8.63091E+001
Graders	1.04700E-002	1.39160E-001	3.99200E-002	1.50000E-004	4.45000E-003	4.09000E-003	0.00000E+000	1.28274E+001	1.28274E+001	4.15000E-003	0.00000E+000	1.29311E+001
Pavers	5.90000E-004	6.32000E-003	6.52000E-003	1.00000E-005	3.10000E-004	2.80000E-004	0.00000E+000	9.29280E-001	9.29280E-001	3.00000E-004	0.00000E+000	9.36800E-001
Paving Equipment	6.20000E-004	6.42000E-003	7.60000E-003	1.00000E-005	3.20000E-004	3.00000E-004	0.00000E+000	1.07373E+000	1.07373E+000	3.50000E-004	0.00000E+000	1.08241E+000
Rollers	5.50000E-004	5.46000E-003	4.97000E-003	1.00000E-005	3.50000E-004	3.20000E-004	0.00000E+000	6.05020E-001	6.05020E-001	2.00000E-004	0.00000E+000	6.09910E-001
Rubber Tired Dozers	2.30100E-002	2.41520E-001	8.80500E-002	1.80000E-004	1.18300E-002	1.08800E-002	0.00000E+000	1.59961E+001	1.59961E+001	5.17000E-003	0.00000E+000	1.61255E+001
Tractors/Loaders/Backhoes	2.83700E-002	2.85930E-001	3.22770E-001	4.40000E-004	1.75700E-002	1.61600E-002	0.00000E+000	3.87867E+001	3.87867E+001	1.25400E-002	0.00000E+000	3.91003E+001
Welders	1.46510E-001	7.03060E-001	7.96190E-001	1.17000E-003	3.65100E-002	3.65100E-002	0.00000E+000	8.61108E+001	8.61108E+001	1.18900E-002	0.00000E+000	8.64081E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.28412E-006	1.28412E-006	0.00000E+000	0.00000E+000	1.28181E-006
Cement and Mortar Mixers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Cranes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20738E-006	1.20738E-006	0.00000E+000	0.00000E+000	1.19770E-006
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.30212E-006	1.30212E-006	0.00000E+000	0.00000E+000	1.29168E-006
Generator Sets	0.00000E+000	1.98377E-005	1.77513E-005	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.27619E-006	1.27619E-006	0.00000E+000	0.00000E+000	1.15863E-006
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	7.79580E-007	7.79580E-007	0.00000E+000	0.00000E+000	1.54665E-006
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.07609E-005	1.07609E-005	0.00000E+000	0.00000E+000	0.00000E+000
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.63956E-005
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.25030E-006	1.25030E-006	0.00000E+000	0.00000E+000	1.24027E-006
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.28910E-006	1.28910E-006	0.00000E+000	0.00000E+000	1.27876E-006
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.16129E-006	1.16129E-006	0.00000E+000	0.00000E+000	1.15730E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		

No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Grading	Fugitive Dust	0.10	0.05	0.10	0.05	0.00	0.00
Grading	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Fugitive Dust	0.03	0.02	0.03	0.02	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.04	100.04	100.00	100.00	100.04
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	2.45	3.64	5.02	6.67	5.88	6.25	0.00	6.39	6.39	5.10	0.00	6.38
Natural Gas	14.21	14.04	14.16	10.00	14.29	14.29	0.00	14.07	14.07	14.29	15.15	14.07
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	30.00	38.69	36.48	30.05	29.27	33.55
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting: Low Density Suburban

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00	0.00	0.00	
No	Land Use	Increase Diversity	-0.01	0.13		
No	Land Use	Improve Walkability Design	0.00	0.00		
No	Land Use	Improve Destination Accessibility	0.00	0.00		
Yes	Land Use	Increase Transit Accessibility	0.07	0.70		
No	Land Use	Integrate Below Market Rate Housing	0.00	0.00		
	Land Use	Land Use SubTotal	0.05			

Yes	Neighborhood Enhancements	Improve Pedestrian Network	2.00	Project Site and Connecting Off-Site		
No	Neighborhood Enhancements	Provide Traffic Calming Measures	0.00			
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.02			
No	Parking Policy Pricing	Limit Parking Supply	0.00	0.00		
No	Parking Policy Pricing	Unbundle Parking Costs	0.00	0.00		
No	Parking Policy Pricing	On-street Market Pricing	0.00	0.00		
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00	0.00		
No	Transit Improvements	Expand Transit Network	0.00	0.00		
No	Transit Improvements	Increase Transit Frequency	0.00		0.00	
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.07			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"	3.00			
No	Commute	Workplace Parking Charge		0.00		
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program	5.00			
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.07			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	150.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	150.00
No	Use Low VOC Paint (Parking)	150.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Exceed Title 24	15.00	
No	Install High Efficiency Lighting	0.00	
Yes	On-site Renewable	24.00	100.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Apply Water Conservation on Strategy	30.00	60.00
No	Use Reclaimed Water	0.00	0.00
No	Use Grey Water	0.00	
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction	0.00	
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape	0.00	0.00

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

Appendix B

Biological Resources Assessment

Biological Resources Assessment

VISTA MAR DEVELOPMENT
PACIFICA, SAN MATEO COUNTY, CALIFORNIA

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August 2019

WRA Project No:
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ENVIRONMENTAL CONSULTANTS

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LIST OF ABBREVIATIONS AND ACRONYMS

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
CWA	Clean Water Act
ESA	Federal Endangered Species Act
FAC	Facultative
FACW	Facultative Wetland
HCP	Habitat Conservation Plan
LSAA	Lake and Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act of 1918
MSL	Mean Sea Level
OBL	Obligate
OHWM	Ordinary High Water Mark
RWQCB	Regional Water Quality Control Board
USDA	United States Department of Agriculture
USDOI	United States Department of Interior
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WBWG	Western Bat Working Group
WRA Inc.	WRA

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1.0 INTRODUCTION

On July 2 and July 12, 2019, WRA, Inc. (WRA) conducted an assessment of biological resources at the site of the proposed Vista Mar Project (Project), located in Pacifica, San Mateo County, California (Appendix A, Figure 1). The proposed Project would occur on a single 1.3-acre parcel (Assessor Parcel Number [APN] 009-381-010) (Study Area). The Study Area is bordered to the west by Monterey Road and to the south by a residential house. An undeveloped parcel lies to the north of the Study Area. Highway 1 is located approximately 0.5 mile west of the Study Area.

The proposed Project is a residential development and includes the construction of eight townhouse units within a 0.78-acre portion of the parcel (Project Area) that would be situated on a hillside (Appendix D, Project Plans). The Project will require grading a majority of the parcel (Appendix A, Figure 4) in preparation for the construction of driveways, parking areas, and residential structures.

This report describes the results of the site surveys, which assessed the Study 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 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 July 2 and July 12, 2019.

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological assessment including applicable laws and regulations that relate to the field investigations.

2.1 Special-Status Species

Special-status species include plants 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 those that are formal candidates 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 the ESA. Additionally, the California Department of Fish and Wildlife (CDFW) Species of Special Concern, CDFW California Fully Protected species, United States Fish and Wildlife Service (USFWS) Birds of Conservation Concern, and CDFW Special-status Invertebrates are all considered special-status species. Although these aforementioned species 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 “High Priority” or “Medium Priority” species for conservation by the WBWG are typically considered special-status and are 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 federal Migratory Bird Treaty Act of 1918 (MBTA) and the California Fish and Game Code (CFGC) (i.e., Sections 3503,

3503.5, and 3513). Under these laws, deliberately destroying active bird nests, eggs, and/or young is illegal[1].

Plant species on the California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (Inventory) with California Rare Plant Ranks (Rank) 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 1.

Table 1. 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

[1]The U.S. Department of the Interior (USDOI) recently issued guidance clarifying that the MBTA only applies to intentional/deliberate killing, harm or collection of covered species (including active nests) (USDOI 2017). According to the guidance, unintentional impacts to birds/nests that occur within the context of otherwise lawful activities are not MBTA violations. However, ambiguity remains regarding application of the CFGC, as well as the extent to which minimization and avoidance measures are still required under the MBTA. Additionally, challenges to the Opinion are anticipated.

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 Act, the CDFW Streambed Alteration Program, and the 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" 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. 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.

Streams, Lakes, and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFW under Sections 1600-1616 of the CFGC. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. 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 Lake and Streambed Alteration Agreement from CDFW.

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 July 2 and July 12, 2019, the Study Area was traversed on foot to determine (1) plant communities present within the Study Area, (2) if existing conditions provided suitable habitat for any special-status plant or wildlife species, and (3) if sensitive habitats are present. All plant species encountered were recorded, and are listed in Appendix B.

3.1 Biological Communities

Prior to the site visit, the Soil Survey of San Mateo County, California (U.S. Department of Agriculture [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 Study Area. Biological communities present in the Study 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.

3.1.1 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.

3.1.2 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.

Wetlands and Non-wetland Waters

The Study Area was surveyed to determine if any wetlands or non-wetland waters potentially subject to jurisdiction by the Corps, RWQCB, or CDFW were present. The assessment was based primarily on the presence of wetland plant indicators, but may also include 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 U.S. Army Corps of Engineers 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 United States (Natural Resources Conservation Service [NRCS] 2010).

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 a high water mark 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, should impacts to wetland habitats be anticipated for Project implementation.

Other Sensitive Biological Communities

The Study Area was evaluated for the presence of other sensitive biological communities, including riparian areas, sensitive plant communities recognized by the CDFW, and habitats supporting rare, endangered, and unique species, as recognized by the City of

[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).

Pacifica (Local Coastal Land Use Plan [LCP] 1980). If present in the Study Area, these sensitive biological communities were mapped and are described below.

3.2 Special Status Species

3.2.1 Literature Review

Potential occurrence of special-status species in the Study Area was evaluated by first determining which special-status species occur in the vicinity of the Study Area through a literature and database search. Database searches for known occurrences of special-status species focused on the Montara Mountain and San Francisco South 7.5-minute United States Geological Survey (USGS) quadrangles. The following sources were reviewed to determine which special-status plant and wildlife species have been documented to occur in the vicinity of the Study 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)

3.2.2 Site Assessment

A site visit was conducted in the Study Area to search for suitable habitats for special-status species. Habitat conditions observed in the Study 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 Study Area was then evaluated according to the following criteria:

- No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, 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 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 Study 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 Study Area with their habitat requirements, potential for occurrence, and rationale for the classification based on criteria listed above. Recommendations for further surveys for species with a moderate or high potential to occur in the Study Area are provided in Section 5.0 below.

4.0 RESULTS

The 1.3-acre Study Area is positioned on a western facing hillside that is approximately 1 mile east of the Pacific Ocean in the South San Francisco USGS 7.5-minute quadrangle with elevations ranging from 325 to 461 feet above mean sea level (MSL). Large portions of the Study Area have been previously graded and disturbed, which is likely due to the creation of Monterey Road and surrounding residential development. Due to the previous site disturbance, the Study Area is primarily dominated by fragmented Monterey pine forest with a non-native herbaceous understory. A depressional drainage feature consisting mostly of arroyo willow thickets is located in the southern portion of the Study Area, starting along the southern border and extending downhill through the Study Area and into a concrete storm drain, located approximately 60 feet east of Monterey Road.

The Study Area is mapped as two soil mapping units, including Candlestick-Kron-Buriburi complex, 30 to 75 percent slopes, and Orthents, cut and fill, 15 to 75 percent slopes (USDA 1961). The four soil series that comprise the two soil types are discussed in more detail below.

Candlestick-Kron-Buriburi complex, 30 to 75 percent slopes contains three primary components: 40% Candlestick, 25% Kron, and 20% Buriburi. Each is described below.

Candlestick Series: This series consists of moderately deep loam formed in residuum derived from sandstone on uplands. These soils occur at elevations ranging from 75 to 1,350 feet, and have rapid to very rapid runoff, as well as moderately slow permeability.

Kron Series: This series consists of shallow, well-drained soils formed from material weathered from hard sandstone. Typically, Kron soils contain sandy loam or loam, and occur on elevation from 100 to 1500 feet. Kron soils have moderate permeability with medium to very rapid runoff and are usually vegetated by a combination of native and non-native grasses and forbs.

Buriburi Series: This series consists of moderately deep, well-drained soils that formed from material derived from hard sandstone. They typically consist of fine loam or gravelly loam and occur from elevations of 200 to 1350 feet. Burburi soils have rapid to very rapid runoff, moderate permeability, and are typically vegetated by annual grasses and small shrubs.

Orthents, cut and fill, 15 to 75 percent slopes, contain one primary component and are composed of 85% Orthents. The Orthents series is described as follows.

Orthents Series: This series consists of soils that have been cut and filled for urban development. These soils are very shallow and well-drained, and are formed in residuum derived mostly from sandstone. These soils vary greatly in thickness and texture, and occur on moderately steep to very steep slopes.

4.1 Biological Communities

The Study Area is comprised of four biological communities, including non-native annual grassland, Monterey pine forest, arroyo willow thicket, and ephemeral drainage ditch. Table 2 provides biological community acreages in the Study Area. Figure 4 in Appendix A depicts the location and extent of each biological community. A description of the biological communities found in the Study Area is provided below.

Table 2. Biological Communities within the Study Area

Community Type	Area (acres)
Monterey Pine Forest (*Pinus radiata* Forest Alliance)	0.58
Arroyo Willow Thicket *(Salix lasiolepis* Shrubland Alliance)	0.46
Non-native Annual Grassland	0.22
Ephemeral Drainage Ditch	0.04 (173 ln. ft.)
Total Study Area Size	**1.3**

4.1.1 Non-sensitive Biological Communities

Monterey Pine Forest. Rank G1/S1.2 (Not sensitive in the Study Area)

Monterey pine forest naturally occurs on maritime terraces and headlands on well-drained soils in Monterey, Santa Cruz, San Luis Obispo, and San Mateo Counties (Sawyer et. al. 2009). There are only three mainland native stands in California, located at Año Nuevo and on the Monterey Peninsula; however, Monterey pine (*Pinus radiata*) is widely planted throughout California as a wind block (CNPS 2018). Monterey pine is dominant or co-dominant in the tree canopy layer with an open to continuous shrub layer and sparse-to-abundant herbaceous layer (Sawyer et. al. 2009).

Within the Study Area, the Monterey pine forest is dominated by Monterey pine with an understory of non-native grasses and pampas grass (*Cortaderia jubata*). Within central portions of the Study Area, small patches of cotoneaster (*Cotoneaster franchetii*) and coyote bush (*Baccharis pilularis)* are present within the understory. Most of this habitat is analogous to a woodland rather than a dense forest; however, some areas contain more abundant tree cover. In the areas with less dense tree cover, there are myriad common native and non-native herbaceous plants, including ripgut brome (*Bromus diandrus*), slim oat (*Avena barbata*), Italian rye grass (*Festuca perennis*), fennel (*Foeniculum vulgare*), several species of thistle, ribwort (*Plantago lanceolata*), soft chess (*Bromus hordeaceus*) and a few lupine individuals, either multivaried lupine (*Lupinus variicolor*) or silver lupine (*Lupinus albifrons*). The understory species composition is not indicative of this community type, but instead is a result of the grading of the hillside and filling with soil in these sections of the Study Area. Poor soil conditions and extensive grading is

responsible for this invasion by non-natives and for the prevention of native communities from establishing below the Monterey pines.

While Monterey pine forest is ranked as sensitive (G1/S1.2), that ranking is only given to the native stands. The Monterey pine forest in the Study Area is not a native stand and is therefore not considered sensitive by the CDFW. However, several of the Monterey pine trees within the forest are considered Heritage trees by the City of Pacifica Tree Ordinance and would require a permit to be removed. Additionally, replacement planting would be required by the City for the removal of each of the Heritage trees.

Non-native Annual Grassland

Non-native annual grassland occurs across a large range of topographic settings on foothills, disturbed areas, rangelands, and openings in woodlands. Dominant vegetation in these grasslands vary greatly. However, typically there is only little to no cover for emergent trees and shrubs.

Non-native annual grassland exists primarily in the northern portion of the Study Area and interfaces with the northern edge of the Monterey pine forest and arroyo willow thickets. A small area of non-native grassland also exists in the southern corner of the Study Area adjacent to Monterey Road. Dominant species include ripgut brome, soft chess, and slim oat, however, many other native herbs are spread throughout the grassland community. Wildflowers, such as California poppy (*Eschscholzia californica*), and sticky monkeyflower (*Mimulus aurantiacus*), were present in this community.

4.1.2 Potentially Sensitive Biological Communities

Arroyo Willow Thickets. Rank G4/S4

Arroyo willow thickets typically occur on stream banks and benches, slope seeps, and stringers along drainages throughout cismontane California (Sawyer et. al. 2009). Arroyo willow (*Salix lasiolepis*) is dominant or co-dominant in the shrub/tree canopy with a sparse to dense herbaceous layer below.

Within the Study Area, arroyo willow thickets were dominated by arroyo willow with an understory of pampas grass and Himalayan blackberry (*Rubus armeniacus*) and a mixture of other grasses and small shrubs. The arroyo willow thickets community occurs along both sides of the ephemeral drainage ditch and extends out from its banks. Riparian portions of arroyo willow thickets would be subject to CDFW jurisdiction as riparian vegetation.

Ephemeral Drainage Ditch

An ephemeral drainage ditch flows east-to-west in the southeastern portion of the Study Area. The ditch originates outside of the eastern border of the Study Area and flows into a storm drain and surrounding concrete headwall in the southern portion of the Study Area. The area directly upstream of the storm drain has been altered from its natural form and is armored with riprap. The stream has a defined bed and bank. Trace amounts of water were observed in the low-flow channel of the stream at the time of the site visit. The channel of the stream ranges from 2 to 5 feet in width and is mainly unvegetated. The banks of the stream are dominated by arroyo willow, Himalayan blackberry, and pampas grass. Approximately 173 linear feet of the ephemeral drainage ditch occur within the

Study Area. Areas mapped as ephemeral drainage ditch may be considered jurisdictional under Sections 404 and 401 of the CWA, and Section 1602 of the CFGC.

4.2 Special Status Species

4.2.1 Plants

Based on a review of the resources and databases discussed in Section 3.2.1, 93 special-status plant species have been documented in the vicinity of the Study Area (Appendix A, Figure 2). The Study Area has low potential to support any special-status plant species documented in the vicinity. Appendix C summarizes the potential occurrence for each special-status plant species located in the vicinity of the Study Area. No special-status plant species were observed during the site visit and none have potential to occur in the Study Area 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., Study Area is below known elevation range)
- Outside the known distribution of species (e.g., Study Area is too far north)

4.2.2 Wildlife

Based on a review of the resources and databases listed in Section 3.2.1, 43 special-status wildlife species have been documented in the vicinity of the Study Area[2]. The locations of special-status wildlife in the CNDDB within 3 miles of the Study Area are depicted on Figure 3 in Appendix A. Appendix C summarizes the potential for each of these species to occur within the Study Area. Of the 43 special-status species examined, five were considered to have moderate or high potential to occur in the Study Area and are discussed below. The remaining 38 species are considered unlikely, or have no potential, to occur in the Study Area for one or more of the following reasons:

- The Study Area is outside of the known or historical range of the species
- The Study Area lacks suitable aquatic habitat (e.g., rivers, streams, vernal pools)
- The Study Area lacks suitable foraging habitat (e.g., marshes)
- The Study Area lacks suitable nesting structures
- The Study 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 Study Area was determined to have adequate conditions and locality to warrant a moderate or high potential for five special-status species to occur. In addition,

[2] The following species without special status, but tracked in the CNNDB, occur in the vicinity of the Study Area but are not addressed in this report: bumblebee scarab beetle, leech's skyline diving beetle, merlin, North American porcupine, obscure bumblebee, San Francisco bay area leaf-cutter bee, sandy beach tiger beetle, Stage's dufourine bee, Tomales isopod, and western bumblebee.

native nesting birds and roosting bats are protected by the MBTA and CFGC, as discussed below.

Wildlife Species with Moderate or High Potential to Occur in the Study Area

Hoary Bat (*Lasiurus cinereus*), WBWG Medium Priority. Moderate Potential. Hoary bats are highly associated with forested habitats in the western United States, particularly in the Pacific Northwest. They are a solitary species and roost primarily in the foliage of both coniferous and deciduous trees, near the ends of branches, usually at the edge of clearings. Roosts are typically 10 to 30 feet above the ground. They have also been documented roosting in caves, beneath rock ledges, in woodpecker holes, in grey squirrel nests, under driftwood, and clinging to the sides of buildings (though this behavior is not typical). Hoary bats are thought to be highly migratory; however, wintering sites and migratory routes have not been well-documented. This species tolerates a wide range of temperatures and has been captured at temperatures between 0 and 22 degrees Celsius. Hoary bats likely mate in the fall, with delayed implantation leading to birth in May through July. They usually emerge late in the evening to forage, typically from just over one hour after sunset to after midnight. This species reportedly has a strong preference for moths, but is also known to eat beetles, flies, grasshoppers, termites, dragonflies, and wasps (WBWG 2015).

This species was recorded approximately 1.5 miles from the Study Area in 1955 (CDFW 2019). Hoary bats have not recently been recorded in the vicinity of the Study Area. However, the Study Area contains coniferous trees suitable for roosting by this species, therefore it has moderate potential to occur in the Monterey pine forest community.

San Francisco Dusky-footed Woodrat (*Neotoma fuscipes annectens*), CDFW Species of Special Concern. Moderate Potential. The San Francisco dusky-footed woodrat inhabits coastal sage scrub, pinyon-juniper scrub, dense chaparral, oak and riparian woodlands, and mixed conifer forests, where a well-developed understory is present. Little is known of the specific life history traits of the San Francisco subspecies of dusky-footed woodrat, and much of the following applies to this species as a whole. The dusky-footed woodrat feeds on woody plants, especially live oak, maple, and alder, but will also consume fungi, grasses, flowers, and acorns. Foraging occurs on the ground and in bushes and trees. This species constructs stick nests in areas with moderate cover and a well-developed understory containing woody debris. Breeding takes place from December to September, with litter sizes of two to three young. Individuals are mostly nocturnal, and are active year round (CDFG 2005).

Suitable habitat for the San Francisco dusky-footed woodrat is present within the Project Area, including forest habitat with moderate cover. While no woodrat individuals or nest structures were observed during the site visit, this species has moderate potential to occur on-site within the Monterey pine forest and arroyo willow thickets communities due to the presence of nest building materials and location of the Project Area within the known breeding range of this species.

White-tailed Kite (*Elanus leucurus*), CDFW Fully Protected. Moderate Potential. White-tailed kites occur in low-elevation grassland, agricultural areas, wetlands, oak woodland, 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).

Although white-tailed kite was not observed during the site visit, suitable nesting habitat for this species is present within the Study Area. Monterey pines provide suitable nesting substrate and the scrub habitat adjacent to the Study Area provides foraging habitat. This species has a moderate potential to occur within the Study Area, specifically within the arroyo willow thickets and Monterey pine forest communities.

Allen's Hummingbird (*Selasphorus sasin*). USFWS Bird of Conservation Concern. Moderate Potential. Allen's hummingbird is a summer resident along the majority of California's coast and is a year-round resident in portions of coastal Southern California and the Channel Islands. Breeding occurs in association with the coastal fog belt, and typical habitats used include coastal scrub, riparian, woodland and forest edges, and eucalyptus and cypress groves (Mitchell 2000). It feeds on nectar, as well as on insects and spiders.

The Study Area contains Monterey pine forest. The Study Area is within the breeding range of this species and contains its preferred habitat type. Allen's hummingbird has moderate potential to occur within the arroyo willow thickets, and Monterey pine forest communities.

<u>Federal Threatened and Endangered Species Documented in the Vicinity with Unlikely or No Potential to Occur</u>

Marbled Murrelet (*Brachyramphus marmoratus*) Federal Threatened, State Endangered. Unlikely. The marbled murrelet is a small seabird which breeds up to 30 miles inland from the coast on large limbs of coast redwood (*Sequoia sempervirens)* and Douglas-fir (*Pseudotsuga menziesii)* trees. At sea, it feeds on small fish near the shore and travels from nesting sites to feed at the coast at dawn and dusk during the breeding season. Breeding requirements for this species are not well documented in the southern portion of its range; however, it appears that dense humid coastal forests of old growth are necessary for breeding. The breeding range of the marbled murrelet in California is considered to be split with the majority of the population in the extreme northwest (Oregon border south to Eureka) and then a smaller population south of San Francisco (Pillar Point south to Santa Cruz) (Small 1994).

The Study Area does not contain the old growth redwood or Douglas- fir trees associated with nesting by this species and is outside of the recognized breeding range. Marbled murrelet is not known to nest in Monterey pine forests. The Study Area is surrounded by residential development. Additionally, the nearest recorded occurrence is approximately 10 miles south of the Study Area. As such, this species is unlikely to occur in the Study Area.

San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*), Federal Threatened, State Threatened. Unlikely. Historically, San Francisco garter snakes (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 in Santa Cruz County.

The preferred habitat of the SFGS is a densely vegetated pond near an open hillside where they can sun themselves, feed, and find cover in rodent burrows; however, considerably less ideal habitats can be successfully occupied. Temporary ponds and other seasonal freshwater bodies, as well as stream channels, 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 provide escape cover. SFGS also use floating algal or rush mats, if available.

SFGS utilize a variety of habitat for survival, including uplands. There is some evidence that SFGS utilize wetlands primarily for foraging, retreating to coastal scrub areas and other uplands when not engaged in these activities. Further, SFGS has been observed traveling over 0.5 mile in a single trapping season (Hanson and Brode 1993).

Pond habitat that this species forages within is not present in the Study Area. The nearest stream channel is approximately 0.5 miles from the Study Area and is separated by movement barriers, including residential development and roadways. The Study Area provides sub-optimal habitat overall for this species, because of the lack of ponds within 300 feet and the barriers to dispersal from known occurrences. As such, SFGS is unlikely to occur in the Study Area.

California Red-legged Frog (*Rana draytonii*), Federal Threatened, CDFW Species of Concern. Unlikely. The California red-legged frog (CRLF) is dependent on suitable aquatic, aestivation, and upland habitat. During periods of wet weather, starting with the first rainfall in late fall, CRLF disperse away from their aestivation 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. If surface water becomes unavailable, CRLF aestivate (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. Typically, populations of this species cannot be maintained in areas where surface water disappears every year (Jennings and Hayes 1994).

The Study Area contains no suitable aquatic breeding habitat for this species. The nearest known CRLF breeding habitat is located over 0.5 mile away from the Study Area. Use of upland habitat by CRLF is generally confined to within 0.25 mile. Barriers to CRLF movement are present between the Study Area and documented occurrences, including residential development and roadways. The Study Area occurs outside of designated CRLF critical habitat (USFWS 2018). Therefore, this species is unlikely to occur in the Study Area.

Mission Blue Butterfly (*Plebejus icarioides missionensis*), Federal Endangered. Unlikely Potential. The Mission blue butterfly persists in small populations in San Francisco, San Mateo, and Marin Counties. The majority of the remaining mission blues 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 in fact be

wider. Two CNDDB occurrences of Mission blue butterfly are documented within 1 mile of the Study Area (CDFW 2019). A well-studied population has been observed on Milagra Ridge, approximately 0.5 mile south of the Study 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).

A few lupine individuals (less than 5), either manycolored lupine (*L. variicolor*) or silver lupine (*Lupinus albifrons*), were observed within a small clearing of the Monterey pine forest within 50 feet uphill of Monterey Road. Although these species are host plants for Mission blue butterfly, there are less than five plants, all surrounded by Monterey pines and located just off the road in the western portion of the Study Area. No host plants were present in the grasslands that my provide connectivity to the observed plants. In addition, no nectar plants were observed within the Study Area. Monterey pine forest is not the preferred habitat for this species, as the species is mainly found on ridgetop grasslands.

There are roads, including Manor Drive and 0.25 mile of residential development, separating the Study Area from known CNDDB occurrences. Although it is unlikely that the existing development alone would provide a barrier to prevent dispersal from known occurrences into the Study Area, this development in concert with the Monterey pine forest habitat which surrounds the larval host plants reduces the likelihood of occurrence of Mission blue butterfly.

Due to the presence of isolated nature of Mission blue butterfly larval host plants, as well as the reduced potential for dispersal from known nearby suitable, this species has an unlikely potential to occur within the Study Area. Although it is unlikely for Mission blue butterfly to utilize the site at a population level, it is possible for individuals to wander into the Study Area. Additionally, if the habitat changes such that increased density of larval host plants or presence of nectar plants become established within the Study Area prior to construction, the potential for occurrence could increase.

San Bruno Elfin Butterfly (*Callophrys mossii bayensis*), Federal Endangered. Unlikely. 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 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).

The Study Area is dominated by a non-native stand of Monterey pine which is not the preferred habitat for this species. The larval host plant of the San Bruno elfin butterfly, broadleaf stonecrop, and the rock outcrop habitat that this species usually inhabits were not detected during the site visit. Due to these factors, the San Bruno elfin butterfly is unlikely to occur within the Study Area.

Callippe Silverspot Butterfly *(Speyeria callippe callippe*), Federal Endangered. Unlikely. The callippe silverspot was historically found around the eastern, southern, and

western sides of San Francisco Bay, but is now limited to just seven sites. The callippe silverspot 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, or heavy recreational use (Black and Vaughan 2005d).

The host plant of the callippe silverspot butterfly, Johnny jump-up, was not detected during the site visit. Populations of this species on the San Francisco Peninsula have only been documented on San Bruno Mountain, which is approximately 3 miles east of the Study Area. Callippe silverspot butterfly is unlikely to occur within the Study Area.

Myrtle's Silverspot Butterfly (*Speyeria zerene myrtleae*), Federal Endangered. 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. The populations south of the Golden Gate bridge apparently have 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 host plant of the Myrtle's silverspot butterfly, hookedspur violet, was not detected during the site visit. Additionally this species is believed to have been extirpated from the San Francisco Peninsula and is now known to be present in coastal Marin and Sonoma Counties. Since this species' host plant is not present and the Study Area lies outside of the known range, Myrtle's silverspot butterfly has no potential to occur.

Bay Checkerpsot Butterfly (*Euphydryas editha bayensis*), Federal Threatened. No Potential. Historically, the Bay checkerspot butterfly was widely distributed to the east, west, and south of 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* spp. *exerta*), which remains available later in the season (Black and Vaughan 2005c).

The Study 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. Bay checkerspot butterfly has no potential to occur within the Study Area.

4.2.3 Critical Habitat

The Study Area is not located within any units of designated critical habitat (USFWS 2019).

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 Study 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 4. 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 3 lists permanent and temporary impacts proposed by the Project within each biotic habitat type.

Table 3. Project Impacts within Each Biotic Habitat Type

Biotic Habitat	Permanent (ac)	Temporary (ac)
Monterey Pine Forest	0.46	0.00
Non-native Annual Grassland	0.04	0.00
Arroyo Willow Thickets	0.26	0.00
Ephemeral Drainage Ditch	0.02 (96 In feet)	0.00
Total	**0.78**	**0.00**

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 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 Study Area.

Impact BIO-1a: Impacts on Federally- and State-Listed Special-Status Plants and CRPR 1 or 2 Plants

The Project Area has no potential to support special-status plant species due to the absence of suitable habitat and presence of aggressive, non-native plant species. The proposed Project is not expected to impact any special-status plant species.

Level of Significance: Less Than Significant

Impact BIO-1b: Impacts on Mission Blue Butterfly (Federally Endangered)

The Project does not currently have potential to indirectly and directly impact mission blue butterfly through direct take or the destruction of larval host plants. Although a few larval host plants are isolated within the Monterey pine forest, Mission blue butterfly are not unlikely to utilize these plants.

Two CNDDB occurrences of mission blue butterfly are documented within 1 mile of the Study Area (CDFW 2019). A population has been observed on Milagra Ridge, approximately 0.5 mile south of the Study Area. However, roads, including Manor Drive,

and 0.25 mile of residential development, separate known occurrences from the Study Area. The combination of existing development and Monterey pine forest likely provides a large enough barrier to prevent dispersal from known occurrences.

Although currently, mission blue butterfly has an unlikely potential to be present, that potential may be increased substantially if either nectar or larval host plants become present in the non-native grasslands or if numbers and densities of the lupine increases substantially in the Monterey pine forest. If these changes become evident, Project activities may have the potential to impact larval host plants of this species, and may result in a significant impact to mission blue butterfly. Impacts to mission blue butterfly or active habitat would be considered significant under CEQA.

Level of Significance: Potentially Significant

Mitigation Measure 1. Conduct Pre-Construction Mission Blue Butterfly Habitat Assessment

Prior to Project activities, the Project Area will be surveyed for larval host plants (silver lupine, summer lupine, and manycolored lupine) by a qualified biologist to determine the number and location of host plants present. The goal of this assessment would be to determine if suitable habitat for Mission blue butterfly is present within areas that will be impacted by the Project prior to construction. If mission blue butterfly or its larval host plants are not present in suitable densities within the work area, no significant impacts will occur as a result of Project activities and no further measures will be necessary. If a suitable number of host plants are present within the work area or adult/larval mission blue butterfly are identified and would be impacted, protocol level surveys may be required to determine presence/absence of this species in the Project Area.

Mitigation Measure 2. Protocol-level Pre-construction Surveys for Mission Blue Butterfly Host Plant and Larvae

If suitable habitat for Mission blue butterfly is identified during the habitat assessment, informal or formal consultation with the USFWS shall be required to develop avoidance and minimization measures specific to mission blue butterfly which would reduce impacts to this species to a less than significant level. Mitigation and minimization measures may include protocol level surveys for mission blue butterfly conducted by a qualified biologist to determine presence/absence of the species on the Project Area. Other examples of potential avoidance and minimization measures and mitigation measures that may be required could include the implementation of a 50-foot no-disturbance buffer around larval host plants during the adult flight period, translocation of host plants outside of the adult flight period (e.g., late March to early July) into portions of the Project Area that will not be impacted, managing the remaining portions of the Project Area for Mission blue butterfly, removal of encroaching trees and invasive species, or planting of larval host species outside of the Project Area.

Level of Significance After Mitigation: Less Than Significant

Impact BIO-1c: Impacts on San Francisco Dusky-Footed Woodrat (Species of Special Concern)

Suitable habitat for the San Francisco dusky-footed woodrat is present within the Project Area, including forest habitat with moderate cover, and the species is known to occur in the region. While no woodrat individuals or nest structures were observed during the site

visit, this species has moderate potential to occur within the Monterey pine forest and arroyo willow thickets communities in the Project Area. Project activities could result in the disturbance of any woodrat nests that may form in the interim period prior to ground disturbance. Should woodrat nests be constructed prior to ground disturbance, the following mitigation measure will reduce any potential impacts to less than significant.

Level of Significance: Potentially Significant

Mitigation Measure 3. Conduct Pre-Construction Surveys and Management for San Francisco Dusky-Footed Woodrat Nests

Prior to initial ground disturbance or vegetation removal, pre-construction surveys for woodrat stick nests will occur in all suitable habitat types within the Project Area by a qualified biologist. Nest structures will be avoided by Project activity.

If nest avoidance is infeasible, the nest structure will be dismantled by a qualified biologist. Nest material will be moved to suitable adjacent areas (e.g., woodland, scrub, or chaparral) that will not be disturbed. If young are encountered during the dismantling process, the material will be placed back on the nest and remain undisturbed for a minimum of two (2) weeks to give the young enough time to mature and leave on their own accord. After the young have left the nest, the nest dismantling process will begin again.

Level of Significance After Mitigation: Less Than Significant

Impact BIO-1d: Impacts on Special-status and Non-special-status Native Nesting Birds

The Project has the potential to impact special-status and non-special-status native nesting birds protected by the MBTA and/or CFGC, including white-tailed kite and Allen's hummingbird. Project activities, such as vegetation removal and ground disturbance associated with development, 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. Impacts to nesting birds would be considered significant under CEQA.

Level of Significance: Potentially Significant

Mitigation Measure 4. Avoid the Nesting Season or Conduct Pre-Construction Nesting Bird Surveys

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 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, 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

Impact BIO-1f: Impacts on Hoary Bat (WBWG Medium Priority)

This species was recorded approximately 1.5 miles from the Study Area in 1955 (CDFW 2019). However, recent occurrences have not been documented in the vicinity, indicating the species may not currently be present in the area. The Project Area contains coniferous trees that may be suitable for roosting by this species, therefore this species has moderate potential to occur in the Monterey pine forest community. However, roost sites are typically located in larger stands of densely forested areas. The Project Area most likely provides suitable migration habitat for this species, while not providing significant value as a roost site. Therefore, Project activities will have a less than significant impact on hoary bat roosting.

Level of Significance: Less Than Significant

5.2 Impact BIO-2: Sensitive Communities

Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW and USFWS.

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 on 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.

Impact BIO-2a: Impacts on Arroyo Willow Thickets Habitat

The Project proposes to permanently impact approximately 0.26 acre of arroyo willow thickets. Portions of the Arroyo willow thickets habitat that qualify as riparian are considered a sensitive community and are within the jurisdiction of the CDFW. Impacts

to this sensitive community require a Lake and Streambed Alteration Agreement (LSAA) from the CDFW.

Level of Significance: Potentially Significant

Mitigation Measure 5. Issuance of Lake and Streambed Alteration Agreement

A Notification of Lake or Streambed Alteration form shall be prepared and submitted to CDFW. Mitigation for impacts to arroyo willow thickets that qualify as riparian (i.e., jurisdiction of the CDFW) will be determined in the LSAA.

Level of Significance After Mitigation: Less Than Significant

5.3 Impact BIO-3: Jurisdictional Waters

Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means

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.

Impact BIO-3a: Impacts on Ephemeral Drainage Ditch

The Project proposes to permanently impact 0.02 acre (96 linear feet) of the on-site ephemeral drainage ditch. The ephemeral drainage ditch would likely be considered Waters of the U.S. and Waters of the State, and as such, would be within jurisdiction of the Corps, the RWQCB, and the CDFW.

Level of Significance: Potentially Significant

Mitigation Measure 6. Conduct a Formal Wetland Delineation (and Potentially Obtain State and Federal Permits from the Corps, RWQCB, and CDFW)

A formal wetland delineation should be conducted by a qualified biologist to determine the extent and jurisdictional status of aquatic features within the Project Area. If the ephemeral drainage ditch is determined to be jurisdictional Waters of the U.S. and State, and impacts to this feature cannot be avoided, a permit from the Corps, a Water Quality Certification (or Waste Discharge Release if no Corps permit is required) from the RWQCB, and a LSAA from the CDFW will be obtained. All avoidance and minimization measures, as well as mitigation measures, set forth in the permits issued by the Corps, the RWQCB, and the CDFW will be adhered to.

Level of Significance After Mitigation: Less Than Significant

5.4 Impact BIO-4: Wildlife Movement

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.

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 Area is not considered a wildlife corridor, though local wildlife may move through it. The surrounding area is largely fragmented due to the presence of extensive existing residential development, which includes roads. The location of the Project Area adjacent to developed areas and at the edge of open space further indicates that other movement corridors will remain present after completion of the Project.

Level of Significance: Less Than Significant

5.5 Impact BIO-5: Impacts due to Conflicts with Local Policies

Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

The Project Area contains heritage trees, as defined by the City of Pacifica's Tree Ordinance. The Project proposes the removal of at least one heritage tree.

Level of Significance: Potentially Significant

Mitigation Measure 7. Conduct Arborist Survey and Obtain Tree Removal Permit

A tree survey of the Project Area will be conducted by a certified arborist to determine the number of trees that will require a tree removal permit from the City of Pacifica. Heritage trees removed should be replaced in like kind and size or equivalent substitution as approved by the Planning Commission as part of the permitting process. Additionally, if more than 20 trees (greater than 6 inches in diameter as measured 12 inches from the ground) are removed from the Project Area, the Project will be considered a logging operation by the City of Pacifica and will require compliance with conditions discussed in Section 2.3 of this report.

Level of Significance After Mitigation: Less Than Significant

5.6 Impact due to 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 will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Level of Significance: No Impact

5.7 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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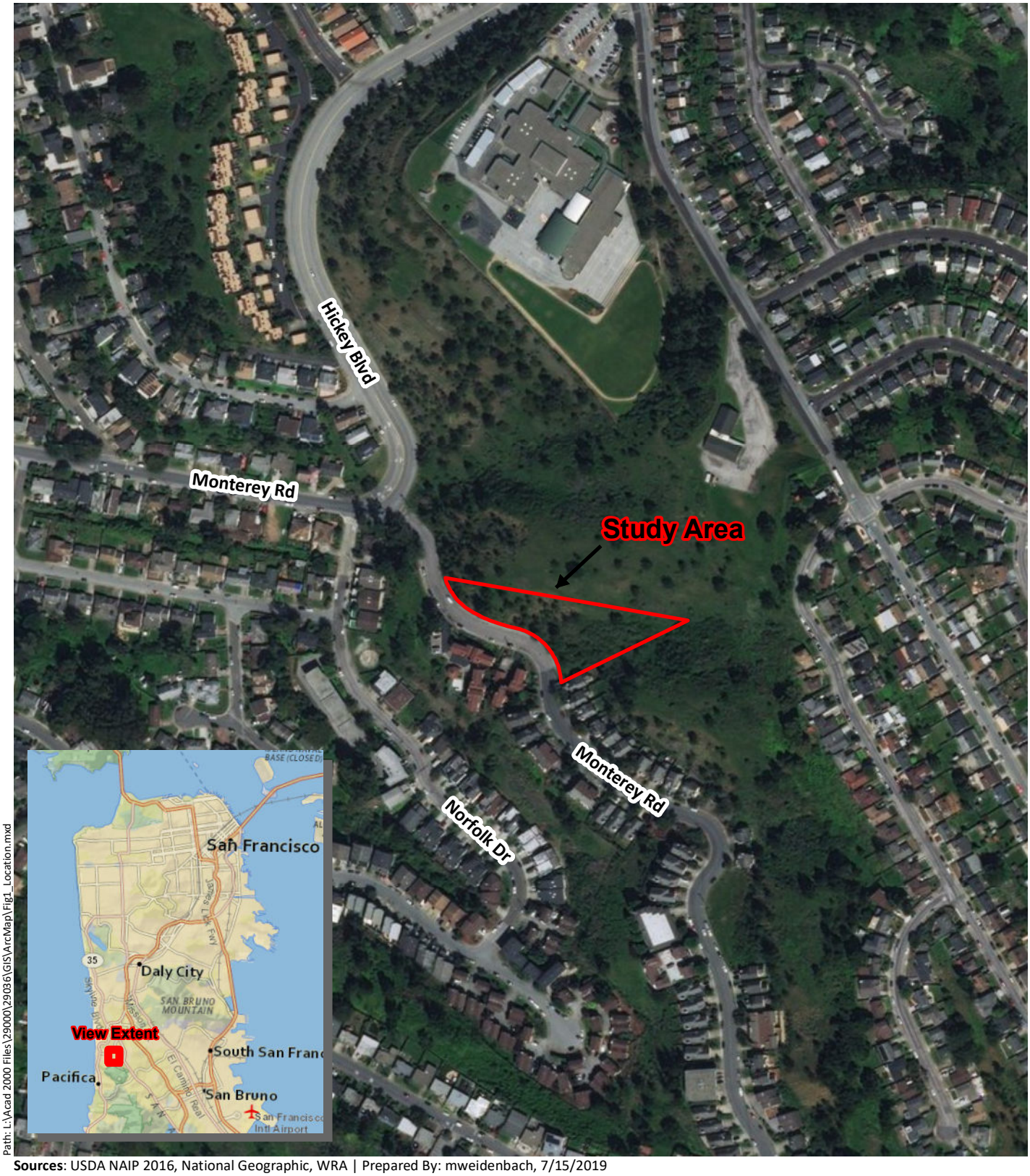

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Sources: USDA NAIP 2016, National Geographic, WRA | Prepared By: mweidenbach, 7/15/2019

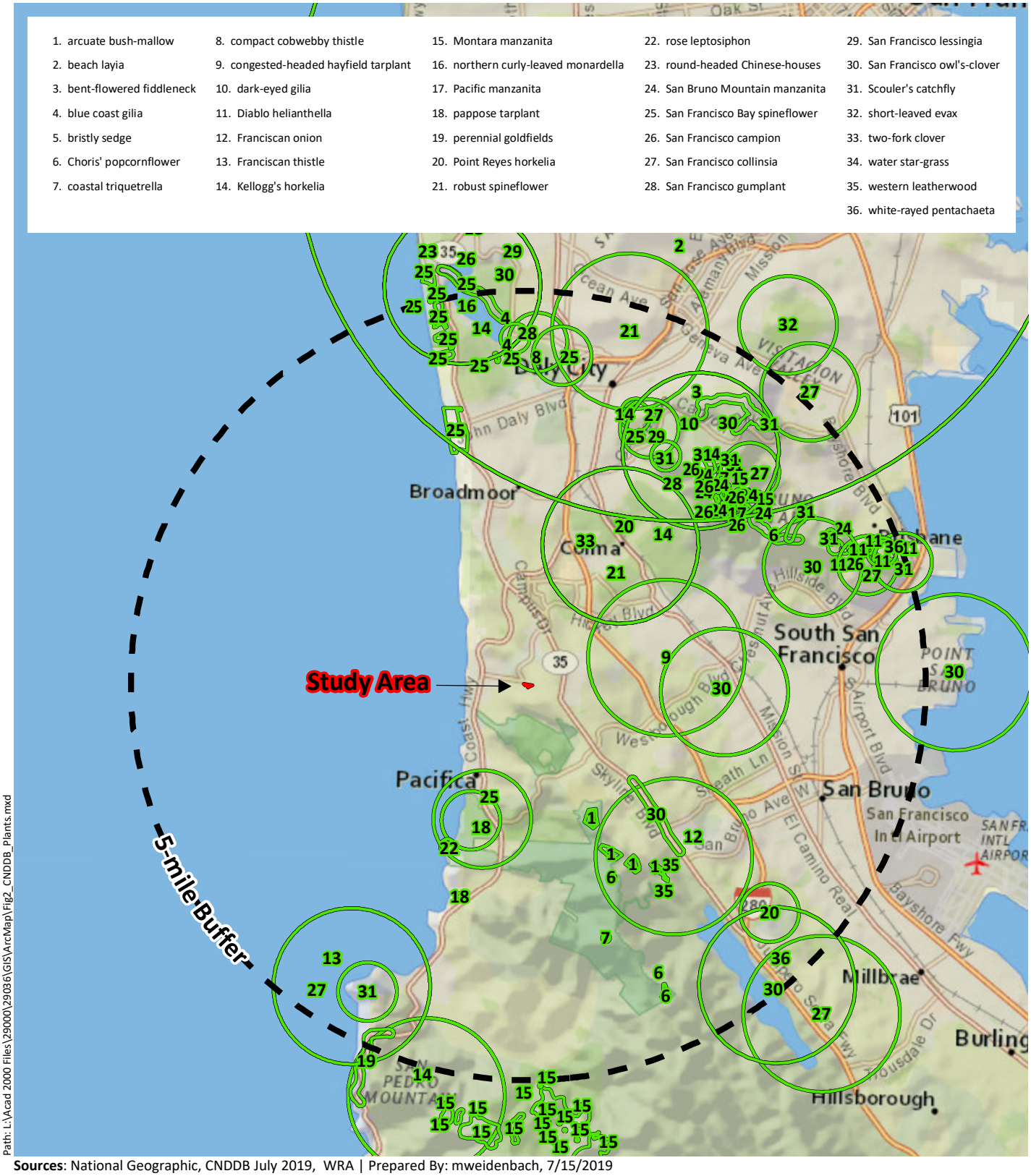
Figure 1. Regional Location Map

Vista Mar Development
Pacifica, San Mateo County, California

0 250 500 Feet

N

wra
ENVIRONMENTAL CONSULTANTS



Sources: National Geographic, CNDDB July 2019, WRA | Prepared By: mweidenbach, 7/15/2019

Figure 2. Special-Status Plant Species Documented within 5 miles of the Study Area

Vista Mar Development
Pacifica, San Mateo County, California

0 1 2 Miles N

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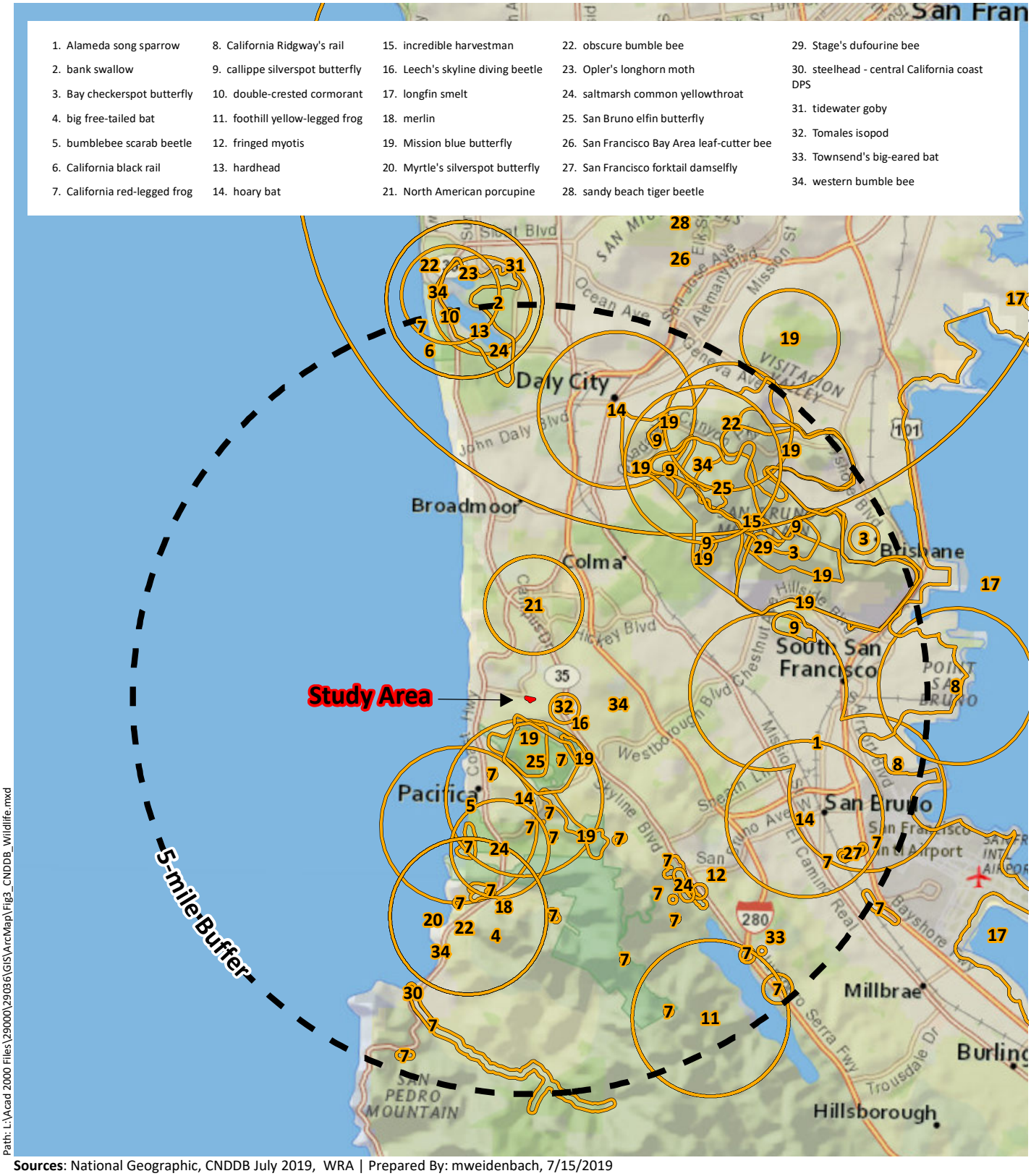

Sources: National Geographic, CNDDB July 2019, WRA | Prepared By: mweidenbach, 7/15/2019

Figure 3. Special-Status Wildlife Species Documented within 5 miles of the Study Area

Vista Mar Development
Pacifica, San Mateo County, California

0 1 2 Miles N

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Figure 4.
Biological Communities

Vista Mar Development
Pacifica, San Mateo County, California

Study Area (1.3 ac.)

Project Area (0.78 ac.)

Top of Bank / Ordinary High Water Mark

Non-sensitive Communities

Monterey Pine Forest (0.58 ac.)

Non-native Annual Grassland (0.22 ac.)

Potentially Sensitive Communities

Arroyo Willow Thickets (0.46 ac.)

Ephemeral Drainage Ditch (0.04 ac.,172.77 lin. ft.)

Impacts

Impacts to Arroyo Willow Thickets (0.26 ac.)

Impacts to Ephemeral Drainage Ditch (0.02 ac., 96.19 lin. ft.)

Impacts to Monterey Pine Forest (0.46 ac.)

Impacts to Non-native Annual Grassland (0.04 ac.)

N

0 50 100

Feet

Monterey Rd

Path: L:\Acad 2000 Files\29000\29036\GIS\ArcMap\Fig4_Biocomms.mxd

Sources: Esri World Imagery, WRA | Prepared By: smortensen, 7/26/2019

wra
ENVIRONMENTAL CONSULTANTS

APPENDIX B

LIST OF OBSERVED PLANT SPECIES

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Appendix B. Observed Plant Species List

Scientific Name	Common Name	Origin	Form	CAL-IPC Status
Albizia lophantha	Plume acacia	non-native	tree	-
Artemisia californica	Coastal sage brush	native	shrub	-
Avena barbata	Slim oat	non-native (invasive)	annual, perennial grass	Moderate
Baccharis pilularis	Coyote brush	native	shrub	-
Briza maxima	Big quaking grass	non-native (invasive)	annual grass	Limited
Brassica rapa	Common mustard	non-native (invasive)	annual herb	Limited
Bromus diandrus	Ripgut brome	non-native (invasive)	annual grass	Moderate
Bromus hordeaceus	Soft chess	non-native	annual grass	-
Calystegia purpurata	Pacific false bindweed	native	perennial herb	-
Carduus pycnocephalus ssp. pycnocephalus	Italian thistle	non-native (invasive)	annual herb	Moderate
Chlorogalum pomeridianum var. pomeridianum	Common soaproot	native	perennial herb	-
Cirsium vulgare	Bullthistle	non-native (invasive)	perennial herb	Moderate
Conium maculatum	Poison hemlock	non-native (invasive)	perennial herb	Moderate
Convolvulus arvensis	Field bindweed	non-native	perennial herb, vine	-
Cortaderia jubata	Andean pampas grass	non-native (invasive)	perennial grass	High
Cotoneaster franchetii	Cotoneaster	non-native (invasive)	shrub	Moderate
Delairea odorata	Cape ivy	non-native (invasive)	perennial herb	High
Eriophyllum staechadifolium	Lizard tail	native	perennial herb	-
Erythranthe guttata	Yellow monkey flower	native	annual herb	-
Eschscholzia californica	California poppy	native	annual, perennial herb	-
Festuca arundinacea	Reed fescue	non-native (invasive)	perennial grass	Moderate
Festuca perennis	Italian rye grass	non-native (invasive)	annual, perennial grass	Moderate
Foeniculum vulgare	Fennel	non-native (invasive)	perennial herb	High
Heteromeles arbutifolia	Toyon	native	shrub	-
Hirschfeldia incana	Short-podded mustard	non-native (invasive)	perennial herb	Moderate
Lotus corniculatus	Bird's foot trefoil	non-native	perennial herb	-
Lupinus variicolor	Varied lupine	native	shrub	-
Madia sativa	Coast tarweed	native	annual herb	-
Mimulus aurantiacus	Sticky monkeyflower	native	shrub	-
Myosotis latifolia	Broadlead forget me not	non-native (invasive)	perennial herb	Limited
Pinus radiata	Monterey pine	native	tree	-
Plantago lanceolata	Ribwort	non-native	perennial herb	-
Polystichum munitum	Western sword fern	native	fern	-
Prunus cerasifera	cherry plum	non-native (invasive)	tree	Limited
Raphanus sativus	Radish	non-native (invasive)	annual, biennial herb	Limited
Rubus ursinus	California blackberry	native	vine, shrub	-
Salix lasiolepis	Arroyo willow	native	tree, shrub	-
Torilis arvensis	Field hedge parsley	non-native (invasive)	annual herb	Moderate
Toxicodendron diversilobum	Poison oak	native	vine, shrub	-
Trifolium hirtum	Rose clover	non-native (invasive)	annual herb	Limited
Vicia villosa	Hairy vetch	non-native	annual herb, vine	-

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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 California Department of Fish and Wildlife (CDFW) Natural Diversity Database (2019), U.S. Fish and Wildlife Service (USFWS) Species Lists (2019), and California Native Plant Society (CNPS) Electronic Inventory (2019) searches focused on the Montara Mountain and San Francisco South USGS 7.5' quadrangles.

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 Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable soils are not present. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable soils are not present. Site has been heavily graded and developed	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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.	**No Potential.** Suitable soils are not present. Site has been previously graded and disturbed.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been heavily graded and developed	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
marsh sandwort *Arenaria paludicola*	FE, SE, Rank 1B.1	Marshes and swamps (freshwateror brackish). Elevation ranges from 5 to 560 feet (3 to 170 meters). Blooms May-Aug.	**No Potential.** Suitable soils are not present. Site has been heavily graded and developed	No further action necessary
Carlotta Hall's lace fern *Aspidotis carlotta-halliae*	Rank 4.2	Chaparral, cismontane woodland. Elevation ranges from 325 to 4595 feet (100 to 1400 meters). Blooms Jan-Dec.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	Rank 1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, north coast coniferous forest. Elevation ranges from 0 to 345 feet (0 to 105 meters). Blooms (Mar)Apr-Sep.	**Unlikely.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
bristly sedge *Carex comosa*	Rank 2B.1	Coastal prairie, marshes and swamps (lake margins), valley and foothill grassland. Elevation ranges from 0 to 2050 feet (0 to 625 meters). Blooms May-Sep.	**Unlikely.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
northern meadow sedge *Carex praticola*	Rank 2B.2	Meadows and seeps (mesic). Elevation ranges from 0 to 10500 feet (0 to 3200 meters). Blooms May-Jul.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
Point Reyes bird's-beak *Chloropyron maritimum ssp. palustre*	Rank 1B.2	Marshes and swamps (coastal salt). Elevation ranges from 0 to 35 feet (0 to 10 meters). Blooms Jun-Oct.	**Unlikely.** Suitable habitat not present within Study Area. No serpentine present. Site has been previously graded and disturbed.	No further action necessary
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).	**Unlikely.** Suitable habitat not present within Study Area.Site has been previously graded and disturbed.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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 previously graded and disturbed.	No further action necessary
Sonoma spineflower *Chorizanthe valida*	FE, SE, Rank 1B.1	Coastal prairie (sandy). Elevation ranges from 30 to 1000 feet (10 to 305 meters). Blooms Jun-Aug.	**No Potential.** Suitable habitat not present within Study Area. No serpentine present. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
Mt. Tamalpais thistle *Cirsium hydrophilum var. vaseyi*	Rank 1B.2	Broadleafed upland forest, chaparral, meadows and seeps. Elevation ranges from 785 to 2035 feet (240 to 620 meters). Blooms May-Aug.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Presidio clarkia *Clarkia franciscana*	FE, SE, Rank 1B.1	Coastal scrub, valley and foothill grassland (serpentine). Elevation ranges from 80 to 1100 feet (25 to 335 meters). Blooms May-Jul.	**No Potential.** Suitable habitat not present within Study Area. No sandy humus soils present. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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).	**Unlikely.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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 Study Area. Site has been previously graded.	No further action necessary
marsh horsetail *Equisetum palustre*	Rank 3	Marshes and swamps. Elevation ranges from 145 to 3280 feet (45 to 1000 meters). Blooms unk.	**Unlikely.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
slender cottongrass *Eriophorum gracile*	Rank 4.3	Bogs and fens, meadows and seeps, upper montane coniferous forest. Elevation ranges from 4195 to 9515 feet (1280 to 2900 meters). Blooms May-Sep.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
San Joaquin spearscale *Extriplex joaquinana*	Rank 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland. Elevation ranges from 0 to 2740 feet (1 to 835 meters). Blooms Apr-Oct.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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.	**Unlikely.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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. Area has been heavily developed and graded	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
dark-eyed gilia *Gilia millefoliata*	Rank 1B.2	Coastal dunes. Elevation ranges from 5 to 100 feet (2 to 30 meters). Blooms Apr-Jul.	**No Potential.** Suitable habitat not present within Study Area. No coastal dunes. Site has been previously graded.	No further action necessary
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.** Coastal scrub present however site has been previously graded and disturbed.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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 Study Area. Site has been previously graded and disturbed.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
Santa Cruz tarplant *Holocarpha macradenia*	FT, SE, Rank 1B.1	Coastal prairie, coastal scrub, valley and foothill grassland. Elevation ranges from 30 to 720 feet (10 to 220 meters). Blooms Jun-Oct.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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 previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. No dunes or remnant dunes present.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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). Blooms Mar-May.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
beach layia *Layia carnosa*	FE, SE, Rank 1B.1	Coastal dunes, coastal scrub (sandy). Elevation ranges from 0 to 195 feet (0 to 60 meters). Blooms Mar-Jul.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
rose leptosiphon *Leptosiphon rosaceus*	Rank 1B.1	Coastal bluff scrub. Elevation ranges from 0 to 330 feet (0 to 100 meters). Blooms Apr-Jul.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
coast lily *Lilium maritimum*	Rank 1B.1	Broadleafed upland forest, closed-cone coniferous forest, coastal prairie, coastal scrub, marshes and swamps (freshwater), north coast coniferous forest. Elevation ranges from 15 to 1560 feet (5 to 475 meters). Blooms May-Aug.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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).	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
marsh microseris *Microseris paludosa*	Rank 1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation ranges from 15 to 1165 feet (5 to 355 meters). Blooms Apr-Jun(Jul).	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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).	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
San Francisco popcornflower *Plagiobothrys diffusus*	SE, Rank 1B.1	Coastal prairie, valley and foothill grassland. Elevation ranges from 195 to 1180 feet (60 to 360 meters). Blooms Mar-Jun.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
adobe sanicle *Sanicula maritima*	SR, Rank 1B.1	Chaparral, coastal prairie, meadows and seeps, valley and foothill grassland. Elevation ranges from 95 to 785 feet (30 to 240 meters). Blooms Feb-May.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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).	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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).	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
long-styled sand-spurrey *Spergularia macrotheca var. longistyla*	Rank 1B.2	Meadows and seeps, marshes and swamps. Elevation ranges from 0 to 835 feet (0 to 255 meters). Blooms Feb-May(Jun).	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
Santa Cruz microseris *Stebbinsoseris decipiens*	Rank 1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland. Elevation ranges from 30 to 1640 feet (10 to 500 meters). Blooms Apr-May.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
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.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
saline clover *Trifolium hydrophilum*	Rank 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elevation ranges from 0 to 985 feet (0 to 300 meters). Blooms Apr-Jun.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
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 Study Area. Site has been previously graded.	No further action necessary
coastal triquetrella *Triquetrella californica*	Rank 1B.2	Coastal bluff scrub, coastal scrub. Elevation ranges from 30 to 330 feet (10 to 100 meters).	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary
oval-leaved viburnum *Viburnum ellipticum*	Rank 2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation ranges from 705 to 4595 feet (215 to 1400 meters). Blooms May-Jun.	**No Potential.** Suitable habitat not present within Study Area. Site has been previously graded.	No further action necessary

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Mammals				
pallid bat *Antrozous pallidus*	SSC, WBWG High	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, forages along river channels. Roost sites include crevices in rocky outcrops and cliffs, caves, mines, trees and various human structures such as bridges, barns, and buildings (including occupied buildings). Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Unlikely.** The Study Area does not support buildings, rocky areas or any other suitable roosting habitat for this species. This species may forage over the Study Area.	No further action necessary.
hoary bat *Lasiurus cinereus*	WBWG Medium	Prefers open forested 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.	**Moderate potential.** The Study Area contains forest habitat which could support roosting for hoary bat.	Trees and snags should be removed between October 1 and March 31 to the extent feasible. If trees are removed between April 1 and September 30, a roost habitat assessment should be conducted by a qualified biologist. If suitable roosts are detected during the habitat assessment, a pre-construction bat survey should be performed no more than 14 days prior to removal. If special status bat-species or maternity roosts are detected during surveys, species and roost specific measures will be developed in consultation with CDFW.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Townsend's big-eared bat *Corynorhinus townsendii*	SSC, WBWG High	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 typically occurs in open forests.	**Unlikely.** The Study Area does not support buildings, caves, mines or any other suitable roosting habitat for this species. This species may forage over the Study Area.	No further action necessary.
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.** The Study Area lacks redwoods, buildings, mines and large snags as roosting habitat for this species. This species may forage over the Study Area	No further action necessary.
big free-tailed bat *Nyctinomops macrotis*	SSC, WBWG Medium-High	Occurs rarely in low-lying arid areas. Requires high cliffs or rocky outcrops for roosting sites.	**No potential.** Typical rocky roost habitat is not present.	No further action necessary.
western red bat *Lasiurus blossevillii*	SSC, WBWG High	Highly migratory and typically solitary, roosting primarily in the foliage of trees or shrubs. Roosts are usually in broad-leaved trees including cottonwoods, sycamores, alders, and maples. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas.	**Unlikely.** Broad-leafed trees are not commonly present on the Study Area, and edge habitat near streams is limited.	No further action necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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.	**Moderate potential.** No stick nests were observed during the site visit. However, the Study Area contains monterey pine forest habitat with moderate to dense understory, which may support this species.	Prior to initial ground disturbance or vegetation removal, pre-construction surveys for woodrat stick nests should take place in all suitable habitat types. Nest structures should be avoided. See Section 5.2 for further details.
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.** The Study Area lacks the dense sagebrush and friable soils required by the species. No suitable burrows were observed during the site visit.	No further action necessary.
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.	**No Potential.** No salt marsh habitat exists on the Study Area.	No further action necessary.
southern sea otter *Enhydra lutris nereis*	FT, CFP, MMC 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	**No Potential.** No marine habitat exists on the Study Area.	No further action necessary.
Birds				

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
double-crested cormorant *Phalacrocorax auritus* not SSC or BCC	DFG:WL	(Rookery site) colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	**No Potential.** No nesting or foraging habitat is present, although this species may occasionally migrate over the Study Area.	No further action necessary.
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.	**Moderate Potential.** The stands of Monterey pine in the Study Area may provide roosting or nesting habitat.	Future project activities should occur to the extent feasible outside of the nesting season from September 1 through January 31. If this is not possible, and project activities are initiated during the nesting season (February 1 through August 31), then WRA recommends that a nesting bird survey be conducted by a qualified wildlife biologist no more than 14 days prior to the start of Project activities. If nests are identified, a no-disturbance buffer should be implemented to avoid impacts to nesting birds.
American peregrine falcon *Falco peregrinus anatum*	CFP, BCC	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.	**No Potential.** May occasionally be observed over the Study Area during migration. Suitable nesting habitat is not present.	No further action necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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.** Tidal marsh habitat not present in Study Area.	No further action necessary.
California Ridgway's (clapper) rail *Rallus obsoletus 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.** Tidal marsh habitat not present in Study Area.	No further action necessary.
Olive-sided flycatcher *Contopus cooperi*	SSC, BCC	Summer resident. Typical breeding habitat is montane coniferous forests. At lower elevations, also occurs in wooded canyons and mixed forests and woodlands. Often associated with forest edges. Arboreal nest sites located well off the ground.	**Unlikely.** This species may be observed within the Study Area during the migration; however typical nesting habitat is not present.	No further action necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	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.	**No Potential.** Vertical nesting habitat is not present in the Study Area.	No further action necessary.
(Brester's) yellow warbler *Setophaga (= Dendroica) petechia brewsteri*	SSC, BCC	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.	**Unlikely.** Yellow warblers may forage within the stands of Monterey pine and arroyo willow. However, nesting in this area is unlikely due to the lack of streams or wet meadows.	No further action necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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.	**Unlikely.** The Study Area does not contain marine habitat or old growth forest to support this species.	No further action necessary.
Alameda song sparrow *Melospiza melodia pusillula*	BCC, SCC	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.	**No Potential.** The Study Area does not contain pickleweed or marsh vegetation to support this species.	No further action necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Allen's hummingbird *Selasphorus sasin*	BCC	Summer resident along the California coast, breeding in a variety of woodland and forest habitats, including parks and gardens with abundant nectar sources. Nest in shrubs and trees with dense vegetation.	**Moderate potential.** Allen's hummingbirds may nest in the shrubs and dense vegetation within the Study Area.	Future project activities should occur to the extent feasible outside of the nesting season from September 1 through January 31. If this is not possible, and project activities are initiated during the nesting season (February 1 through August 31), then WRA recommends that a nesting bird survey be conducted by a qualified wildlife biologist no more than 14 days prior to the start of Project activities. If nests are identified, a no-disturbance buffer should be implemented to avoid impacts to nesting birds.
Nuttall's woodpecker *Picoides nuttallii*	BCC	Year-round resident in lowland woodlands throughout much of California west of the Sierra Nevada. Typical habitat is dominated by oaks; also occurs in riparian woodland. Nests in tree cavities.	**Unlikely.** Nuttall's woodpecker rarely occurs in confer forests. The Study Area does not contain the oaks or riparian woodland to support this species.	No further action necessary.
oak titmouse *Baeolophus inornatus*	BCC	Occurs year-round in woodland and savannah habitats where oaks are present, as well as riparian areas. Nests in tree cavities.	**Unlikely.** Oak titmouse rarely occurs in confer forests. The Study Area does not contain the woodland or savannah habitat to support this species.	No further action necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
San Francisco (saltmarsh) common yellowthroat *Geothlypis trichas sinuosa*	SSC, BCC	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.	**No Potential.** The Study Area lacks the marsh habitat favored for nesting by this species.	No further action necessary.
yellow-breasted chat *Icteria virens*	SSC	Summer resident, occurring in riparian areas with an open canopy, very dense understory, and trees for song perches. Nests in thickets of willow, blackberry, and wild grape.	**No Potential.** The Study Area lacks riparian habitat that this species utilizes for breeding.	No further action necessary.
western snowy plover *Charadrius nivosus (alexandrines) nivosus*	FT, SSC, BCC, RP	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.	**No Potential.** No sandy beaches or other suitable breeding habitat exists on the Study Area.	No further action necessary.
burrowing owl *Athene cunicularia*	SSC, BCC	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.	**No Potential.** No ground squirrel activity or suitably sized burrow facsimiles exist on the Study Area. Furthermore, the Study Area is outside of the known range of this species.	No further action necessary.
Reptiles and Amphibians				

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Western pond turtle *Actinemys [Emys] marmorata*	SSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter.	**No Potential.** Aquatic habitat is not present in the Study Area. Pond turtles are not known to occur within 5.0 miles of the Study Area (CNDDB 2018).	No further action necessary.
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.	**Unlikely.** The Study Area provides low-quality habitat overall for this species, because of the lack of ponds within 300 feet and the barriers to dispersal from suitable habitat.	No further action necessary.
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.	**Unlikely.** The Study Area does not contain streams to support breeding. Additionally, the site is surrounded by dispersal barriers (roads, buildings) from suitable habitat.	No further action necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
California red-legged frog *Rana 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.	**Unlikely.** The Study Area lacks suitable aquatic breeding habitat for this species. The nearest CNDDB occurrence is associated with an unnamed pond approximately 0.9 miles south of the Study Area (CDFW 2018). Additionally, there is an unnamed stream which lies approximately 0.4 miles south of the Study Area which may potentially be used as a dispersal corridor when inundated. Barriers to CRLF movement are present between the Study Area and documented occurrences on the south side of Manor Drive, including a two lane road and residential development. Additionally, the Study Area lies outside of designated CRLF critical habitat (USFWS 2018).	No further action necessary.
foothill yellow-legged frog *Rana boylii*	SC, SSC	Found in or adjacent to 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.** No stream habitat exists on the Study Area.	No further action necessary.
Fishes				

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
central California coastal steelhead *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 1 or more years before migrating downstream to the ocean.	**No Potential.** Suitable stream habitat is not present in the Study Area.	No further action necessary.
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.	**No Potential.** Estuarine habitat is not present in the Study Area.	No further action necessary.
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.	**No Potential.** Suitable stream habitat is not present in the Study Area.	No further action necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
longfin smelt *Spirinchus thaleichthys*	ST, SSC	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.** Estuarine habitat is not present in the Study Area.	No further action necessary.
Coho salmon - central CA coast ESU *Oncorhynchus kisutch*	FE, SE, NMFS	Federal listing includes populations between Punta Gorda and San Lorenzo River. State listing includes populations south of San Francisco Bay only. Occurs inland and in coastal marine waters. Requires beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water and sufficient dissolved oxygen.	**No Potential.** Riverine habitat is not present in the Study Area.	No further action necessary.
Invertebrates				
San Bruno elfin butterfly *Incisalia mossi 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.** Larval host plant Sedum spathulifolium is not supported by the habitat present in the Study Area and was not observed during the site assessment. The nearest documented occurrence of San Bruno elfin is 0.6 miles south of the Study Area (CNDDB 2018).	No further action necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Mission blue butterfly *Icaricia icariodides 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.** Only a few isolated Larval host plant Lupinus sp. individuals were observed within the Study Area. There are two documented occurrences within 1 mile of the Study Area (CNDDB 2018), but lack of high quality habitat on site.	Prior to Project activities, the full Project Area should be surveyed for larval host plants (Lupinus albifrons, Lupinus formosus, and Lupinus variicolor) by a qualified biologist to determine the number and location of host plants present. If suitable habitat for Mission blue butterfly host plants is present where Project activities will occur, consultation with USFWS and avoidance or mitigation measures shall be developed.
monarch butterfly *Danaus plexippus*	Winter Roost Sites Protected	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 Study Area contains Monterey pine, which may be used as roosting habitat. However, the few large trees on site do not offer the wind protection or thermoregulation favored by the Monarch butterfly. The nearest CNDDB recorded winter roost site is approximately 7.0 miles from the Study Area (CDFW 2018).	No further action necessary.
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.	**No Potential.** Serpentine habitat and host plant are not present in the Study Area. The nearest documented occurrences are from San Bruno Mountain, 3.5 miles east of the Study Area (CNDDB 2018).	No further action necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
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 Study Area lies outside of this species recognized range. Additionally, the host plant is not present in the Study Area.	No further action necessary.
Myrtle's silverspot *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.	**No Potential.** The Study Area lies outside of this species recognized range.	No further action necessary.

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
FC	Federal Candidate
BCC	USFWS Birds of Conservation Concern
SE	State Endangered
ST	State Threatened
SC	State Candidate
SSC	CDFW Species of Special Concern
CFP	CDFW Fully Protected Animal
WBWG	Western Bat Working Group High or Medium Priority 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 2A	CNPS Rank 2A: Plants presumed extirpated in California, but more common elsewhere
Rank 2B	CNPS Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere

Potential to Occur:

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.

Results and Recommendations:
Present. Species was observed on the site or has been recorded (i.e. CNDDB, other reports) on the site recently.
Not Present. Species is assumed to not be present due to a lack of key habitat components.
Not Observed. Species was not observed during surveys.

APPENDIX D

PROJECT PLANS

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VISTA MAR DEVELOPMENT

MONTEREY ROAD

APN 009-381-010

INDEX OF DRAWINGS

1.- COVER SHEET: PROJECT DATA AND INDEX
2.- (E) TOPOGRAPHIC SURVEY
3.- SITE PLAN
4.- LANDSCAPE PLAN
4.1- LANDSCAPE PLANTING PLAN
5.- GRADING PLAN
6.- UTILITY MAP
7.- ACCESS DRIVEWAY
8.- TENTATIVE MAP
9.- PROFILES AND SECTIONS
10.- FLOOR PLANS AND ELEVATIONS HOUSE 1 (MODEL "C")
10.1- FLOOR PLANS AND CALCULATION AREA, SECTIONS HOUSE 1 (MODEL "C")
10.2- LIGHT FIXTURE ELEVATIONS & DOORS AND WINDOWS SCHEDULE HOUSE 1 (MODEL "C")
11.- FLOOR PLANS AND ELEVATIONS HOUSE 2 (MODEL "B")
11.1- FLOOR PLANS AND CALCULATION AREA, SECTIONS HOUSE 2 (MODEL "B")
11.2- LIGHT FIXTURE ELEVATIONS & DOORS AND WINDOWS SCHEDULE HOUSE 2 (MODEL "B")
12.- FLOOR PLANS AND ELEVATIONS HOUSE 3 (MODEL "A")
12.1- FLOOR PLANS AND CALCULATION AREA, SECTIONS HOUSE 3 (MODEL "A")
12.2- LIGHT FIXTURE ELEVATIONS & DOORS AND WINDOWS SCHEDULE HOUSE 3 (MODEL "A")
13.- FLOOR PLANS AND ELEVATIONS HOUSE 4 (MODEL "A")
13.1- FLOOR PLANS AND CALCULATION AREAS, SECTIONS HOUSE 4 (MODEL "A")
13.2- LIGHT FIXTURE ELEVATIONS & DOORS AND WINDOWS SCHEDULE HOUSE 4 (MODEL "A")
14.- FLOOR PLANS AND ELEVATIONS HOUSE 5 (MODEL "B")
14.1- FLOOR PLANS AND CALCULATION AREAS, SECTIONS HOUSE 5 (MODEL "B")
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15.- FLOOR PLANS AND ELEVATIONS HOUSE 6 (MODEL "A")
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16.- FLOOR PLANS AND ELEVATIONS HOUSE 7 (MODEL "A")
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17.- FLOOR PLANS AND ELEVATIONS HOUSE 8 (MODEL "A")
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18.- CAL GREEN CHECK LIST.

FRONT VIEW

PROJECT INFORMATION

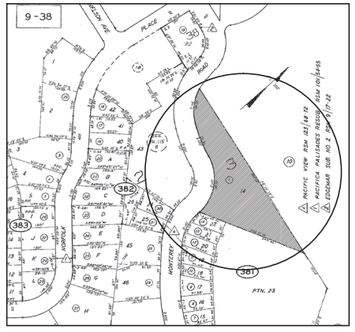
OWNER:	VISTA MAR DEVELOPMENT A CALIFORNIA CORPORATION
ADDRESS:	848 BURNS COURT PACIFICA, CA. 94044
APN:	009-381-010
LOT AREA:	APPROX. 52,916.4 SQ. FT.
ZONING:	R-3
PROPOSED USE:	TOWN HOUSE (8 UNITS)
FRONT SET BACK:	15'-0"
SIDE SET BACK:	5'-0" MIN.
SET BACK BETWEEN BUILDINGS:	10'-0"
MAX. BUILDING HEIGHT:	35'-0"

NOTE:
REQUIRED REAR YARD SETBACK IS 20'-0" MINIMUM

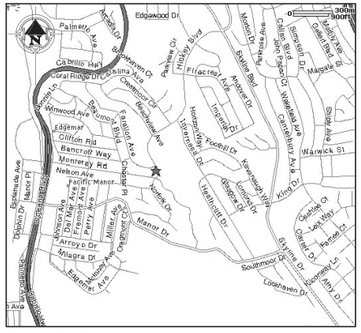
CONSTRUCTION USE

HOUSE #	MODEL	LIVING AREA Sq.Ft.	FOOTPRINT Sq. Ft.	GARAGE Sq.Ft.	P.O.S (REQUIRED) Sq.Ft.	P.O.S (PROPOSED) Sq.Ft.	COVER PARKING #
1	C	1752.37	831.01	540.10	150.0	221.27	2 CARS
2	B	1753.72	916.56	482.83	150.0	151.16	2 CARS
3	A	1614.29	781.89	435.72	150.0	158.99	2 CARS
4	A	1571.40	780.10	484.66	150.0	160.86	2 CARS
5	B	1880.63	974.67	482.83	150.0	200.80	2 CARS
6	A	1583.43	776.01	447.91	150.0	160.50	2 CARS
7	A	1573.47	779.83	444.17	150.0	159.28	2 CARS
8	A	1568.55	777.01	419.90	150.0	163.97	2 CARS
TOTAL		13,297.86	6,617.08	3738.12	1200	1376.83	16

PARCEL MAP



VICINITY MAP



APPLICABLE CODES:

- ALL PROPOSED WORK WILL BE PERFORMED UNDER

2013 EDITION California Building Code(CBC), 2013 California Residential Code, 2013California Electric Code(CEC), California Mechanical Code(CMC), California Plumbing Code(CPC), 2013 California Energy Efficiency Standars, 2013 California Green Building Code (Calgreen), ALONG WITH ALL LOCAL AND STATE REGULATIONS APPLICABLE TO THIS PROJECT.

LAND USE

USE NAME	DESCRIPTION	REQUIRED/ ALLOWED SQ.FT.	PROPOSED SQ.FT.		LOT COVERAGE
BUILDING FOOTPRINT	Maximun lot Coverage 60%	31,749.84	6,617.08		12.50%
LANDSCAPE	Minimun Landscape required 20%	10,583.20	11,017.37		20.81%
DRIVEWAY	Permeable pavers area	-	7,622.75		14.40%
DRIVEWAY	Impermeable paved area	-	3,380.30		6.40%
COMMON OPEN SPACE	COS on Roof deck area(1) + COS on Site area(2)	6,000.00	3,793.61(1) 2,608.25(2)	(1)+(2)= 6,401.86	5.10%
VISITORS PARKING AREA	1 spaces for every 4 units 8 / 4 = 2 guest park. Min.	2 Parking	3 Parking		1.36%
		-			
WALKWAY/ STAIRS	Permeable Surfaces	-	3,644.10		6.89%
UNDISTURBED AREA		-	17,218.05		32.54%
TOTAL		-			100.00%

MINIMUN LOT AREA PER DWELING UNITS=2075.00 Sq. Ft.
CALC: (Lot Area)=52916.40 / 2075 = 25 units
PROPOSED UNITS = 8

USE NAME	DESCRIPTION	REQUIRED / ALLOWED SQ. FT.	PROPOSED SQ. FT.
PRIVATE OPEN SPACE	150 Sq Ft. Dedicate to each Unit	150.00	150.00 min. See table above
NOTE: PRIVATE OPEN SPACE IS CALCULATED FROM DECK AREA			

USE NAME	DESCRIPTION	ALLOWED SQ. FT.	PROPOSED SQ.FT.
IMPERMEABLE AREA	Roof deck area + Impermeable Paved Driveway	10,000.00	9997.38

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javier@jcenginnering.us

REMARKS:

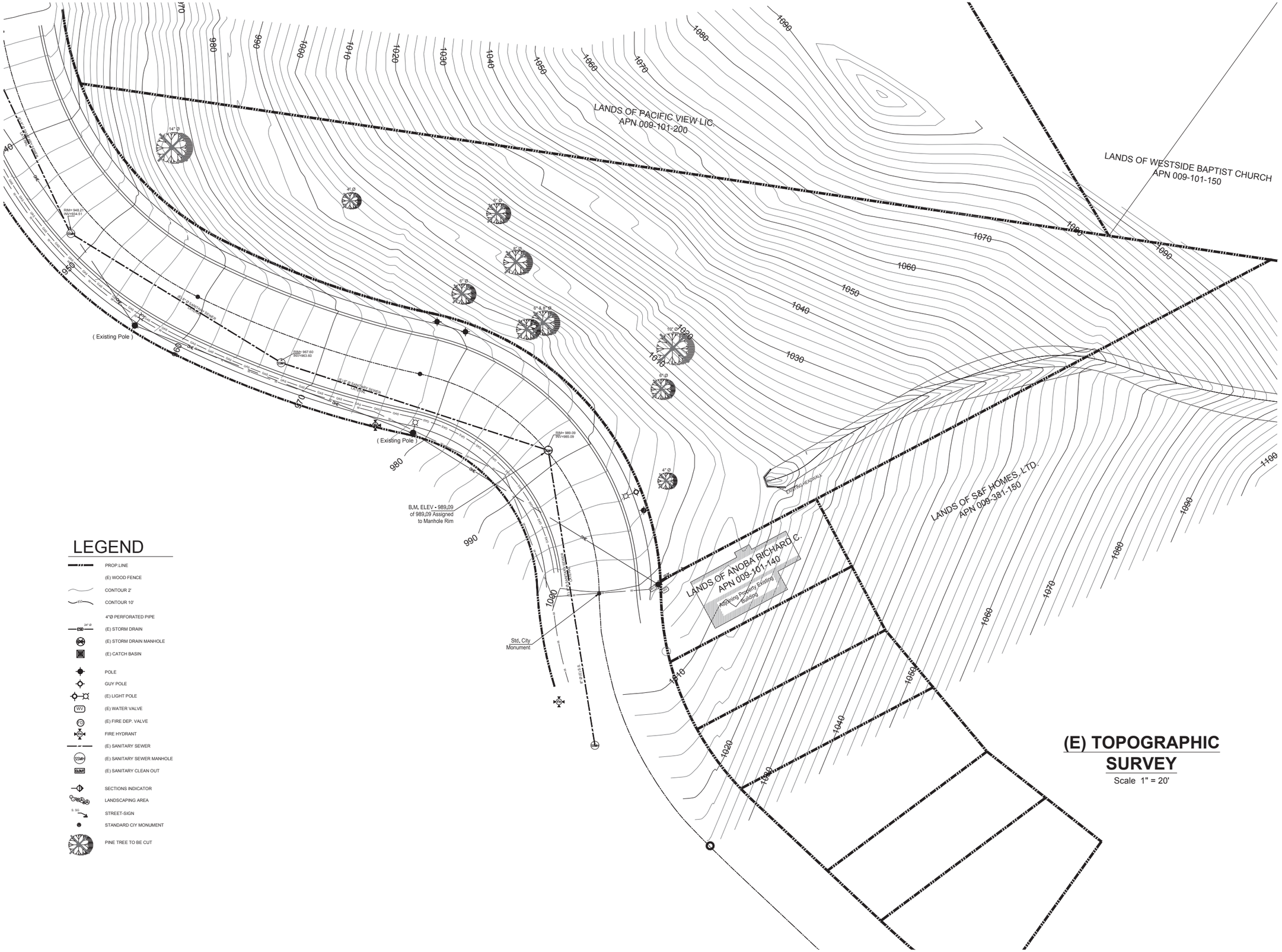
VISTA MAR DEVELOPMENT
MONTEREY ROAD
APN: 009-381-010

SHEET:
COVER SHEET AND PROJECT DATA

DATE	ISSUED FOR
04/13/07	PLANNING SET
10/24/08	PLANNING SET
12/02/08	PLANNING SET
02/25/09	PLANNING SET
03/20/14	PLANNING SET
11/11/14	PLANNING SET
01/08/15	PLANNING SET
07/31/15	PLANNING SET

Drawn by"
Checked by: JC

PROJECT No **2K1-0906**
SHEET No. **1**



LEGEND

- PROP.LINE
- (E) WOOD FENCE
- CONTOUR 2'
- CONTOUR 10'
- 4"Ø PERFORATED PIPE
- (E) STORM DRAIN
- (E) STORM DRAIN MANHOLE
- (E) CATCH BASIN
- POLE
- GUY POLE
- (E) LIGHT POLE
- (E) WATER VALVE
- (E) FIRE DEP. VALVE
- FIRE HYDRANT
- (E) SANITARY SEWER
- (E) SANITARY SEWER MANHOLE
- (E) SANITARY CLEAN OUT
- SECTIONS INDICATOR
- LANDSCAPING AREA
- STREET-SIGN
- STANDARD CIY MONUMENT
- PINE TREE TO BE CUT

(E) TOPOGRAPHIC SURVEY

Scale 1" = 20'

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REMARKS:

VISTA MAR DEVELOPMENT

MONTEREY ROAD
APN: 009-381-010

SHEET:
(E) TOPOGRAPHIC SURVEY

DATE	ISSUED FOR
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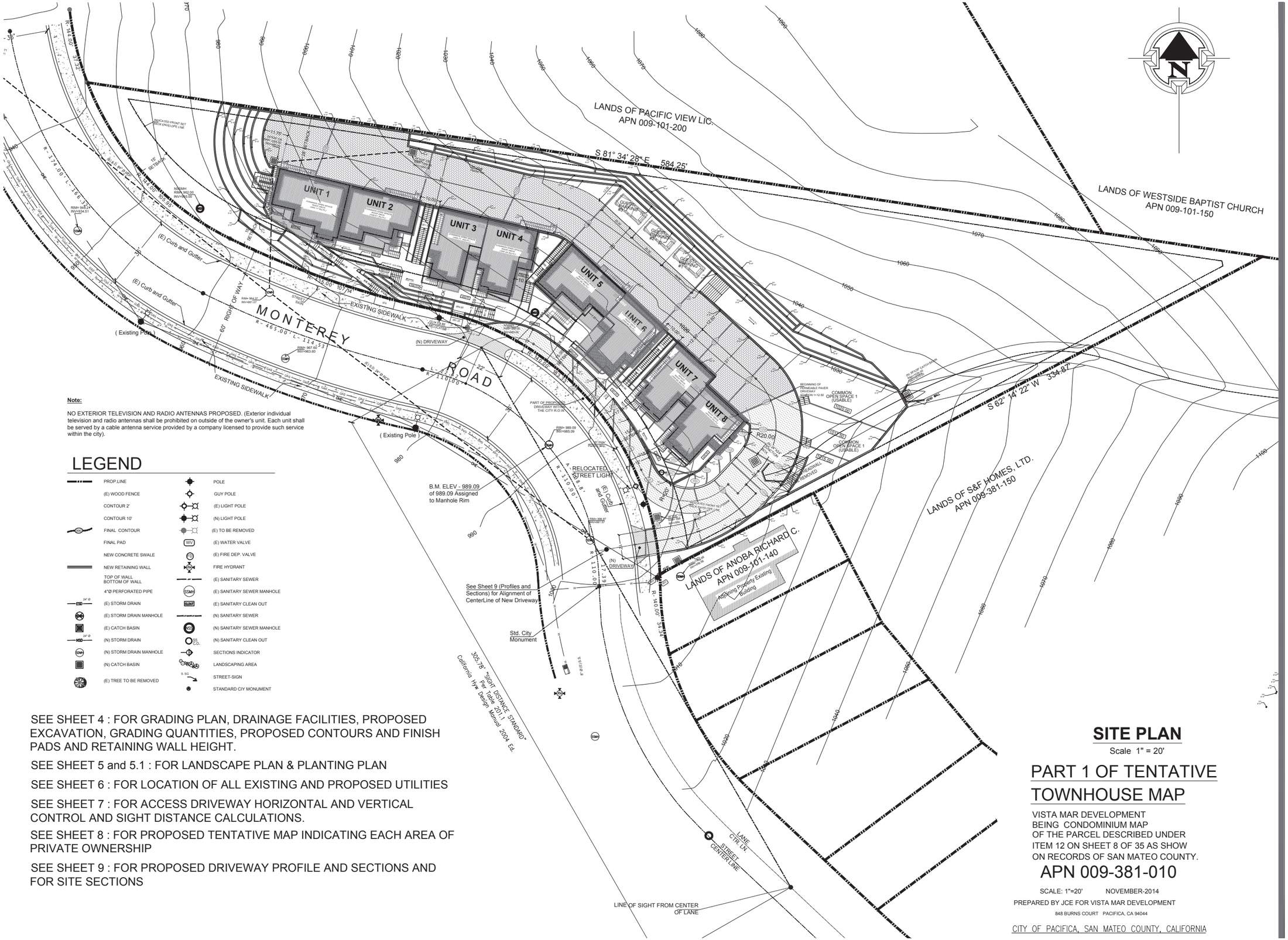
11/11/14	PLANNING SET
01/08/15	PLANNING SET
07/31/15	PLANNING SET

Drawn by"
Checked by: JC

PROJECT No **2K1-0906**

SHEET No. **2**



Note:

NO EXTERIOR TELEVISION AND RADIO ANTENNAS PROPOSED. (Exterior individual television and radio antennas shall be prohibited on outside of the owner's unit. Each unit shall be served by a cable antenna service provided by a company licensed to provide such service within the city).

LEGEND

PROP.LINE	POLE
(E) WOOD FENCE	GUY POLE
CONTOUR 2'	(E) LIGHT POLE
CONTOUR 10'	(N) LIGHT POLE
FINAL CONTOUR	(E) TO BE REMOVED
FINAL PAD	(E) WATER VALVE
NEW CONCRETE SWALE	(E) FIRE DEP. VALVE
NEW RETAINING WALL	FIRE HYDRANT
TOP OF WALL / BOTTOM OF WALL	(E) SANITARY SEWER
4"Ø PERFORATED PIPE	(E) SANITARY SEWER MANHOLE
(E) STORM DRAIN	(E) SANITARY CLEAN OUT
(E) STORM DRAIN MANHOLE	(N) SANITARY SEWER
(E) CATCH BASIN	(N) SANITARY SEWER MANHOLE
(N) STORM DRAIN	(N) SANITARY CLEAN OUT
(N) STORM DRAIN MANHOLE	SECTIONS INDICATOR
(N) CATCH BASIN	LANDSCAPING AREA
(E) TREE TO BE REMOVED	STREET-SIGN
	STANDARD CIY MONUMENT

SEE SHEET 4 : FOR GRADING PLAN, DRAINAGE FACILITIES, PROPOSED EXCAVATION, GRADING QUANTITIES, PROPOSED CONTOURS AND FINISH PADS AND RETAINING WALL HEIGHT.

SEE SHEET 5 and 5.1 : FOR LANDSCAPE PLAN & PLANTING PLAN

SEE SHEET 6 : FOR LOCATION OF ALL EXISTING AND PROPOSED UTILITIES

SEE SHEET 7 : FOR ACCESS DRIVEWAY HORIZONTAL AND VERTICAL CONTROL AND SIGHT DISTANCE CALCULATIONS.

SEE SHEET 8 : FOR PROPOSED TENTATIVE MAP INDICATING EACH AREA OF PRIVATE OWNERSHIP

SEE SHEET 9 : FOR PROPOSED DRIVEWAY PROFILE AND SECTIONS AND FOR SITE SECTIONS

SITE PLAN

Scale 1" = 20'

PART 1 OF TENTATIVE TOWNHOUSE MAP

VISTA MAR DEVELOPMENT
BEING CONDOMINIUM MAP
OF THE PARCEL DESCRIBED UNDER
ITEM 12 ON SHEET 8 OF 35 AS SHOW
ON RECORDS OF SAN MATEO COUNTY.

APN 009-381-010

SCALE: 1"=20' NOVEMBER-2014

PREPARED BY JCE FOR VISTA MAR DEVELOPMENT

848 BURNS COURT PACIFICA, CA 94044

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REMARKS:

VISTA MAR DEVELOPMENT

MONTEREY ROAD
APN: 009-381-010

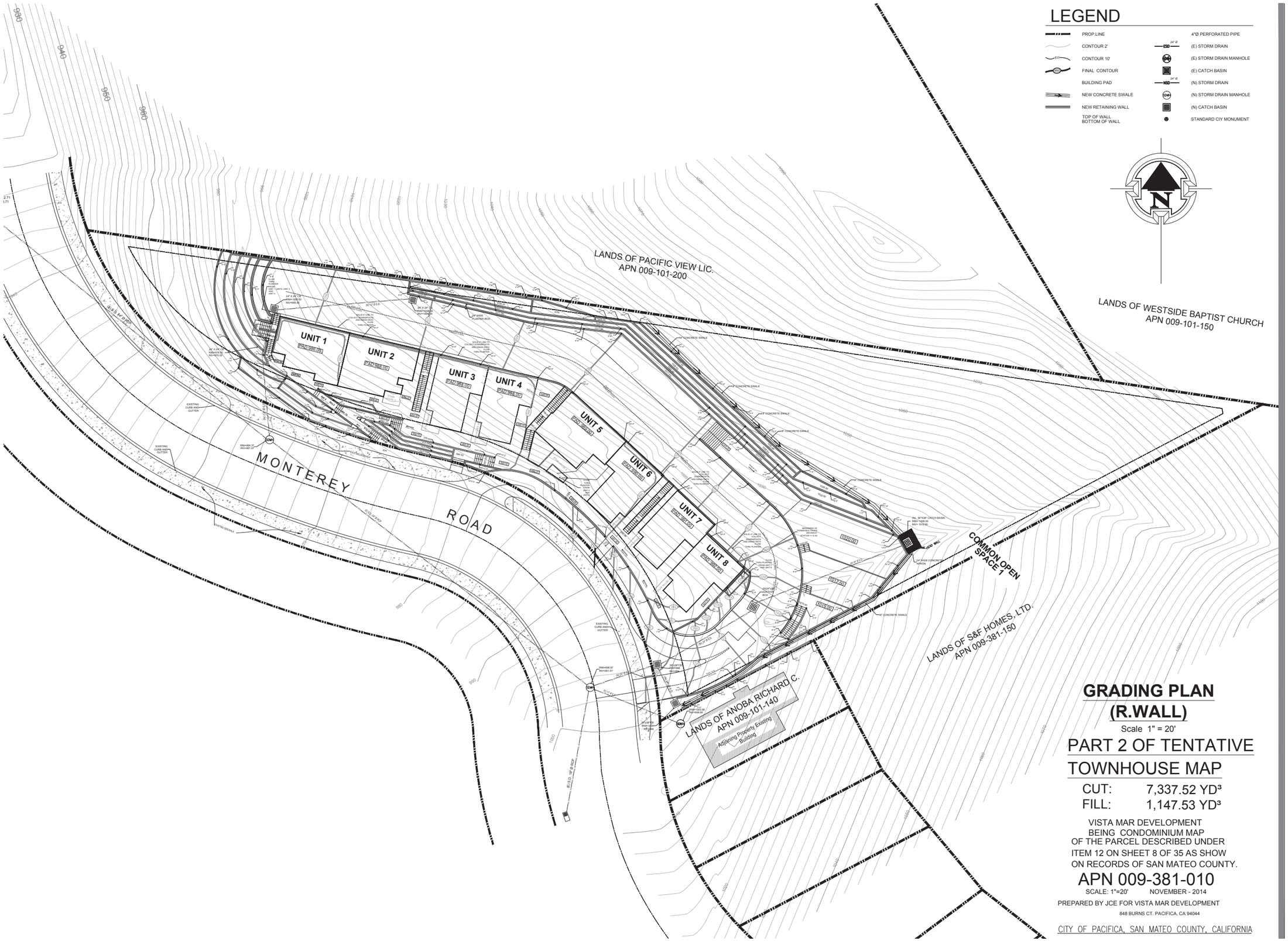
SHEET:
SITE PLAN

DATE	ISSUED FOR
04/13/07	PLANNING SET
10/24/08	PLANNING SET
12/02/08	PLANNING SET
02/25/09	PLANNING SET
03/20/14	PLANNING SET
11/11/14	PLANNING SET
01/08/15	PLANNING SET
07/31/15	PLANNING SET

Drawn by"
Checked by: JC

PROJECT No **2K1-0906**

SHEET No. **3**



GRADING PLAN (R.WALL)

Scale 1" = 20'

PART 2 OF TENTATIVE TOWNHOUSE MAP

CUT: 7,337.52 YD³

FILL: 1,147.53 YD³

VISTA MAR DEVELOPMENT
BEING CONDOMINIUM MAP
OF THE PARCEL DESCRIBED UNDER
ITEM 12 ON SHEET 8 OF 35 AS SHOW
ON RECORDS OF SAN MATEO COUNTY.

APN 009-381-010

SCALE: 1"=20' NOVEMBER - 2014

PREPARED BY JCE FOR VISTA MAR DEVELOPMENT

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REMARKS:

VISTA MAR DEVELOPMENT

MONTEREY ROAD
APN: 009-381-010

SHEET:
GRADING PLAN

DATE	ISSUED FOR
04/13/07	PLANNING SET
10/24/08	PLANNING SET
12/02/08	PLANNING SET
02/25/09	PLANNING SET
03/20/14	PLANNING SET
11/11/14	PLANNING SET
07/29/15	PLANNING SET

Drawn by"
Checked by: JC

PROJECT No **2K1-0906**

SHEET No. 4

Appendix C

Arborist Report

Arborist Survey Report

VISTA MAR DEVELOPMENT
PACIFICA, SAN MATEO COUNTY, CALIFORNIA

Prepared For:

TKG International
PO Box 29263
San Francisco, CA 94129

Contact: John Kontrabecki
jk@tkgintl.com

Prepared By:

WRA, Inc.
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San Rafael, California 94901

Contacts:

Sean Avent, Project Manager
avent@wra-ca.com

Gavin Albertoli
albertoli@wra-ca.com

Date:
August 2019

WRA Project No:
29036-2

ENVIRONMENTAL CONSULTANTS

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1.2 Regulatory Background 1
2.0 METHODS 2
2.1 Tree Inventory 2
2.2 Tree Assessment 3
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APPENDICES

Appendix A Tree Survey Table
Appendix B Tree Survey Map
Appendix C Representative Photographs

1.0 INTRODUCTION

On August 14, 2019, WRA, Inc. (WRA) conducted an arborist survey at the site of the Vista Mar Development Project (Project), located north of Monterey Road in the City of Pacifica (City), San Mateo County, California at Assessor's Parcel Number 009-381-010 (Study Area). The survey was conducted by ISA-Certified Arborist, Gavin Albertoli (ISA #WE-12027A). The purpose of the survey was to identify and document the presence of "heritage trees" and "trees" as defined by Chapter 12, "Preservation of Heritage Trees" of the City of Pacifica Municipal Code (Tree Ordinance) within the Study Area.

Locations for all heritage trees surveyed within the Study Area and information regarding the species, size in diameter at 24 inches above natural grade, estimated crown radius, estimated height, health, condition, and structure ratings were collected and are included in this report. A table with all relevant information pertaining to surveyed trees is provided in Appendix A. A tree survey location map is provided in Appendix B. Representative photographs are provided in Appendix C.

1.1 Study Area Description

The Study Area is approximately 1.26-acres and is composed of a single parcel (Assessor Parcel Number [APN] 009-381-010). The development is anticipated to occur on a 0.78-acre portion of the parcel (Project Area). The Project is anticipated to remove all trees within the Project Area while preserving trees within the Study Area but outside of the development footprint. The Study Area is located on a moderate to steeply sloped west facing hillside approximately 0.5 mile east of Highway 1. The Study Area is bordered to the west by Monterey Road and to the south by a residential house. An undeveloped parcel lies to the north of the Study Area.

The Project Area was delineated based on the most recent site plans for the Project (JC Engineering, July 13, 2015).

1.2 Regulatory Background

<u>City of Pacifica Tree Ordinance</u>

Chapter 12, "Preservation of Heritage Trees" of the City's Municipal Code regulates the protection of certain trees on public and private properties within City limits. The ordinance defines a heritage tree as being any tree with any of the following characteristics:

- all trees within the City of Pacifica, exclusive of eucalyptus, which have a trunk with a circumference of 50 inches (approximately 16 inches in diameter) or more, measured at 24 inches above the natural grade; or
- a tree or grove of trees, including eucalyptus, designated by resolution of the Council to be of special historical, environmental, or aesthetic value regardless of its size.

Because of their value to the City of Pacifica, heritage trees may not be moved, 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 approval of a permit. Development projects involving heritage trees, which require approval from the Planning Commission, must be accompanied by a tree protection plan. In order to mitigate the adverse effects of tree removal, tree removal permits may require tree relocation on-site, planting of replacement trees, or payment of in lieu fees if on-site replacement is not feasible. The fees associated with an approved tree removal permit shall not

exceed the appraised value of the trees for which a permit is required. The applicant may be required to submit an evaluation, appraisal, or replacement plan prepared by a qualified arborist or licensed landscape architect.

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 within one year from any parcel or contiguous parcel in the same ownership. In reference to logging regulations, a tree is defined as any tree 6 inches in diameter as measured at 12 inches from the ground. City of Pacifica Ordinance No. 636-C.S. prohibits logging operation 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 the 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.

2.0 METHODS

On August 14, 2019 the Study Area was traversed on foot to inventory all trees greater than or equal to 6 inches diameter, including heritage trees as defined per the City's Tree Ordinance. WRA's ISA-Certified Arborist surveyed the area and recorded relevant tree information for each surveyed tree.

2.1 Tree Inventory

Locations of surveyed trees within or directly adjacent to the Study Area were recorded using a handheld GPS unit with sub-meter accuracy capability[1]. Each surveyed tree was given an aluminum tree tag with a unique identification number. However, in some cases impenetrable vegetation prevented tagging trees. In these cases, the tree was given a unique sequential identification number but the tree was not tagged. Trees that were not tagged show "No tag" in the comment column of the tree survey table (Appendix A).

Diameter was calculated for surveyed trees by measuring the trunk diameter at 24 inches above natural grade. Diameter for multi-stem trees was calculated by measuring each individual stem

[1] GPS accuracy depends on many factors and only under near-perfect conditions will the technology result in sub-meter accuracy. GPS accuracy under heavy tree canopy, in canyons, and conducted during poor weather or bad satellite topology may result in accuracies of up to 4 meters or more.

and calculating the sum total of stem diameters. In cases where multi-stem trees had more than five main stems, only the five largest stems were measured. In cases where an irregular buttress or bulge occurred at two feet above ground, measurements were taken above or below the irregular feature in order to best represent the size of the tree. In cases where impenetrable vegetation prevented access to the trunk of the tree, diameter was estimated. Tree circumferences were calculated by multiplying the diameter by 3.14.

2.2 Tree Assessment

General notes on the condition of trees were taken, including health, structure, and overall condition. Assessment of the health, structure, and overall condition of each tree was conducted according to the narratives listed in Table 1.

Table 1. Rating Narratives for Tree Assessment

Health	
Good	Tree is free from symptoms of disease and stress.
Fair	Tree shows some symptoms of disease or stress including twig and small branch dieback, evidence of fungal / parasitic infection, thinning of crown, or poor leaf color.
Poor	Tree shows symptoms of severe decline.
Structure	
Good	Tree is free from major structural defects.
Fair	Tree shows some structural defects in branches but overall structure is stable.
Poor	Tree shows structural failure of a major branch or co-dominant trunk.
General Condition	
Good	Tree shows condition of foliage, bark, and overall structure characteristic of the species and lacking obvious defect, or disease.
Fair	Tree shows condition of foliage, bark, and overall structure characteristic of the species with some evidence of stress, defect, or disease.
Poor	Tree shows condition of foliage, bark, and overall structure uncharacteristic of the species with obvious evidence of stress, defect, or disease.

2.3 Tree Impact Assessment

Potential impacts to heritage trees were calculated based on each trees location in relation to the Project Area. Trees that are located within the Project Area were assumed to be potential impacts via removal. Potential heritage tree impacts requiring a permit from the City include removal or heavy pruning of any heritage tree.

3.0 RESULTS

3.1 Tree Inventory

A total of 80 trees were identified within or directly adjacent to the Study Area. Four tree species were identified and surveyed including plume acacia (*Albizia lophantha)*, Monterey pine (*Pinus radiata*), California wax myrtle (*Morella californica*), and arroyo willow (*Salix lasiolepis*). Twenty-six (26) of the trees surveyed are considered heritage trees as defined by the Tree Ordinance.

The remaining 54 trees are considered trees as defined by the City of Pacifica's logging operations regulations.

The heritage trees range in size from 50.2 inches to 216.7 inches in circumference (16.0 inches to 69.0 inches diameter). The largest heritage tree surveyed was a 216.7-inch circumference (69.0-inch diameter) Monterey pine (#838). The largest multi-stem heritage tree surveyed was a 190.0-inch circumference (60.5-inch diameter) five-stem Monterey pine (#854). Approximate canopy radii averaged from 5 to 25 feet. Approximate height ranged from 10 to 45 feet. A complete list of all trees surveyed is presented in Appendix A. The GPS locations of surveyed trees are shown in Appendix B.

3.2 Tree Assessment

The overall condition, health, and structure of trees inventoried during this assessment ranged from poor to good, with most trees ranking fair in all three categories. Seventy-three (73) percent of surveyed trees ranked fair in general condition with most trees displaying little to no signs of maladies, disease, or mechanical injuries. Seventy-three (73) percent of the trees ranked fair in health further indicating the large quantity of visibly healthy trees surveyed. Trees that received a poor health ranking were observed to be growing under suppressed conditions due to larger trees dominating the upper canopy. The majority of trees surveyed ranked fair in structure with only 20 trees being ranked poor due to having poor growth forms. The two trees that received a poor structure rating had excessive, uncorrected leans. Table 2 below summarizes the assessment results for all trees surveyed.

Table 2. Tree Assessment Results Summary

Criteria Assessed/Rating	Condition	Health	Structure
Good	18 (23%)	18 (23%)	6 (7%)
Fair	59 (73%)	59 (73%)	72 (90%)
Poor	3 (4%)	3 (4%)	2 (3%)

3.3 Tree Impact Assessment

The Project has the potential to remove up to 23 heritage trees and 34 trees. Potential permit, mitigation, and tree protection requirements as required by the Tree Ordinance and City's logging operations regulations are provided below. If Project plans change prior to construction, tree impacts should be assessed based on the final Project design.

4.0 SUMMARY AND RECOMMENDATIONS

A tree removal permit will be required anytime a heritage tree is moved, removed, destroyed, or damaged beyond repair. A project removing, destroying, or harvesting 20 or more trees within one year from any parcel or contiguous parcel in the same ownership will be required to be evaluated at a duly noticed public hearing by the commission in conjunction with required city permits. Application requirements, conditions of approval, and potential mitigation for removals are defined by No. 673-c.s. of the City's Municipal Code.

The Project has the potential to remove up to 23 heritage trees and 34 trees. Any of the 23 heritage trees that may potentially be removed would require a removal permit. Replacement tree plantings may be required by the City as a condition of approval.

In order to avoid and minimize damage to existing trees which are not proposed for direct impact by project activities, the following measures should be implemented during construction:

- All construction activity (grading, filling, paving, landscaping etc.) shall respect the root protection zone (RPZ) around all trees within the vicinity of the project area that are to be preserved. The RPZ should be a distance of 1.0 times the dripline radius measured from the trunk of the tree. Exception to this standard could be considered on a case-by-case basis, provided that it is demonstrated that an encroachment into the RPZ will not affect the root system or the health of the tree, and is authorized by an ISA-Certified Arborist or comparable specialist.
- Temporary protective fencing shall be installed around the dripline of existing trees prior to commencement of any construction activity conducted within 25' of the tree canopy. The fence shall be clearly marked to prevent inadvertent encroachment by heavy machinery.
- Drainage will not be allowed to pond around the base of any tree.
- An ISA-Certified Arborist or tree specialist shall be retained to perform any necessary pruning of trees during construction activity.
- Should any utility lines encroach within the tree protection zone, a single, shared utility conduit shall be used where possible to avoid negative impact to trees.
- Roots exposed, as a result of construction activities shall be covered with wet burlap to avoid desiccation, and should be buried as soon as practicable.
- Construction materials or heavy equipment shall not be stored within the root protection zone of preserved trees.
- An ISA-Certified Arborist or comparable specialist may make specific recommendations as to where any existing trees can safely tolerate some level of fill within the drip line.
- Trenching within RPZ shall be done under the field supervision of an ISA-Certified Arborist and shall be hand dug as much as possible in addition to using auger or drill.
- Construction materials shall be properly stored away from existing trees to avoid spillage or damage to trees.

5.0 REFERENCES

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds.). 2012. The Jepson Manual: Vascular Plants of California, second edition. University of California Press, Berkeley, California.

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APPENDIX A

TREE SURVEY TABLE

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Appendix A. Vista Mar Tree Survey Table

August 2019

Tag ID	Species	Common Name	Multi-stem	Diameter	Diameter	Diameter	Diameter	Diameter	Total Diameter (inches)	Total Circumference (inches)	Ordinance Status	Potential Impact	Comment	Dripline (feet)	Height (feet)	Condition	Health	Structure
802	*Pinus radiata*	Monterey pine	No	6.4	0.0	0.0	0.0	0.0	6.4	20.1	tree	No impact		6	25	Fair	Fair	Good
803	*Pinus radiata*	Monterey pine	No	7.4	0.0	0.0	0.0	0.0	7.4	23.2	tree	No impact		6	20	Fair	Fair	Good
805	*Pinus radiata*	Monterey pine	No	8.8	0.0	0.0	0.0	0.0	8.8	27.6	tree	No impact		6	20	Fair	Fair	Good
806	*Pinus radiata*	Monterey pine	No	9.2	0.0	0.0	0.0	0.0	9.2	28.9	tree	No impact		6	25	Fair	Fair	Good
807	*Pinus radiata*	Monterey pine	No	8.8	0.0	0.0	0.0	0.0	8.8	27.6	tree	No impact		6	20	Fair	Fair	Good
808	*Pinus radiata*	Monterey pine	No	8.3	0.0	0.0	0.0	0.0	8.3	26.1	tree	No impact		6	20	Fair	Fair	Fair
809	*Pinus radiata*	Monterey pine	No	9.1	0.0	0.0	0.0	0.0	9.1	28.6	tree	No impact		6	25	Fair	Fair	Fair
810	*Pinus radiata*	Monterey pine	No	7.8	0.0	0.0	0.0	0.0	7.8	24.5	tree	No impact		6	25	Fair	Fair	Fair
811	*Pinus radiata*	Monterey pine	No	6.8	0.0	0.0	0.0	0.0	6.8	21.4	tree	No impact		7	25	Fair	Fair	Fair
812	*Pinus radiata*	Monterey pine	No	8.0	0.0	0.0	0.0	0.0	8.0	25.1	tree	No impact		7	25	Fair	Fair	Fair
813	*Pinus radiata*	Monterey pine	No	9.0	0.0	0.0	0.0	0.0	9.0	28.3	tree	No impact		7	25	Good	Good	Fair
814	*Pinus radiata*	Monterey pine	No	6.1	0.0	0.0	0.0	0.0	6.1	19.2	tree	No impact		5	18	Fair	Fair	Fair
815	*Pinus radiata*	Monterey pine	No	27.1	0.0	0.0	0.0	0.0	27.1	85.1	heritage tree	Removal		20	45	Good	Good	Good
816	*Pinus radiata*	Monterey pine	No	18.6	0.0	0.0	0.0	0.0	18.6	58.4	heritage tree	Removal		15	35	Good	Good	Fair
817	*Pinus radiata*	Monterey pine	No	13.5	0.0	0.0	0.0	0.0	13.5	42.4	tree	Removal		15	30	Fair	Fair	Fair
818	*Pinus radiata*	Monterey pine	No	7.8	0.0	0.0	0.0	0.0	7.8	24.5	tree	Removal		6	20	Fair	Fair	Poor
819	*Pinus radiata*	Monterey pine	No	15.6	0.0	0.0	0.0	0.0	15.6	49.0	tree	Removal		15	28	Fair	Fair	Fair
820	*Pinus radiata*	Monterey pine	Yes	11.2	1.6	0.0	0.0	0.0	12.8	40.2	tree	Removal		10	30	Fair	Fair	Fair
821	*Pinus radiata*	Monterey pine	No	10.8	0.0	0.0	0.0	0.0	10.8	33.9	tree	Removal		10	30	Fair	Fair	Fair
822	*Pinus radiata*	Monterey pine	No	6.9	0.0	0.0	0.0	0.0	6.9	21.7	tree	Removal		6	20	Poor	Poor	Fair
823	*Pinus radiata*	Monterey pine	No	6.5	0.0	0.0	0.0	0.0	6.5	20.4	tree	Removal		6	20	Fair	Fair	Fair
824	*Pinus radiata*	Monterey pine	No	10.1	0.0	0.0	0.0	0.0	10.1	31.7	tree	Removal		8	20	Fair	Fair	Fair
825	*Pinus radiata*	Monterey pine	No	7.2	0.0	0.0	0.0	0.0	7.2	22.6	tree	Removal		8	18	Fair	Fair	Fair
826	*Pinus radiata*	Monterey pine	No	6.1	0.0	0.0	0.0	0.0	6.1	19.2	tree	Removal		7	15	Fair	Fair	Fair
827	*Pinus radiata*	Monterey pine	Yes	5.9	4.1	6.9	0.0	0.0	16.9	53.1	heritage tree	Removal		7	20	Fair	Fair	Fair
828	*Pinus radiata*	Monterey pine	Yes	8.8	1.0	0.0	0.0	0.0	9.8	30.8	tree	Removal		7	20	Fair	Fair	Fair
829	*Pinus radiata*	Monterey pine	No	7.9	0.0	0.0	0.0	0.0	7.9	24.8	tree	Removal		7	20	Fair	Fair	Fair
830	*Pinus radiata*	Monterey pine	Yes	6.3	2.0	0.0	0.0	0.0	8.3	26.1	tree	Removal		6	18	Fair	Fair	Fair
831	*Pinus radiata*	Monterey pine	Yes	2.0	5.8	6.0	4.8	0.0	18.6	58.4	heritage tree	Removal		8	20	Fair	Fair	Fair
832	*Pinus radiata*	Monterey pine	Yes	7.5	8.1	6.4	0.0	0.0	22.0	69.1	heritage tree	Removal		10	30	Fair	Fair	Fair
833	*Pinus radiata*	Monterey pine	Yes	7.2	10.8	4.1	0.0	0.0	22.1	69.4	heritage tree	Removal		10	30	Fair	Fair	Fair
834	*Pinus radiata*	Monterey pine	No	11.2	0.0	0.0	0.0	0.0	11.2	35.2	tree	Removal		11	30	Fair	Fair	Fair
835	*Pinus radiata*	Monterey pine	Yes	4.0	2.0	5.2	0.0	0.0	11.2	35.2	tree	Removal		8	25	Fair	Fair	Fair
836	*Pinus radiata*	Monterey pine	No	12.1	0.0	0.0	0.0	0.0	12.1	38.0	tree	Removal		10	30	Fair	Fair	Fair
837	*Pinus radiata*	Monterey pine	Yes	9.6	6.4	0.0	0.0	0.0	16.0	50.2	heritage tree	Removal		8	30	Fair	Fair	Fair
838	*Pinus radiata*	Monterey pine	No	69.0	0.0	0.0	0.0	0.0	69.0	216.7	heritage tree	Removal		8	25	Poor	Poor	Fair
839	*Pinus radiata*	Monterey pine	Yes	19.6	14.1	10.0	0.0	0.0	43.7	137.2	heritage tree	Removal		20	45	Good	Good	Fair
840	*Albizia lophantha*	plume acacia	No	10.1	0.0	0.0	0.0	0.0	10.1	31.7	tree	Removal		8	15	Fair	Fair	Poor
841	*Pinus radiata*	Monterey pine	Yes	5.1	1.0	2.2	0.0	0.0	8.3	26.1	tree	Removal		6	20	Fair	Fair	Fair
842	*Pinus radiata*	Monterey pine	Yes	9.3	7.9	0.0	0.0	0.0	17.2	54.0	heritage tree	Removal		10	30	Fair	Fair	Fair
843	*Pinus radiata*	Monterey pine	Yes	7.5	1.2	0.0	0.0	0.0	8.7	27.3	tree	Removal		8	30	Fair	Fair	Fair
844	*Pinus radiata*	Monterey pine	Yes	6.2	1.2	1.0	0.0	0.0	8.4	26.4	tree	Removal		6	20	Poor	Poor	Fair
845	*Pinus radiata*	Monterey pine	No	7.3	0.0	1.0	0.0	0.0	8.3	26.1	tree	Removal		6	25	Fair	Fair	Fair
846	*Pinus radiata*	Monterey pine	Yes	20.4	11.2	0.0	0.0	0.0	31.6	99.2	heritage tree	Removal		20	45	Good	Good	Fair
847	*Morella californica*	California wax myrtle	Yes	10.0	9.5	8.0	6.2	4.6	38.3	120.3	heritage tree	Removal		15	20	Good	Good	Fair
848	*Morella californica*	California wax myrtle	Yes	9.3	8.1	7.1	6.0	6.0	36.5	114.6	heritage tree	Removal		15	20	Good	Good	Fair
849	*Salix lasiolepis*	arroyo willow	Yes	4.0	5.0	4.0	4.0	2.0	19.0	59.7	heritage tree	Removal	No tag	25	15	Good	Good	Fair
850	*Pinus radiata*	Monterey pine	Yes	6.3	2.5	0.0	0.0	0.0	8.8	27.6	tree	Removal		8	25	Fair	Fair	Fair
851	*Pinus radiata*	Monterey pine	Yes	6.3	3.0	3.8	0.0	0.0	13.1	41.1	tree	Removal		8	25	Fair	Fair	Fair
852	*Pinus radiata*	Monterey pine	No	19.4	0.0	0.0	0.0	0.0	19.4	60.9	heritage tree	Removal		15	35	Fair	Fair	Fair
853	*Pinus radiata*	Monterey pine	No	20.5	0.0	0.0	0.0	0.0	20.5	64.4	heritage tree	Removal		15	35	Fair	Fair	Fair
854	*Pinus radiata*	Monterey pine	Yes	18.5	17.5	8.0	10.0	6.5	60.5	190.0	heritage tree	No impact		20	35	Good	Good	Fair

Appendix A. Vista Mar Tree Survey Table

August 2019

Tag ID	Species	Common Name	Multi-stem	Diameter	Diameter	Diameter	Diameter	Diameter	Total Diameter (inches)	Total Circumference (inches)	Ordinance Status	Potential Impact	Comment	Dripline (feet)	Height (feet)	Condition	Health	Structure
855	*Salix lasiolepis*	arroyo willow	Yes	4.0	5.0	6.0	4.0	2.0	21.0	65.9	heritage tree	No impact		25	12	Good	Good	Fair
856	*Salix lasiolepis*	arroyo willow	Yes	4.0	2.0	3.0	4.0	2.0	15.0	47.1	tree	No impact	No tag	25	12	Good	Good	Fair
857	*Salix lasiolepis*	arroyo willow	Yes	4.0	2.0	3.0	4.0	2.0	15.0	47.1	tree	No impact	No tag	25	12	Good	Good	Fair
858	*Salix lasiolepis*	arroyo willow	Yes	3.0	2.0	3.0	2.0	2.0	12.0	37.7	tree	No impact	No tag	25	15	Good	Good	Fair
859	*Salix lasiolepis*	arroyo willow	Yes	3.0	2.0	2.0	0.0	0.0	7.0	22.0	tree	No impact	No tag	25	15	Good	Good	Fair
860	*Salix lasiolepis*	arroyo willow	Yes	3.0	2.0	2.0	2.5	0.0	9.5	29.8	tree	No impact	No tag	25	15	Good	Good	Fair
861	*Salix lasiolepis*	arroyo willow	Yes	4.0	3.0	2.0	2.5	0.0	11.5	36.1	tree	No impact		25	15	Good	Good	Fair
862	*Salix lasiolepis*	arroyo willow	Yes	4.0	4.0	2.0	2.5	5.0	17.5	55.0	heritage tree	No impact		25	15	Good	Good	Fair
863	*Salix lasiolepis*	arroyo willow	Yes	4.0	4.0	3.0	2.5	0.0	13.5	42.4	tree	No impact		25	15	Good	Good	Fair
864	*Salix lasiolepis*	arroyo willow	Yes	4.0	4.0	5.0	2.5	0.0	15.5	48.7	tree	No impact	No tag	25	15	Fair	Fair	Fair
865	*Salix lasiolepis*	arroyo willow	Yes	4.0	4.0	2.0	0.0	0.0	10.0	31.4	tree	Removal	No tag	25	15	Fair	Fair	Fair
866	*Salix lasiolepis*	arroyo willow	Yes	4.0	4.0	2.0	1.0	1.0	12.0	37.7	tree	Removal	No tag	25	15	Fair	Fair	Fair
867	*Salix lasiolepis*	arroyo willow	Yes	5.0	3.0	4.0	3.0	3.0	18.0	56.5	heritage tree	Removal	No tag	25	20	Fair	Fair	Fair
868	*Morella californica*	California wax myrtle	Yes	8.0	9.0	8.5	4.0	0.0	29.5	92.6	heritage tree	Removal	No tag	25	25	Fair	Fair	Fair
869	*Salix lasiolepis*	arroyo willow	Yes	4.0	4.2	3.0	2.0	2.0	15.2	47.7	tree	Removal	No tag	20	10	Fair	Fair	Fair
870	*Salix lasiolepis*	arroyo willow	Yes	5.0	3.2	2.0	2.0	0.0	12.2	38.3	tree	Removal		15	10	Fair	Fair	Fair
871	*Salix lasiolepis*	arroyo willow	Yes	5.8	3.5	2.5	0.0	0.0	11.8	37.1	tree	Removal		15	10	Fair	Fair	Fair
872	*Salix lasiolepis*	arroyo willow	Yes	4.9	3.5	2.5	2.5	2.0	15.4	48.4	tree	Removal	No tag	15	10	Fair	Fair	Fair
873	*Salix lasiolepis*	arroyo willow	Yes	4.0	3.5	3.0	2.5	2.0	15.0	47.1	tree	Removal		15	10	Fair	Fair	Fair
874	*Morella californica*	California wax myrtle	Yes	7.5	6.8	7.0	5.0	3.0	29.3	92.0	heritage tree	Removal		15	20	Fair	Fair	Fair
875	*Salix lasiolepis*	arroyo willow	Yes	2.5	2.5	2.0	3.0	0.0	10.0	31.4	tree	Removal	No tag	15	20	Fair	Fair	Fair
876	*Salix lasiolepis*	arroyo willow	Yes	4.6	4.0	4.0	3.0	3.5	19.1	60.0	heritage tree	Removal		20	20	Fair	Fair	Fair
877	*Salix lasiolepis*	arroyo willow	Yes	6.5	7.0	4.0	3.0	0.0	20.5	64.4	heritage tree	Removal	No tag	20	20	Fair	Fair	Fair
878	*Salix lasiolepis*	arroyo willow	Yes	6.0	4.0	2.5	3.0	0.0	15.5	48.7	tree	Removal	No tag	20	20	Fair	Fair	Fair
879	*Salix lasiolepis*	arroyo willow	Yes	3.0	2.5	2.5	3.0	2.0	13.0	40.8	tree	Removal	No tag	15	20	Fair	Fair	Fair
880	*Salix lasiolepis*	arroyo willow	Yes	3.0	2.5	2.5	3.0	2.5	13.5	42.4	tree	Removal	No tag	15	20	Fair	Fair	Fair
881	*Salix lasiolepis*	arroyo willow	Yes	4.0	5.0	4.0	3.0	2.5	18.5	58.1	heritage tree	Removal	No tag	15	20	Fair	Fair	Fair
882	*Salix lasiolepis*	arroyo willow	Yes	4.0	5.0	4.0	3.0	3.0	19.0	59.7	heritage tree	Removal	No tag	15	15	Fair	Fair	Fair

APPENDIX B

TREE SURVEY MAP

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Figure 1.
Tree Survey and Impacts

Vista Mar Development
Pacifica, San Mateo County, California

Study Area (1.26 ac.)

Project Area (0.78 ac.)

Heritage Tree, No Impact

Tree, No Impact

Tree, Proposed for Removal

Heritage Tree, Proposed for Removal

N

0 50 100

Feet

wra
ENVIRONMENTAL CONSULTANTS

Path: L:\Acad 2000 Files\29000\29036\GIS\ArcMap\Fig5_TreeSurvey.mxd

Sources: NAIP 2016 Imagery, WRA | Prepared By: njander, 9/4/2019

APPENDIX C

REPRESENTATIVE PHOTOGRAPHS

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Photograph 1. A representative photograph of the arroyo willow (*Salix lasiolepis*) thicket in the eastern portion of the Study Area.

Photograph 2. A representative photograph of the arroyo willow (*Salix lasiolepis*) thicket in the southeastern portion of the Study Area.

Photograph 3. Tree #815, a 85.1” circumference Monterey pine (*Pinus radiata*) heritage tree proposed for removal in the western portion of the Study Area.

Photograph 4. Tree #853, a 64.4” circumference Monterey pine (*Pinus radiata*) heritage tree proposed for removal in the central portion of the Study Area.

Photograph 5. Tree #854, a 190.0” circumference Monterey pine (*Pinus radiata*) heritage tree to be retained in the northern portion of the Study Area.

Photograph 6. Tree #847, a 120.3” circumference California wax myrtle (*Morella californica*) heritage tree proposed for removal in the southern portion of the Study Area.

Appendix D

Geotechnical Report and Peer Review

GEOTECHNICAL INVESTIGATION
FOR PROPOSED NEW TOWNHOUSES

at

Monterey Road

Pacifica, California

Report Prepared for:

Vistamar Development

Report Prepared by:

GeoForensics, Inc.

April 2002

File: 202049
April 29, 2002

Miramar Enterprises
255 Rockaway Beach Ave #400
Pacifica, CA 94044

Subject: **Proposed New Townhouses**
Monterey Road
Pacifica, California
GEOTECHNICAL INVESTIGATION
FOR PROPOSED NEW TOWNHOUSES

Dear Gentlemen:

In accordance with your authorization, we have performed a subsurface investigation into the geotechnical conditions present at the location of the proposed improvements. This report summarizes the conditions we measured and observed, and presents our opinions and recommendations for the design and construction of the proposed new townhouses.

Site Description

The subject site is steeply sloping, irregularly-shaped parcel located on a steep uphill site along Monterey Road (at the approximate location shown on Figure 1). The property is bounded by a single family residence to the south, Monterey Road to the west, and the undeveloped hillsides to the north and east.

The site is currently an empty lot covered by small to medium sized bushes, weeds, and pampas grass, which blankets the parcel.

The ground surface in the site vicinity has an overall slope down towards the west (as shown on Figure 2). At the site, the ground is moderately to steeply sloping down to the southwest and west, with surface gradients ranging from 5:1 to 1:1 (horizontal:vertical, H:V). There is a swale on the south side of the lot. The northern portion of the lot appears to be a cut slope created for the construction of the roadway. Two v-ditches cross the upper reaches of the cut slope.

Proposed Construction

We understand that the current development for the site proposes the construction of new townhouses and associated improvements. No basements are planned for this project. The townhouses are to be of conventional, wood-framed construction. New foundation loads are expected to be typical for this type of structure (i.e. light).

Excavation work at the site is expected to be require some deep cuts into the hillside, but only minor fill placement is anticipated as part of this work. Site retaining walls up to 20 feet tall will be required to support the cuts for the proposed construction.

INVESTIGATION

Scope and Purpose

The purpose of our investigation was to determine the nature of the subsurface conditions so that we could provide geotechnical recommendations for the construction of the proposed new townhouses and associated improvements. In order to achieve this purpose, we have performed the following scope of work:

1 - visited the property to observe the geotechnical setting of the area to be developed;

2 - reviewed relevant published geotechnical maps;

3 - drilled two borings near the location of the proposed improvements;

4 - performed laboratory testing on the collected soil samples;

5 - assessed the collected information and prepared this report.

The findings of these work items are discussed in the following sections of this report.

Geologic Map Review

We reviewed the *Geotechnical Hazards Synthesis Map for San Mateo County*, by Leighton and Associates (1976), the *Map of Hillside Materials and Description of their Engineering Character, San Mateo County, California*, by Carl M. Wentworth and Associates (1985), and the *Geology of the Onshore Part of San Mateo County, California*, derived from the Digital Database Open-File-98-137. The relevant portion of the Digital Database map has been reproduced in Figure 3

The Digital Database map indicates that the site is underlain by *Colluvium* and *Greenstone* (map symbols "Qcl" and "Fg"). The Colluvium is described as loose to firm, friable, unsorted sand, silt, clay, gravel, rock debris, and organic material in varying proportions." The Greenstone material is described as "dark green to red altered basaltic rocks, including flows, pillow lavas, breccias, tuff breccias, tuffs, and minor related intrusive rocks, in unknown proportions. Unit includes some Franciscan chert and limestone bodies that are too small to show on the map. Greenstone crops out in lenticular bodies varying in thickness from a few meters to many hundreds of meters."

Our subsurface exploration in the southern area of the lot (see Boring #1 below) encountered gravelly clay and sand materials similar to those described as colluvium. Our subsurface exploration in the northern area of the lot (see Boring #2 below) encountered gravelly materials similar to those described as greenstone.

We reviewed the report by Howard • Donley Associates, Inc., *Geological Investigation Landslide Type and Distribution and Mechanics Details of Nine Representative Failures, January 1982 Rainstorms, City of Pacifica, California*, (1982). The **Landslide Susceptibility Map** (Plate 3) in the Donley report indicates that the subject site is in a Category II area, which is defined as having a "low susceptibility to landsliding."

The active San Andreas fault is mapped approximately 2000 feet northeast of the site. No landslides are mapped on any of the geologic maps on the subject property.

Subsurface Exploration

On March 26, 2002 we drilled two borings at the site at the locations shown on Figure 4. The borings were drilled using a Mobile B-24 truck-mounted drilling rig equipped with 4.0 inch diameter, helical flight augers. Logs of the soils encountered during drilling record our observations of the cuttings traveling up the augers and of relatively undisturbed samples collected from the base of the advancing holes. The final boring logs are based upon the field logs with occasional modifications made upon further laboratory examinations of the recovered samples and laboratory test results. The final logs are attached in Appendix A.

The relatively undisturbed samples were obtained by driving a 3.0 inch (outer diameter) Modified California Sampler into the base of the advancing hole by repeated blows from a 140 pound hammer lifted 30 inches. On the logs, the number of blows required to drive the sampler the final 12 inches of the 18 inch drive, have been recorded as the Blow Counts. These blows have not been adjusted to reflect equivalent blows of any other type of sampler or hammer, or to account for the different hammers and samplers used.

Subsurface Conditions

The borings encountered varying subsurface soil and rock conditions. Boring 1 encountered very stiff sandy clay with gravel to a depth of 5 feet. Below a depth of 5 feet, medium dense to dense gravelly clayey sand was encountered to the base of the boring at 15.5 feet.

Boring 2 penetrated 5 feet of sandy clay/clayey sand in a stiff/loose condition. This soil was underlain by black and white gravels to the base of the boring at 13 feet. We interpret the gravels to be the volcanic basalt. During the drilling process, caving of the basalt gravels occurred below a depth of 5 feet.

Please refer to Appendix A for a more detailed description of each boring.

During the drilling of the holes, groundwater was encountered at 11 and 13 feet below grade in borings 1 and 2 respectively.

Laboratory Testing

The relatively undisturbed samples collected during the drilling process were returned to the laboratory for testing of engineering properties. In the lab, selected soil samples were tested for moisture content, density, and strength. The results of the laboratory tests are attached to this report in Appendix B.

Strength testing was conducted on a samples of the colluvial soil (Samples 1-1 @ 1.5 feet, Sample 1-2 @ 5.5 feet, Sample 1-4a @ 14.5 feet, and Sample 1-4b @ 15 feet). The testing showed that these materials have moderate strength parameters (cohesions = 250 psf, 440 psf, 350 psf, and 170 psf) and (friction angles = 29 degrees, 34 degrees, 22 degrees, and 44 degrees). The other deeper soils at the site were judged to also have moderate strengths based upon the blow counts obtained during the sampling process.

Aerial Photograph Review

We reviewed a stereo set of historic aerial photographs to evaluate the nature of the terrain in which the subject parcel is located. The photographs allow for the terrain to be viewed in three-dimensions, as if being observed from an airplane above the site. The photograph we reviewed was:

Photo No.	Date	Scale	Type
AV-2839-2-3/4	3/25/86	1:100	Color

Review of the photograph indicated that the Monterey Road had already been constructed at that time. In front of the subject parcel, the road appears to cut across the nose of a ridge. The slope above the roadway (within the subject parcel) appears to have been cut back to create the current slope observed in the aerial photograph. It appears that two v-ditches have been cut across the hillside slope as part of the grading work. No signs of slope instability were noted in the vicinity of the cut slope.

Along the southern border of the property, a drainage swale extends from several hundred feet to the east, down along the side of the property to the street, where fill has been placed for the roadway. At the time the photograph was taken, the ground in the swale has been relatively freshly disturbed, with virtually no ground cover along the axis of the swale. Towards the head of the ravine, a small circular depression in the ground is also barren of vegetation. These barren areas are a debris flow which originated near the head of the swale, and has flowed down the drainage swale, all the way to the street.

CONCLUSIONS AND RECOMMENDATIONS

General

Based upon our investigation, we believe that the proposed improvements can be safely constructed. Geotechnical development of the site is controlled by the presence of debris flow deposits at the head of the swale which passes through the site, and steep slopes, underlain by relatively clean gravelly soils.

Where the proposed site improvements are located on, or proximate to, slopes, they should be supported by drilled piers. However, where the improvements are situated in level areas, then spread footings may be utilized. All foundation elements should derive their support from competent colluvial or basalt bedrock materials.

The recommendations in this report should be incorporated into the design and construction of the proposed new townhouses and associated improvements.

Seismicity

The greater San Francisco Bay Area is recognized by Geologists and Seismologists as one of the most active seismic regions in the United States. Three major fault zones pass through the Bay Area in a northwest direction which have produced approximately 12 earthquakes per century strong enough to cause structural damage. The faults causing such earthquakes are part of the San Andreas Fault System, a major rift in the earth's crust that extends for at least 700 miles along western California. The San Andreas Fault System includes the San Andreas, Hayward, Calaveras Fault Zones, and other faults.

During 1990, the U.S. Geological Survey cited a 67 percent probability that a Richter magnitude 7 earthquake, similar to the 1989 Loma Prieta Earthquake, would occur on one of the active faults in the San Francisco Bay Region in the following 30 years. Recently, this probability was increased to 70 percent, as a result of studies in the vicinity of the Hayward Fault. A 23 percent probability is still attributed specifically to the potential for a magnitude 7 earthquake to occur along the San Andreas fault by the year 2020.

Ground Rupture - The lack of mapped active fault traces through the site, suggests that the potential for primary rupture due to fault offset on the property is low.

Ground Shaking - The subject site is likely to be subject to very strong to violent ground shaking during its life span due to a major earthquake in one of the above-listed fault zones. Current building code design should be followed by the structural engineer to minimize damages due to seismic shaking. The site should be considered to have a UBC Soil Type SD. Improvements should be designed to resist shaking from a Seismic Source Type A, located less than 1 km from the site. Alternatively, site-specific accelerations may be utilized by the structural engineer for the design of

the proposed improvements. The following accelerations were obtained by utilizing the EQFAULT computer program by T.F. Blake. The program provides a deterministic prediction of horizontal ground accelerations from more than 100 digitized faults. Then utilizing an attenuation relationship by Campbell and Bozorgnia (1994), a maximum-credible site acceleration of 0.53 g, and a maximum-probable site acceleration of 0.51 g, were predicted for the property. These site accelerations were determined assuming a maximum-credible event of magnitude 8.0, and a maximum-probable event of magnitude 7.3, on the San Andreas fault. We note that the repeatable accelerations typically used for seismic design are generally considered to be on the order of 67% of the aforementioned peak values.

Landsliding - The subject site and the surrounding area are moderately to steeply sloping. Fortunately, the site is underlain by competent resistant native material at relatively shallow depths. Therefore, the hazard due to large-scale seismically-induced landsliding is, in our opinion, relatively low for the site. However, as with any slope, shallow sloughing of the steeper site slopes could occur during earthquake shaking. The proposed improvements should not be affected by any such sloughing, as they will be supported by the competent native materials at the site.

Liquefaction - Liquefaction most commonly occurs during earthquake shaking in loose fine sands and silty sands associated with a high ground water table. Based upon the subsurface investigation, the proposed building site is underlain by resistant materials at shallow depths. Although ground water was encountered in the vicinity of the proposed building site, it is our opinion that liquefaction is unlikely to affect the subject property.

Ground Subsidence - Ground subsidence may occur when poorly consolidated soils densify as a result of earthquake shaking. Since the proposed building site is underlain at shallow depths by resistant materials, the hazard due to ground subsidence is, in our opinion, considered to be low.

Lateral Spreading - Lateral spreading may occur when a weak layer of material, such as a sensitive silt or clay, loses its shear strength as a result of earthquake shaking. Overlying blocks of competent material may be translated laterally towards a free face. Such conditions were not encountered on the proposed building site, therefore, the hazard due to lateral spreading is, in our opinion, considered very low.

Debris Flow Mitigation

The swale which passes along the southern side of the parcel extends up to a hillside area which is filled with colluvial materials. Those materials have been liberated in the past in the form of a small debris flow which has traveled down the slope and been deposited out in Monterey Road. The threat from a future debris flow down this ravine remains high, and threatens development within or around the swale area of the subject parcel. Mitigation measures will need to be incorporated into the design and construction of the proposed development.

Alternatives for debris flow mitigation typically include:

Avoidance - build away from the anticipated debris flow track;

Containment - construction of a reservoir of sufficient size to contain the debris;

Removal - excavation of the potentially unstable source of debris at is source area;

Deflection - redirection of the flow path away from developed areas.

Of these choices, it is our opinion that removal and containment are not practical for this site. **Removal** would require substantial work on properties located off the subject site, and unlikely to be accessible to the owner of this project. Similarly, **containment** would appear to require the construction of a sufficiently large reservoir to encompass the vast majority of the subject parcel.

Avoidance is a possible choice, but due to the skewed orientation of the hillside slope to the channel, a relatively wide area of the lower reaches of the property (the area proposed for development) would remain at-risk. The areas which remain at-risk should therefore be protected from impact using **deflection** barriers to redirect the debris away from the development.

Based upon the current tentative design layout, we suggest that the access driveway be designed to accept and convey debris flow materials out onto the street (as has occurred in the past). To properly accomplish this feat, the driveway will need to be constructed with a portion of steeply sloping pavement to help deflect the flow materials. Deflection walls will need to be incorporated into the roadway construction, directing the debris flow materials back onto the driveway and away from the buildings. Alternatively, the roadway can be reconfigured and raised to an elevation well above the creek bed, forcing the debris flow materials to flow out into the street without passing down the driveway. Again, this choice would still require debris deflection walls above and to the side of the driveway alignment. Finally, it may be desirable to consider some re-direction of the axis of the existing swale to help channelize the debris flow materials in a direction away from the proposed developed area of the parcel.

Debris flow deflection walls will need to extend between 5 and 10 feet above the grade of the adjacent drainage swale slopes. The smaller walls may be used where the axis of the channel is steeper, and the walls are oriented parallel to the axis of the channel. The taller walls should be used where the channel starts to flatten out or the walls are oriented as flat as 45 degrees to the axis of potential debris flow tracking.

Debris flow deflection walls should be designed to accommodate an active pressure of 120 pcf EFW, as the fluidized soils will be substantially heavier than normal soil materials (which can partially support themselves) and much denser than water (at 62.4 pcf). These forces may be resisted by drilled pier supports, spread footings, or buttressing soil embankments behind (upslope of) the walls.

As a final precaution, we recommend that the exterior wall of the unit closest to the swale consider having a portion of its exterior southward facing wall consist of a debris flow wall which extends a minimum of 5 feet above finished grade.

Site Preparation and Grading

Any vegetation and organically contaminated soils should be cleared from the building area. All holes resulting from removal of tree stumps and roots, or other buried objects, should be overexcavated into firm materials and then backfilled and compacted with native materials.

The placement of fills at the site is expected to include: utility trench backfill, slab subgrade materials, and finished drainage and landscaping grading. Unretained fill should not be placed on the site. These and all other fills should be placed in conformance with the following guidelines:

Fills may use organic-free soils available at the site or import materials. Import soils should be free of construction debris or other deleterious materials and be non-expansive. *A minimum of 3 days prior to the placement of any fill, our office should be supplied with a 30 pound sample (approximately a full 5 gallon bucket) of any soil or baserock to be used as fill (including native and import materials) for testing and approval.*

All areas to receive fills should be stripped of organics and loose or soft near-surface soils. Fills should be placed on level benches in lifts no greater than 6 inches thick (loose) and be compacted to at least 90 percent of their Maximum Dry Density (MDD), as determined by ASTM D-1557. In pavement (concrete or asphalt) areas to receive vehicular traffic, all baserock materials should be compacted to at least 95 percent of their MDD. Also, the upper 6 inches of soil subgrade beneath any pavements should be compacted to at least 95 percent of its MDD.

Temporary, dry-weather, vertical excavations should remain stable for short periods of time to heights of 5 feet. Due to the loose gravels at approximately 8 feet, deeper cuts have a high potential to experience raveling and sloughing. ***Deeper cuts will need to be shored or laid back.*** All excavations should be shored in accordance with OSHA standards.

Deep excavations into the hillside will penetrate more deeply than the depths achieved by our borings. These excavations are expected to encounter progressively harder bedrock materials as the excavations proceed, below a mantle of looser and potentially unstable upper soils. Therefore, the excavations should be prepared to accommodate both types of excavated materials (unstable and hard), and the contractor should be prepared for hard drilling or excavation at depths in excess of 15 feet.

Due to the existing steep nature of the existing areas to be cut for construction of the townhouses and driveway, and the relatively poor quality of the upper soil and bedrock materials, it may be desirable to construct the retaining walls at the excavations progress. Such walls would consist of tie-back supported shotcrete retaining walls. The walls may be constructed in conjunction with drilled piers,

or may be constructed as steeply sloping "soil nail" walls obtaining all support from the tie-backs and inclined slopes.

Permanent cut and/or fill slopes should be no steeper than 2:1 (H:V). However, even at this gradient, minor sloughing of slopes may still occur in the future. Positive drainage improvements (e.g. drainage swales, catch basins, etc.) should be provided to prevent water from flowing over the tops of cut and/or fill slopes.

Foundation Alternative #1 - Drilled Piers

Any new improvements built on, or within 15 feet of the crests of slopes steeper than 4:1 (H:V), will need to be supported by a drilled pier foundation system. Piers can also be used in level areas, if desired.

In level areas (flatter than 4:1, H:V) , the piers should penetrate a minimum of 8 feet below lowest adjacent grade, and 5 feet into competent native material or weathered rock, whichever is deeper. In sloping areas, the piers should penetrate a minimum of 12 feet below lowest adjacent grade, and 8 feet into competent native material or weathered rock, whichever is deeper. It should be assumed that up to 5 feet of overburden will exist at the site, depending on the scope of the grading.

Where piers are located on ground that has a gradient of 4:1 (H:V) or flatter, the piers should have a minimum diameter of 12 inches and be nominally reinforced with a minimum of two #5 bars vertically. If pier depths are to extend over 15 feet deep, then minimum 16 inch diameter piers should be used. Where piers are located in areas with gradients steeper than 4:1 (H:V), they should have a minimum diameter of 16 inches and be nominally reinforced with a minimum of four #4 bars vertically, with #3 ties on 24 inch centers.

Piers should be spaced no closer than 4 diameters, center to center. Actual pier depth, diameter, reinforcement, and spacing should be determined by the structural engineer based upon the following design criteria:

A friction value of 600 psf may be assumed to act on that portion of the pier within bedrock material. Lateral support may be assumed to be developed along the length of the pier below 5 feet, using a passive pressure of 400 pcf Equivalent Fluid Weight (EFW). Passive resistance may be assumed to act over 1.5 projected pier diameters. Above the bedrock, no frictional or lateral support may be assumed. These design values may be increased ⅓ for transient loads (i.e. seismic and wind).

Even though piers are designed to derive their vertical resistance through skin friction, the bases of the piers holes should be clean and firm prior to setting steel and pouring concrete. If more than 6 inches of slough exists in the base of the pier holes after drilling, then the slough should be removed. If less than 6 inches of slough exists, the slough may be tamped to a stiff condition. Piers should not remain open for more than a few days prior to casting concrete. In the event of rain, shallow groundwater, or caving conditions it may be necessary to pour piers immediately.

All perimeter piers, and piers under load-bearing walls, should be connected by concrete grade beams. Perimeter grade beams should penetrate a minimum of 6 inches below crawlspace grade. Interior grade beams do not need to penetrate below grade.

All improvements connected directly to any pier supported structure, also need to be supported by piers or footings bearing on weathered bedrock. This includes, but is not limited to: porches, decks, entry stoops and columns, etc. If the designer does not wish to pier support these items, then care must be taken to structurally isolate them (with expansion joints, etc.) from the pier supported structure.

If the above recommendations are followed, total foundation settlements should be less than 1 inch, while differential settlements should be less than ½ inches.

Foundation Alternative #2 - Spread Footings

Due to the relatively non-expansive nature and high strength of the site bedrock, the foundations (or portions) for the townhouses may consist of conventional spread footings on bedrock.

All footings should be a minimum of 12 inches wide. Strip footings should be embedded a minimum of 24 inches below exterior grade and 18 inches below interior grade, *whichever is deeper*. Stepped footings need only be embedded 18 inches below exterior grade at the toe. Isolated footings (e.g. interior pads or exterior post supports) should be embedded at least 24 inches below lowest adjacent grade.

All spread footings should bear on competent bedrock, as verified by our office in the field. Localized deepening of footings may be required to reach the bedrock.

The footings should be founded below an imaginary line projecting at a 1:1 slope from the base of any adjacent, parallel utility trenches. The footings must be embedded so that there is a minimum of 15 feet of horizontal cover between the face of the footings and any adjacent, parallel slope.

The footings should be designed to exert pressures on the ground which do not exceed 3500 psf for Dead plus Live Loads. The weight of the embedded portion of the footings may be neglected when determining bearing pressures. Lateral pressures may be resisted by friction between the base of the footings and the ground surface. A friction coefficient of 0.40 may be assumed. Alternatively, lateral pressures may be resisted by a passive pressure of 400 pcf EFW assumed to be acting against the face of the footings (or shear keys, if required). These values may be increased ⅓ for transient loads (i.e. seismic and wind).

Footings should be nominally reinforced with four #4 bars (two at top and two at bottom). The designer should determine actual width, embedment and reinforcement for the footings.

If the above recommendations are followed, total foundation settlements should be less than 1 inch, while differential settlements should be less than ¾ inches.

Retaining Walls

Retaining walls may be supported by drilled piers or spread footings, depending upon wall type and location. All walls should be supported by competent native or weathered rock materials.

Wall Forces - Any unrestrained retaining walls required for the proposed construction should be designed to resist an active pressure of 45 pcf Equivalent Fluid Weight (EFW) in supporting soils with retained slopes less than 4:1 (H:V). An active pressure of 65 pcf EFW should be utilized for retained slopes with an inclination of 2:1 (H:V). Where retained slopes are greater than 4:1, though less than 2:1, the designer should linearly interpolate between 45 and 65 pcf EFW. *These active pressures may be reduced 5 pcf when supporting cuts deeper than 5 feet.*

Any restrained retaining walls required should be designed for the aforementioned active pressures with an additional uniform pressure of 8H psf, where H is the height of the wall in feet. We leave it to the design professional's judgement in determining whether a wall is restrained or not.

All retaining walls should also be designed to resist a point load applied at the midpoint of the wall, equal to ½ the maximum applied surcharge.

Drilled Piers - Any wall which is located on, or within 15 feet of the crest of, slopes steeper than 4:1 (H:V) should utilize a drilled pier foundation system. We note that pier-supported walls may not rely upon a toe footing to resist overturning forces. All vertical and lateral forces should be resisted by piers. This may require the use of a staggered, double row of piers, depending upon the wall height and any surcharges. Additional lateral support may be derived from tie backs drilled into bedrock. Tie back installation details will need to be determined based upon the type of tie back used.

Please refer to the *Foundation Alternative #1* section of this report for the applicable pier design recommendations.

If drilled piers are utilized beneath a concrete or block wall, they will need to be connected by a concrete grade beam. No grade beam is required for a wood lagging wall.

Spread Footings - Walls located 15 or more feet from the crest of slopes steeper than 4:1 (H:V) and upon exposed bedrock may utilize a spread footing foundation system. Refer to the *Foundation Alternative #2* section of this report for the applicable spread footing design recommendations.

Wall Drainage - The above values have been provided assuming that back-of-wall drains will be installed to prevent build-up of hydrostatic pressures behind all walls. This drainage system may consist of a prefabricated drainage panel (i.e. Miradrain) or a gravel and filter fabric type system. We also recommend that any interior retaining walls, or walls through which efflorescence transmission would be undesirable, should be waterproofed. The waterproofing should be specified by the designer, though we recommend the use of Paraseal, Miradri, or other similar waterproofing membrane. Additionally, the ground surface above all walls should form a drainage swale to carry water to the sides of the wall. Excess surface water should not overtop the retaining wall.

The back-of-wall drain systems should be installed with a minimum 3 inch diameter perforated pipe placed a minimum of 4 inches below the top of the footing. The pipe should not be placed on top of the heel of the wall footing unless seepage through the base of the wall is acceptable. Perforations should be placed face-down (at 5 and 7 o'clock). The perforated pipe should connect to a solid discharge line, which discharges away from the new structures. This solid line should not connect to surface water drain lines (i.e. downspout and area drain lines). If water transmission through the base of a wall is not a concern, then weep holes may be used in place of the pipe.

If used, the gravel system should consist of a minimum 12 inch wide column of drain rock (⅜ to ¾ inch clean, crushed rock) extending the full width of the wall. The rock should continue to within 12 inches of finish grade. Prior to backfilling with the drain rock, a layer of filter fabric (Mirafi 140N or approved equivalent) should be placed against all soil surfaces to separate the rock and soil. The filter fabric should wrap over the top of the gravel and then a 12 inch thick cap of native soils should be placed at the top of the drain. If concrete flatwork is to directly overlay the back-of-wall drain, or if the drain is located in a crawlspace area, then the soil cap should be eliminated.

If prefabricated drainage panels are used, a packet of filter fabric-wrapped drain rock should be placed around the perforated collector pipe at the base of the panel. The tops of the panels should be sealed and secured in accordance with the manufacturer's recommendations.

We note that Caltrans Class II permeable rock may be utilized in lieu of clean drain rock and filter fabric. The Class II permeable rock needs to be compacted into place, and needs to be certified by the quarry or rockery that it meets the Caltrans Class II permeable rock specifications. Additionally, the perforated collector pipes will need to be wrapped in a filter fabric sock to prevent the permeable rock from washing into the pipe.

Slabs-on-Grade

Where located within areas bounded by spread footings, the townhouse floors may consist of a conventional slab-on-grade. Slabs which abut pier supported footings need to be structural slabs, deriving all support from foundation elements not soil. The entire slab should be underlain by at least 6 inches of clean, crushed drain rock, overlain by 2 inches of sand. The sand and drain rock should be separated by a moisture barrier. At least 3 inches of gravel and the sand should also

extend between the base of the floor slab and the top of the retaining wall footings. Perforated collector pipes should be embedded within the drain rock to carry any water which gathers within the drain rock to the back-of-wall drain discharge location. *The use of baserock or Caltrans Class II permeable rock is not allowed beneath the townhouse floor slabs in lieu of drain rock.*

In large slabs (e.g. patios, garage, etc.), score joints should be placed at a maximum of 10 feet on center. In sidewalks, score joints should be placed at a maximum of 5 feet on center. All slabs should be separated from adjacent improvements (e.g. footings, porches, columns, etc.) with expansion joints.

Interior slabs, and other slabs through which moisture transmission is undesirable, should be underlain by 2 inches of sand over 4 inches of ¾ inch drain rock. The sand and drain rock should be separated by a vapor barrier (e.g. visqueen). Slabs which will be subject to light vehicular loads and through which moisture transmission is not a concern (e.g. driveway) should be underlain by at least 6 inches of compacted baserock, in lieu of the sand and gravel. The 6 inches of granular subgrade may be included as part of the 12 inches of non-expansive materials. Exterior landscaping flatwork (e.g. patios and sidewalks) may be placed directly on proof-rolled soil subgrade materials (e.g. no granular subgrade), however, they will be potentially subject to shifting and moisture transmission.

As stated previously, in pavement (concrete or asphalt) areas to receive vehicular traffic, all baserock materials should be compacted to at least 95 percent of their MDD. Also, the upper 6 inches of native soil subgrade beneath any pavements should be compacted to at least 95 percent of its MDD.

If the garages are to be at grade, the garage slabs should "float" independently from the perimeter grade beam. The slab should be separated from the grade beam with an expansion joint completely around the perimeter and at any interior isolated columns. Ideally, the grade beam at the front of the garage should continue to final floor elevation, with the slab inside the grade beam. This will help to assure that the garage doors always shut upon the grade beam, which should experience little or no movement (while the slab has the potential for greater movements).

Drainage

Due to the sloping nature of the site, it will be important to provide good drainage improvements at the property.

Surface Drainage - Adjacent to any buildings, the ground surface should slope at least 4 percent away from the foundations within 5 feet of the perimeter. Impervious surfaces should have a minimum gradient of 2 percent away from the foundation.

Surface water should be directed away from all buildings into drainage swales, or into a surface drainage system (i.e. catch basins and a solid drain line). "Trapped" planting areas should not be created next to any buildings without providing means for drainage.

All roof eaves should be lined with gutters. The downspouts should be connected to solid drain lines, or should discharge onto paved surfaces which drain away from the structure. The downspouts may be connected to the same drain line as any catch basins, but should not connect to any perforated pipe drainage system.

Footing Drain - Due to the potential for changes to surface drainage provisions, it would be wise (though not required) to install a perimeter footing drain to intercept water attempting to enter the crawlspace or subslab areas. If a footing drain is not installed, some infiltration of moisture into the crawlspace may occur. Such penetration should not be detrimental to the performance of the structure, but can possibly cause humidity, mold, and mildew problems within the townhouses. Where perimeter walls will be retaining walls, the back of wall drain will serve as the footing drain.

The footing drain system, if installed, should consist of a 12 inch wide gravel-filled trench, *dug a minimum of 12 inches below the elevation of the adjacent crawlspace*. The trench should be lined with a layer of filter fabric (Mirafi 140N or equivalent) to prevent migration of silts and clays into the gravel, but still permit the flow of water. Then 1 to 2 inches of drain rock (clean crushed rock or pea gravel) should be placed in the base of the lined trench. Next a perforated pipe (minimum 3 inch diameter) should be placed on top of the thin rock layer. The perforations in the pipe should be face down. The trench should then be backfilled with more rock to within 6 inches of finished grade. The filter fabric should be wrapped over the top of the rock. Above the filter fabric 6 inches of native soils should be used to cap the drain. If concrete slabs are to directly overlay the drain, then the gravel should continue to the base of the slab, without the 6 inch soil cap. <u>This drain should not be connected to any surface drainage system.</u>

Drainage Discharge - The surface drain lines should discharge at least 15 feet away from the townhouses, preferably at the street or southern drainage swale. The discharge location(s) should be protected by energy dissipaters to reduce the potential for erosion.

The footing drain (if installed) and any back-of-wall drain lines should discharge independently from the surface drainage system. A sump pump may be required for the footing drain discharge system. The surface and subsurface drain systems <u>should not</u> be connected to one another.

Drainage Materials - Drain lines should consist of hard-walled pipes (e.g. Schedule 40 PVC or SDR 35). In areas where vehicle loading is not a possibility, SDR 38 or HDPE pipes may be used. Corrugated, flexible pipes may not be used in any drain system installed at the property.

Surface drain lines (e.g. downspouts, area drains, etc.) should be laid with a minimum 2 percent gradient (¼ inch of fall per foot of pipe). Any subsurface drain systems (e.g. footing drains) should be laid with a minimum 1 percent gradient (⅛ inch of fall per foot of pipe).

Utility Lines

All utility trenches should be backfilled with compacted native clay-rich materials within 5 feet of any buildings. This will help to prevent migration of surface water into trenches and then underneath the structures' perimeter. The rest of the trenches may be compacted with other native soils or clean imported fill. Only mechanical means of compaction of trench backfill will be allowed. Jetting of sands is not acceptable. Trench backfill should be compacted to at least 90 percent of its MDD. However, under pavements, concrete flatwork, and footings the upper 12 inches of trench backfill must be compacted to at least 95 percent of its MDD.

Pavement

The new driveway is expected to be asphaltic concrete over Caltrans Class II aggregate base (baserock). The asphalt should have a minimum thickness of 2½ inches. The baserock should have a minimum thickness of 6 inches. All of the baserock and the upper 6 inches of soil subgrade should attain a minimum compaction of 95 percent of its MDD.

Plan Review and Construction Observations

The use of the recommendations contained within this report are contingent upon our being contracted to review the plans, and to observe geotechnically relevant aspects of the construction.

We should be provided with a full set of plans to review at the same time the plans are submitted to the building/planning department for review. A minimum of one working week should be provided for review of the plans.

At a minimum, our observations should include: compaction testing of fills and subgrades; footing excavations; pier drilling; slab subgrade preparation; installation of any drainage system (e.g. back-of-wall, footing, and surface), and final grading. A minimum of 48 hours notice should be provided for all construction observations.

LIMITATIONS

This report has been prepared for the exclusive use of the addressee, and their architects and engineers for aiding in the design and construction of the proposed development. It is the addressee's responsibility to provide this report to the appropriate design professionals, building officials, and contractors to ensure correct implementation of the recommendations.

File: 202049
April 29, 2002

The opinions, comments and conclusions presented in this report were based upon information derived from our field investigation and laboratory testing. Conditions between, below, or beyond our borings may vary from those encountered. Such variations may result in changes to our recommendations and possibly variations in project costs. Should any additional information become available, or should there be changes in the proposed scope of work as outlined above, then we should be supplied with that information so as to make any necessary changes to our opinions and recommendations. Such changes may require additional investigation or analyses, and hence additional costs may be incurred.

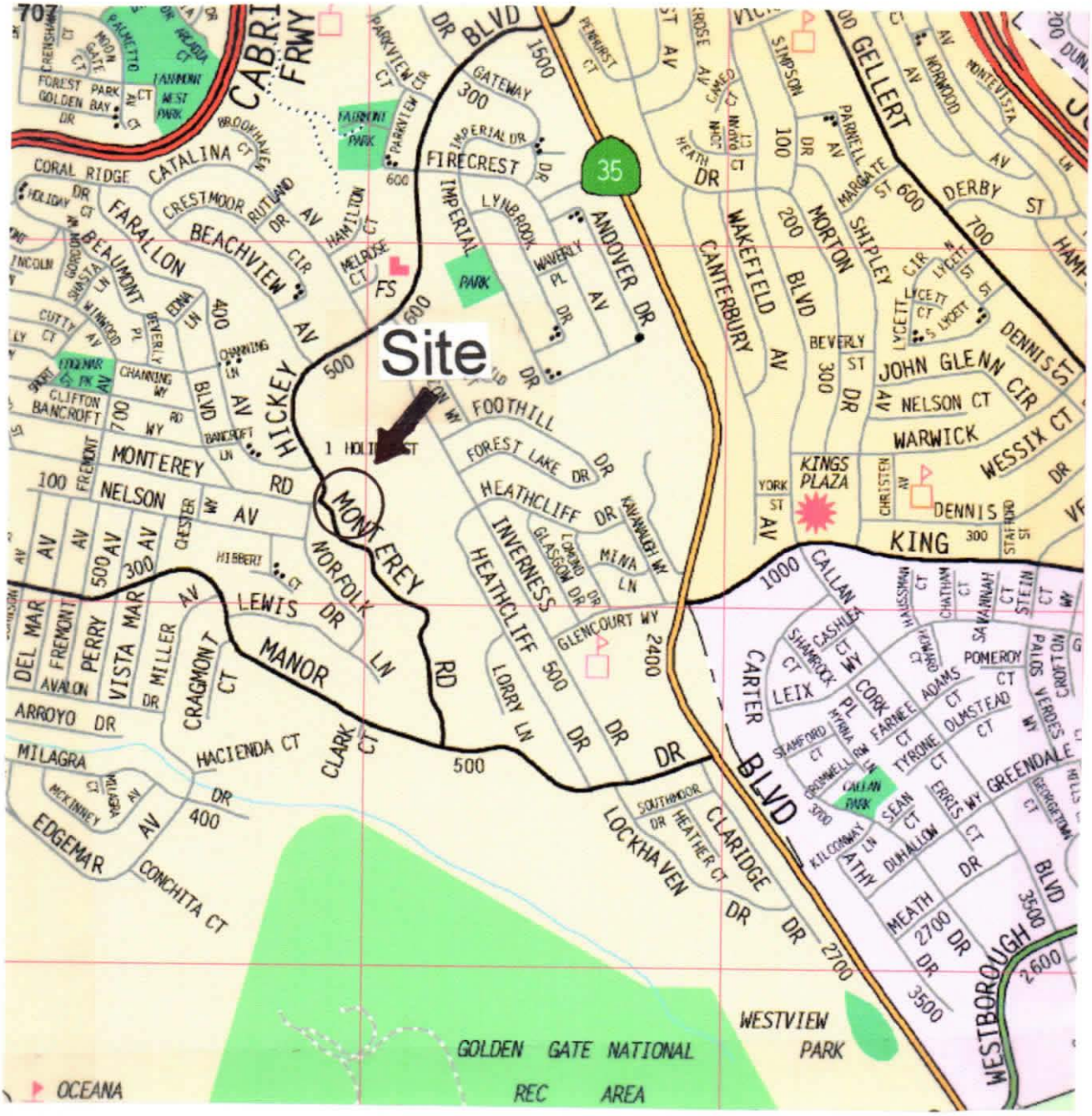
Our work has been conducted in general conformance with the standard of care in the field of geotechnical engineering currently in practice in the San Francisco Bay Area for projects of this nature and magnitude. We make no other warranty either expressed or implied. By utilizing the design recommendations within this report, the addressee acknowledges and accepts the risks and limitations of development at the site, as outlined within the report.

Respectfully Submitted;
GeoForensics, Inc.

Daniel F. Dyckman, PE, GE
Senior Geotechnical Engineer, GE 2145

Bernard A. Atendido
Field Engineer

cc: 5 to addressee



Source: "Thomas Bros. Maps" CD-ROM (1996).

GeoForensics Inc.
561-D Pilgrim Drive Foster City, CA 94404
Tel: (650) 349-3369 Fax: (650) 571-1878

Figure 1 - Site Location

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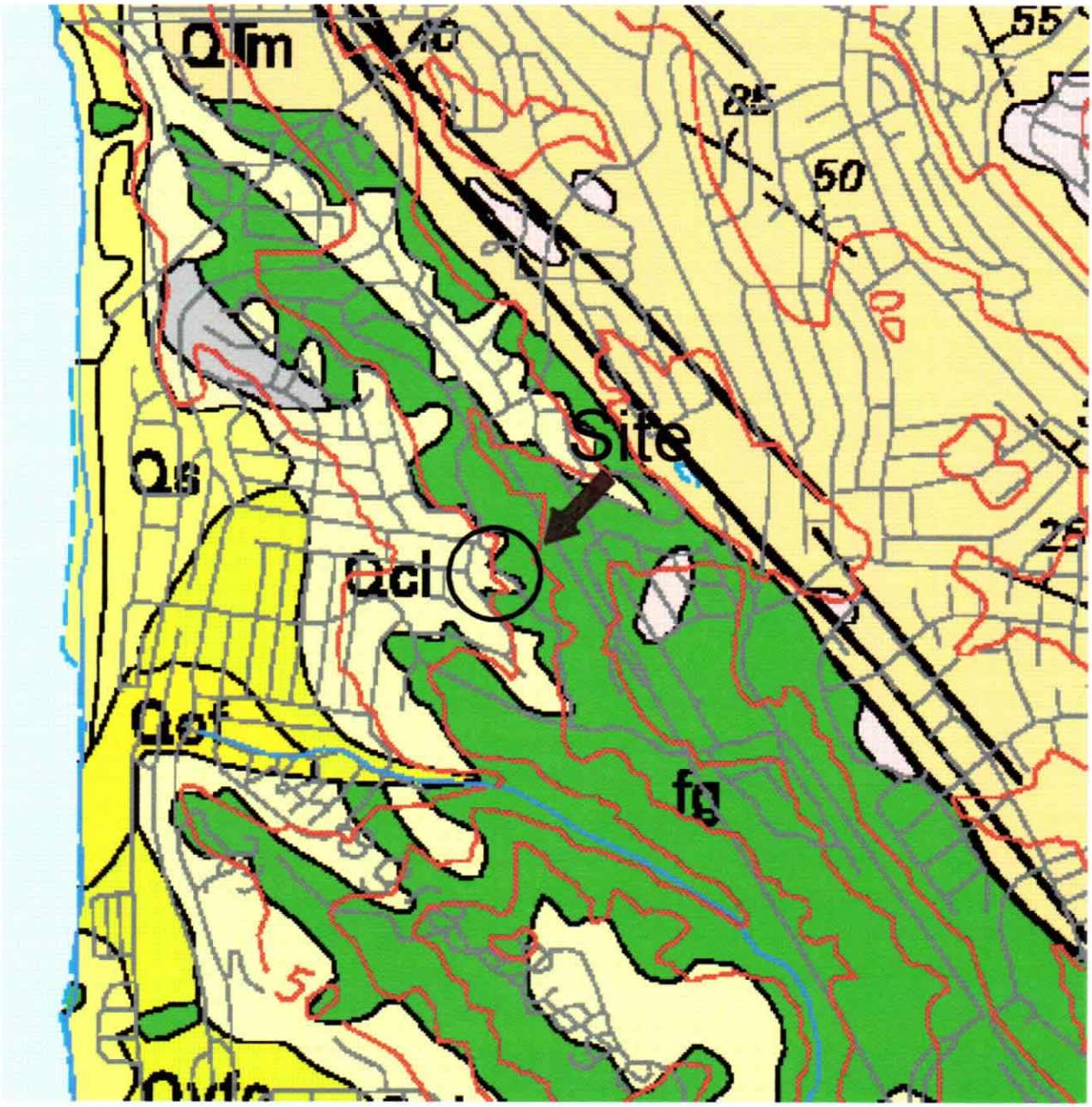
Tel: (650) 349-3369 Fax: (650) 571-1878

Figure 2 - Vicinity Topography



Qcl - Colluvium (Holocene) - Loose to firm, friable, unsorted sand, silt, clay, gravel, rock debris, and organic material in varying proportions.

Fg - Greenstone- Dark green to red altered basaltic rocks, including flows, pillow lavas, breccias, tuff breccias, tuffs, and minor related intrusive rocks, in unknown proportions. Unit includes some Franciscan chert and limestone bodies that are too small to show on map. Greenstone crops out in lenticular bodies varying in thickness from a few meters to many hundreds of meters.

Source: "*Geology of the Onshore Part of San Mateo County, California*" derived from the Dgital Database Open-File-98-137.

GeoForensics Inc.
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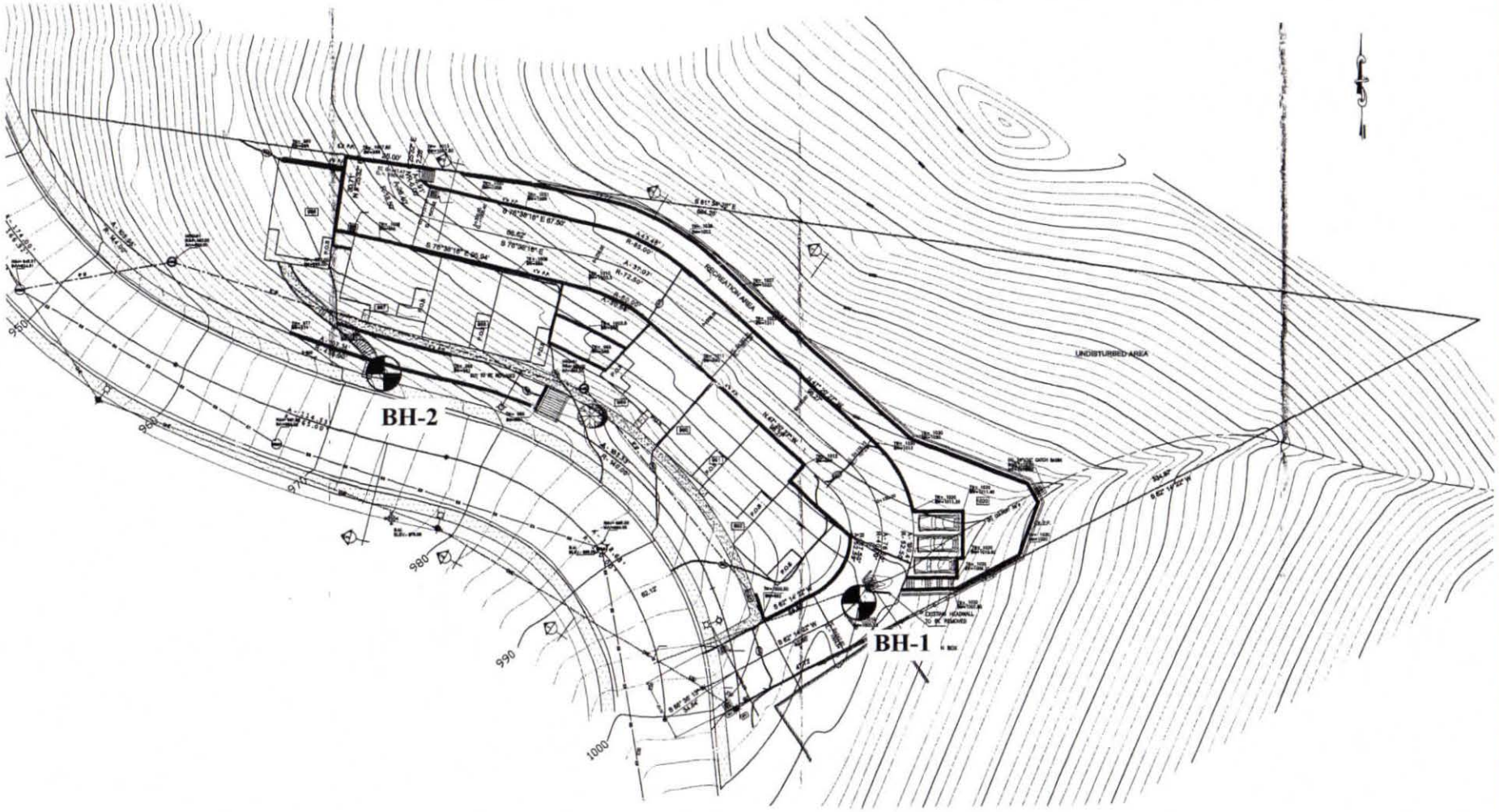
Figure 3 - Geologic Map



Scale: 1 inch = 40 feet

Base drawing by J C Engineering

GeoForensics Inc.
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Tel: (650) 349-3369 Fax: (650) 571-1878

Figure 4 - Site Plan with Boring Locations

APPENDIX A - BORING LOGS

LOG OF BORING

DEPTH (ft)	SAMPLE NO.	SAMPLE LOC.	BLOW COUNTS (12 inches)	DESCRIPTION	DRY DENSITY (pcf)	MOISTURE CONTENT (%)
	1 - 1		44	sandy fine gravelly CLAY - brown; slightly moist sandy small to large gravelly CLAY - greenish brown & brown; very stiff; slightly moist	114.5	14.6
5	1 - 2		45	small to large gravelly clayey SAND - as above; medium dense	127.1	7.7
10	1 - 3	N/R	23	cuttings are sandy CLAY/clayey SAND with some fine gravels - orange-brown; slightly moist	-	-
15	1 - 4A			clayey SAND - moist; orange-brown; dense	87.9	34.6
	1 - 4B		85/7"	weathered clayey SAND - slightly moist; greenish brown; very dense	94.1	30.0
20						
25				Groundwater encountered @ 13 feet, rose to 10.5 feet after 1.5 hours. Bottom of boring at 15.5 feet Drilled on 03/26/02 Logged by ba Mobile B-24 drilling rig Modified California sampler 140# hammer		
30						
35						

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Figure A1 - Log of Boring 1

LOG OF BORING

DEPTH (ft)	SAMPLE NO.	SAMPLE LOC.	BLOW COUNTS (12 Inches)	DESCRIPTION	DRY DENSITY (pcf)	MOISTURE CONTENT (%)
				gravelly sandy CLAY/clayey SAND - olive-brown; slightly moist		
	2 - 1		15	sandy CLAY/clayey SAND with fine to large gravels - red & olive-brown; slightly moist to moist; stiff/loose	115.3	16.3
5						
	2 - 2	N/R	23	cuttings are large white & black gravels	-	-
10						
15						
20						
25				Groundwater encountered @ 11 feet. Bottom of boring at 13 feet, gravels caved to 9 feet. Drilled on 03/26/02 Logged by ba Mobile B-24 drilling rig Modified California sampler 140# hammer		
30						
35						

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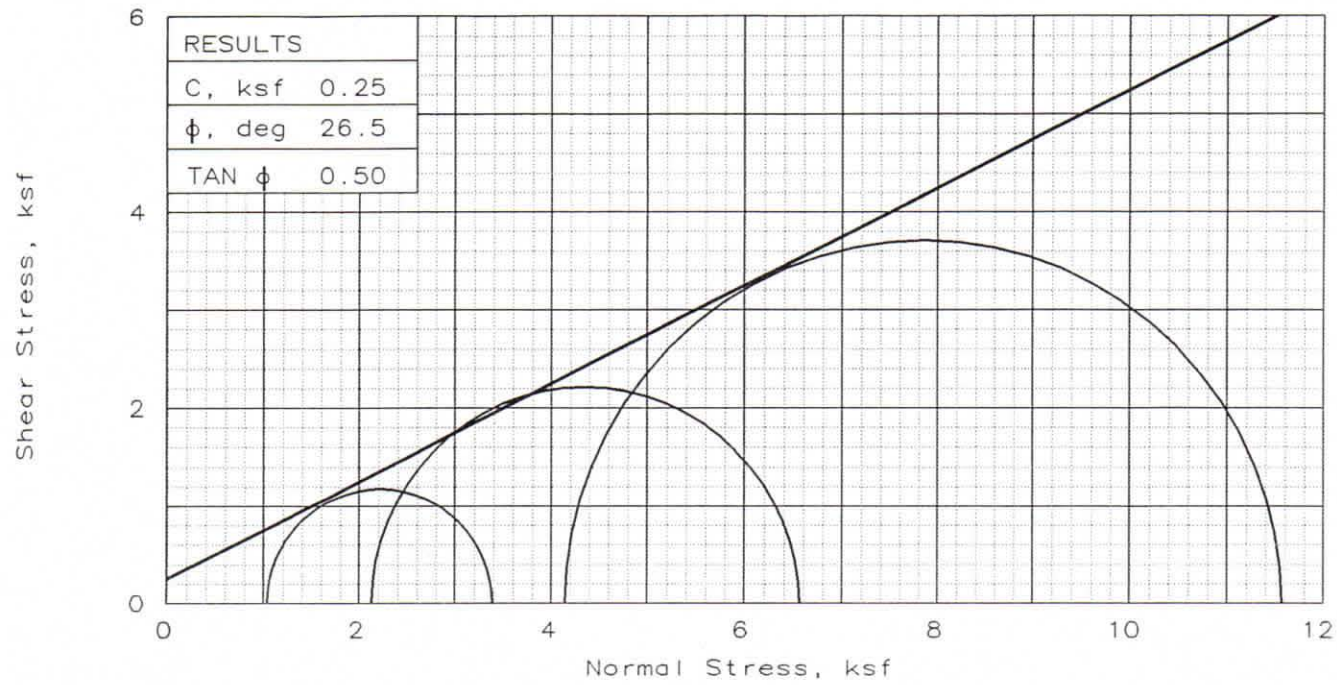
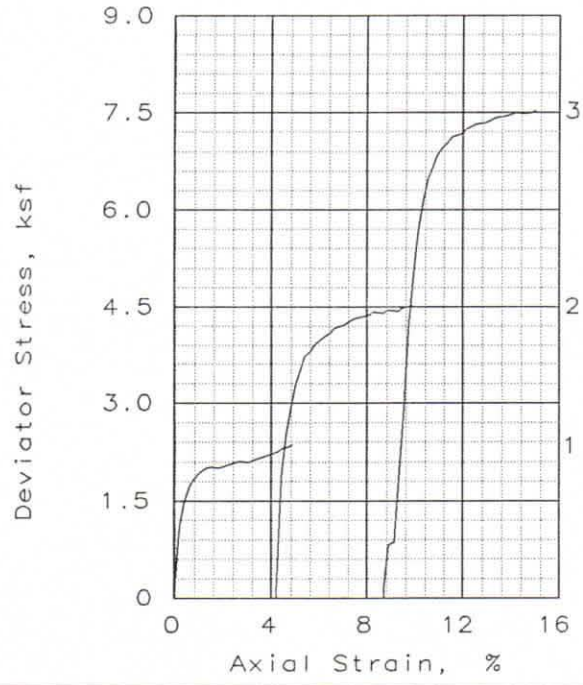
Figure A2 - Log of Boring 2

APPENDIX B - LABORATORY TEST RESULTS





SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	14.6		
	DRY DENSITY, pcf	114.5		
	SATURATION, %	83.7		
	VOID RATIO	0.472		
	DIAMETER, in	2.42		
	HEIGHT, in	5.00		
AT TEST	WATER CONTENT, %	17.9	17.0	16.0
	DRY DENSITY, pcf	113.5	115.5	117.8
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.485	0.460	0.431
	DIAMETER, in	2.44	2.46	2.50
	HEIGHT, in	4.99	4.78	4.57
Strain rate, %/min		0.50	0.50	0.50
BACK PRESSURE, ksf		5.5	5.4	5.4
CELL PRESSURE, ksf		6.5	7.5	9.5
Deviator Stress, ksf		2.4	4.4	7.4
STRAIN, %		4.9	5.3	5.1
, ksf				
STRAIN, %				
σ_1 FAILURE, ksf		3.4	6.6	11.6
σ_3 FAILURE, ksf		1.0	2.1	4.1

TYPE OF TEST:
Consolidated Undrained
SAMPLE TYPE: undisturbed
DESCRIPTION: Dark Brown Sandy CLAY w/gravel

ASSUMED SPECIFIC GRAVITY= 2.7
REMARKS:

Fig. No.: _____

CLIENT: Geoforensics

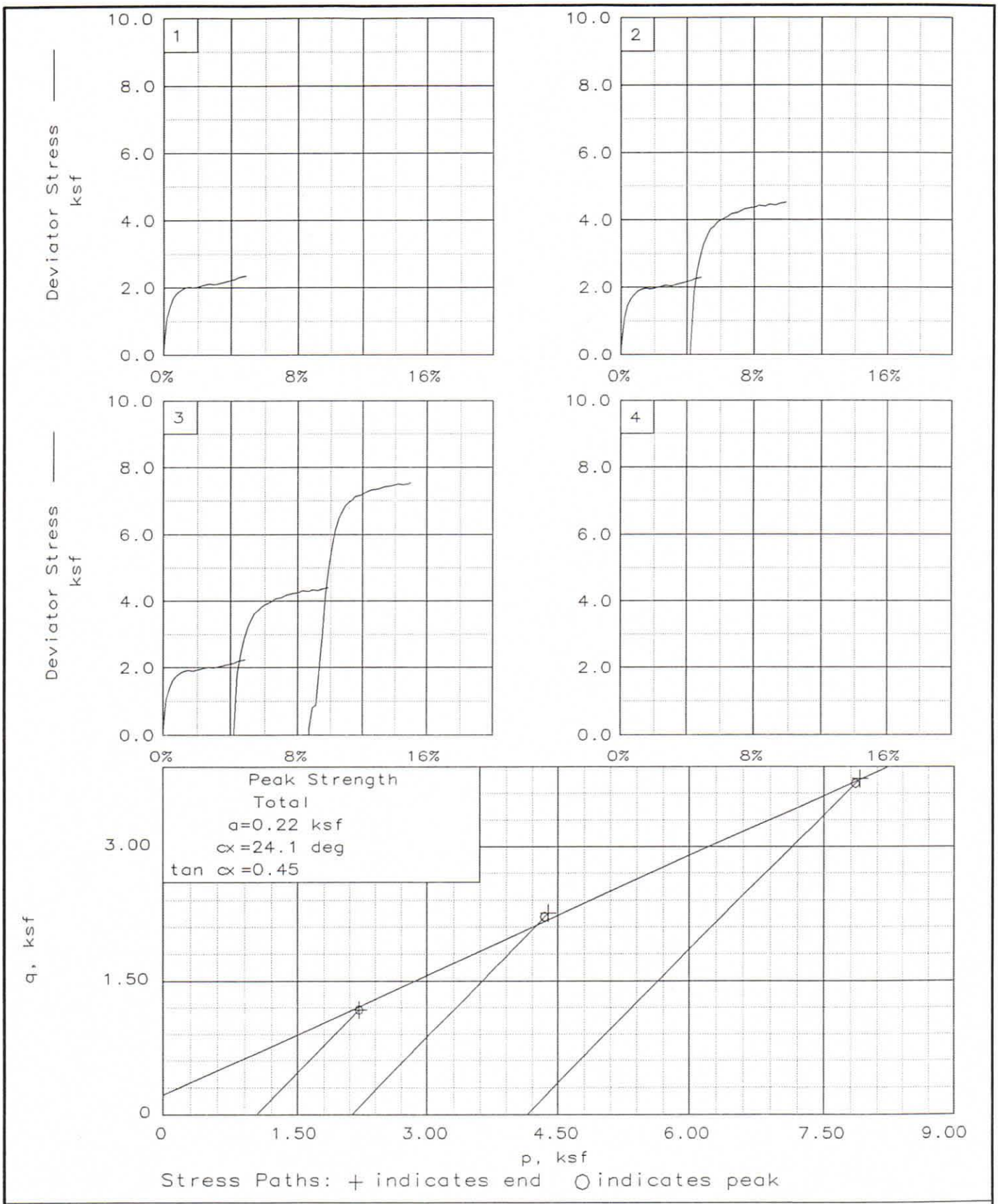
PROJECT: 202049/Monterey

SAMPLE LOCATION: 1-1 @ 1.5'

PROJ. NO.: 060-1360b DATE: 4/5/02

TRIAXIAL SHEAR TEST REPORT

COOPER TESTING LABORATORY

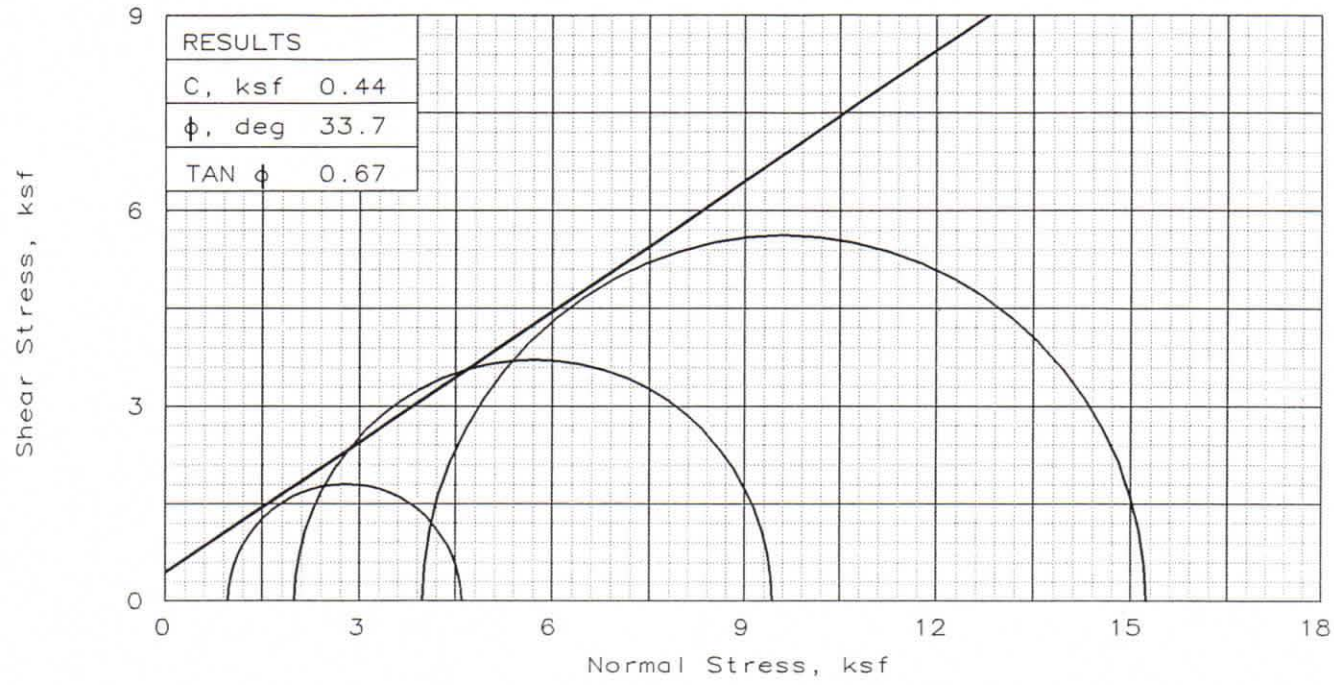


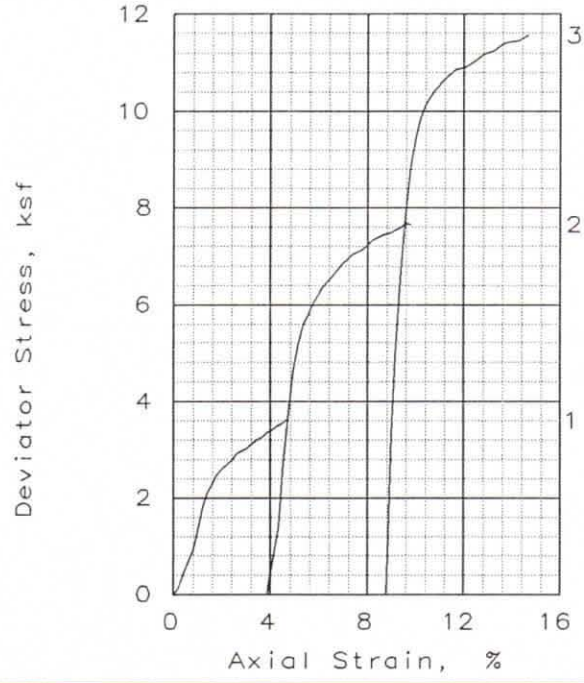
Client: Geoforensics

Project: 202049/Monterey

Location: 1-1 @ 1.5'

File: 60-1360B Project No.: 060-1360b Fig. No.: ____





SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	7.7		
	DRY DENSITY, pcf	127.1		
	SATURATION, %	63.6		
	VOID RATIO	0.327		
	DIAMETER, in	2.41		
	HEIGHT, in	5.00		
AT TEST	WATER CONTENT, %	12.2	11.3	10.3
	DRY DENSITY, pcf	126.9	129.3	131.8
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.328	0.304	0.279
	DIAMETER, in	2.41	2.42	2.48
	HEIGHT, in	5.00	4.85	4.56
Strain rate, %/min		0.50	0.50	0.50
BACK PRESSURE, ksf		5.6	5.5	5.6
CELL PRESSURE, ksf		6.5	7.5	9.5
Deviator Stress, ksf		3.6	7.4	11.2
STRAIN, %		4.6	4.8	4.9
, ksf				
STRAIN, %				
σ_1 FAILURE, ksf		4.6	9.4	15.2
σ_3 FAILURE, ksf		1.0	2.0	4.0

TYPE OF TEST:
Consolidated Undrained
SAMPLE TYPE: undisturbed
DESCRIPTION: Olive-Brn GRAVEL w/sand & clay

ASSUMED SPECIFIC GRAVITY= 2.7
REMARKS: Non linear strength envelope. The cohesion is less than the linear best fit indicates. C=0
Fig. No.: _____

CLIENT: Geoforensics

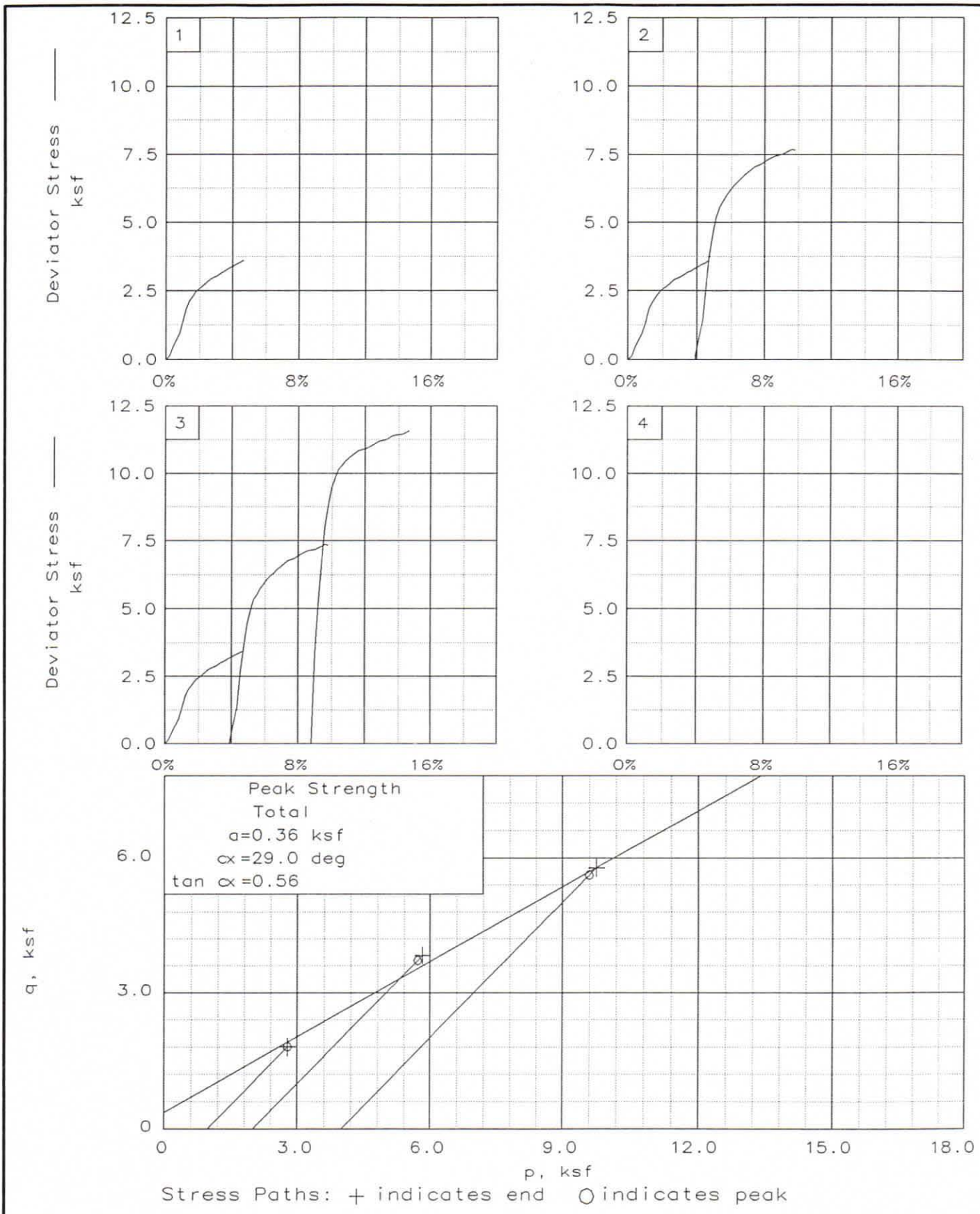
PROJECT: 202049?Monterey

SAMPLE LOCATION: 1-2 @ 5.5'

PROJ. NO.: 60-1360c DATE: 4/15/02

TRIAXIAL SHEAR TEST REPORT

COOPER TESTING LABORATORY

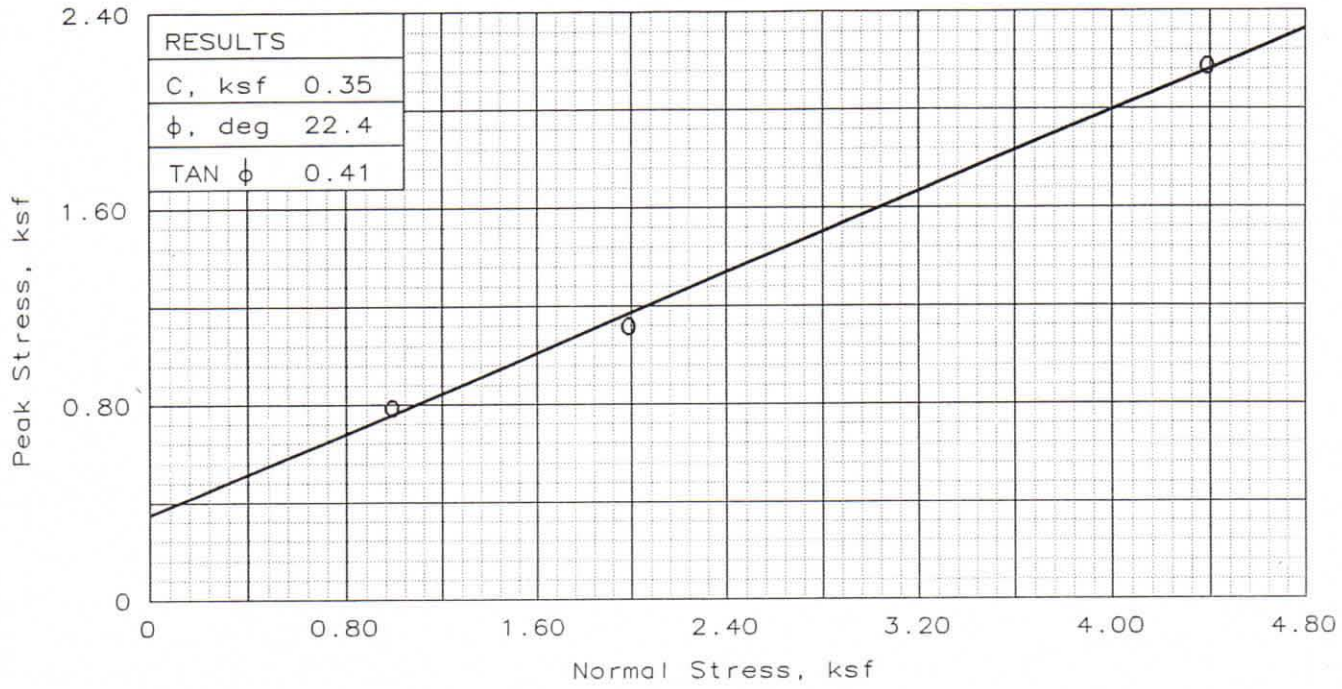


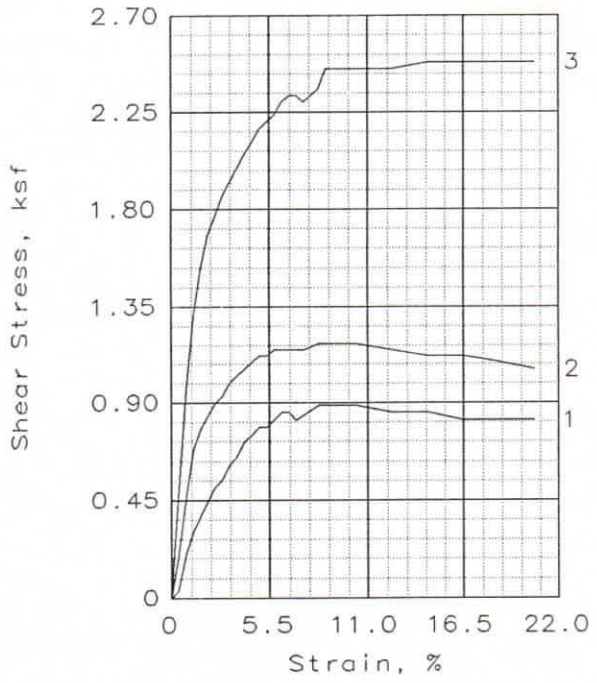
Client: Geoforensics

Project: 202049?Monterey

Location: 1-2 @ 5.5'

File: 60-1360C Project No.: 60-1360c Fig. No.: ____





SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	33.3	39.2	31.4
	DRY DENSITY, pcf	89.7	81.4	92.7
	SATURATION, %	98.3	95.6	99.0
	VOID RATIO	0.948	1.147	0.886
	DIAMETER, in	2.43	2.43	2.43
	HEIGHT, in	1.02	1.02	1.02
AT TEST	WATER CONTENT, %	31.8	36.1	26.3
	DRY DENSITY, pcf	92.4	86.5	100.6
	SATURATION, %	99.9	99.0	99.8
	VOID RATIO	0.891	1.020	0.738
	DIAMETER, in	2.43	2.43	2.43
	HEIGHT, in	0.99	0.96	0.94
NORMAL STRESS, ksf		1.00	2.00	4.40
Peak Stress, ksf		0.79	1.12	2.17
STRAIN, %		4.9	4.9	4.9
Ultimate Stress, ksf				
STRAIN, %				
Strain rate, %/min		1.00	1.00	1.00

SAMPLE TYPE: Undisturbed
DESCRIPTION: brown clayey SAND with gravel (soft & sat.)

ASSUMED SPECIFIC GRAVITY= 2.8
REMARKS: **DS-CU**
An undrained condition cannot be completely accomplished.

Fig. No.: _____

CLIENT: GeoForensics

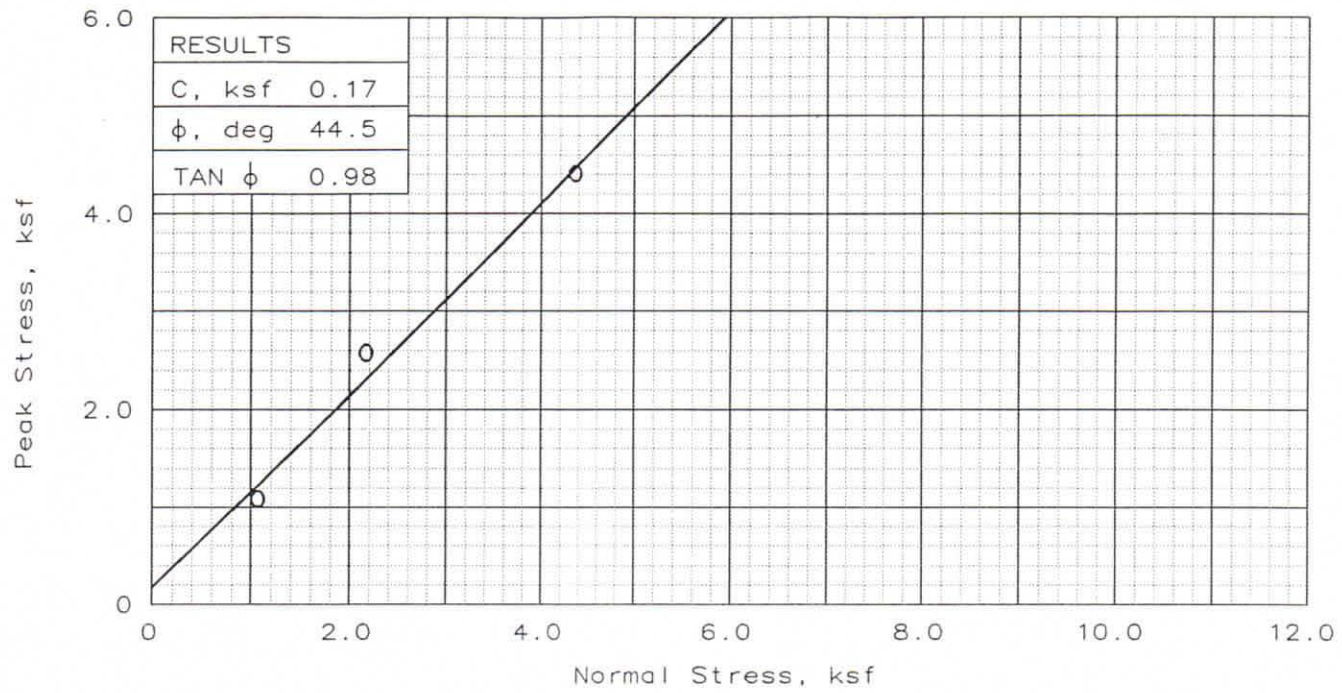
PROJECT: 202049 / Monterey

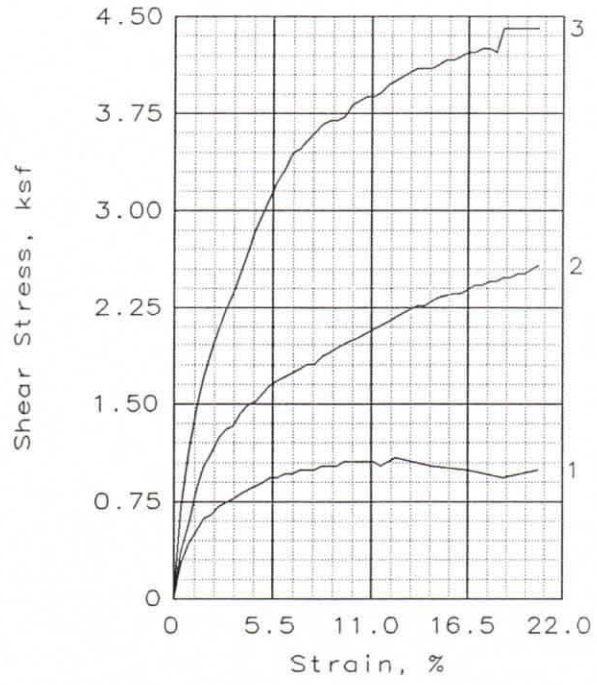
SAMPLE LOCATION: 1-4A @ 14'

PROJ. NO.: 060-1360 DATE: 04/10/02

DIRECT SHEAR TEST REPORT

COOPER TESTING LABORATORY





SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	32.4	28.8	28.9
	DRY DENSITY, pcf	91.3	95.6	96.5
	SATURATION, %	99.1	97.3	99.6
	VOID RATIO	0.915	0.828	0.811
	DIAMETER, in	2.43	2.43	2.43
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	31.1	27.2	25.9
	DRY DENSITY, pcf	93.4	99.1	101.3
	SATURATION, %	99.8	99.8	99.9
	VOID RATIO	0.871	0.764	0.725
	DIAMETER, in	2.43	2.43	2.43
	HEIGHT, in	0.98	0.97	0.95
NORMAL STRESS, ksf		1.10	2.20	4.40
Peak Stress, ksf		1.09	2.58	4.41
STRAIN, %		12.3	20.6	18.5
Ultimate Stress, ksf				
STRAIN, %				
Strain rate, %/min		1.00	1.00	1.00

SAMPLE TYPE: Undisturbed
DESCRIPTION: brown gray clayey SAND with gravel

ASSUMED SPECIFIC GRAVITY= 2.8
REMARKS:

Fig. No.: _____

CLIENT: Geoforensics

PROJECT: 202049 / Monterey

SAMPLE LOCATION: 1-4B @ 15'

PROJ. NO.: 60-1360A DATE: 04/10/02

DIRECT SHEAR TEST REPORT

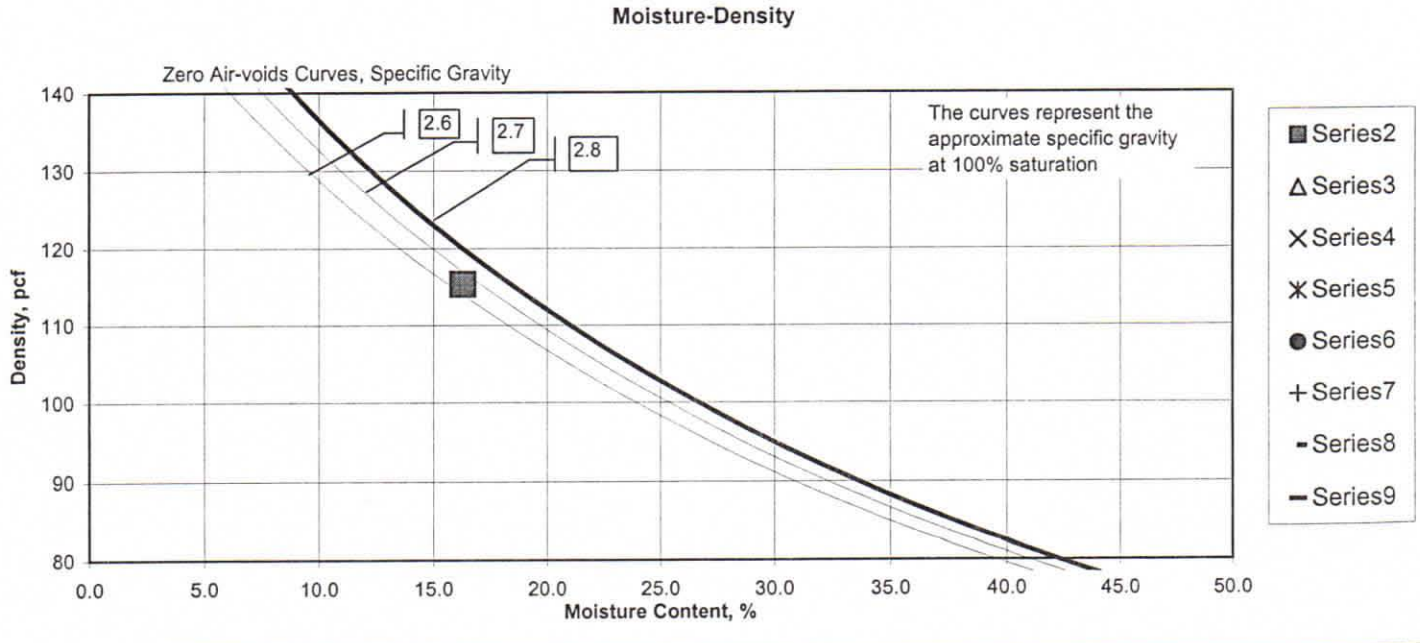
COOPER TESTING LABORATORY

Moisture-Density-Porosity Report

Cooper Testing Labs, Inc.

Job No:	060-1360	Date:	04/16/02
Client:	GeoForensics	By:	DC
Project:	202049 / Monterey		

Boring:	2-1							
Sample:								
Depth:	3.5'							
Description	brown clayey SAND with gravel							
Actual G_s								
Assumed G_s	2.70							
Total Vol cc	79.20							
Vol Solids,cc	54.14							
Vol Voids,cc	25.05							
Moisture, %	16.3							
Wet Unit, pcf	134.1							
Dry Unit, pcf	115.3							
Saturation, %	95.1							
Porosity, %	31.6							
Void Ratio	0.463							
Series	2	3	4	5	6	7	8	9



GEOFORENSICS INC. **Consulting Soil Engineering**

561-D Pilgrim Drive, Foster City, CA 94404 Phone: (650) 349-3369 Fax: (650) 571-1878

File: 202049
September 2, 2014

Miramar Enterprises
c/o Javier Chavarria
848 Burns Court
Pacifica, CA 94044

Subject: **Monterey Townhouses**
Monterey Road
Pacifica, California
GEOTECHNICAL REPORT UPDATE

Dear Mr. Chavarria:

This letter has been prepared to update the findings, opinions, and recommendations contained in our original April 29, 2002 geotechnical report for the proposed townhouse development at this site.

Original Report

As noted above, our original report for the subject project was issued on April 29, 2002. In preparing that report, we had visited the property, reviewed published geologic maps, drilled two borings on the property, performed laboratory testing on the collected soil samples, assessed the collected information, and prepared the written report with figures.

Our previous work found that the site is underlain by both colluvial materials (swale at the southern end of lot) and greenstone gravels (hillsides at the central and northern side of the project), consistent with the geologic mapping. Although the Howard-Donley Associates landsliding mapping suggested that the site is in an area which has a low susceptibility to landsliding, we were concerned about the potential for debris flows to wash down along the ravine on the southern end of the project site. This concern was reinforced by our review of historic aerial photography which indicated that a debris flow had occurred in the swale some time shortly prior to 1986. Also of concern was the caving conditions our borings encountered in the gravelly materials in the boring drilled at the base of the northern slope.

Based upon our investigation, we concluded that the site could be safely developed, but the geotechnical controlling factors included potential debris flows in the ravine, steep existing slopes, and clean gravelly soils. To address these concerns, we recommended that:

1 - The swale along the southern end of the parcel would need to be addressed by **avoiding the area entirely, or alternatively deflecting potential debris** to safely bypass any proposed development.

2 – **Any significant (>5 feet) excavations into the hillside would need to be shored.** We were concerned that excavations may be difficult to achieve where the clean gravels are encountered, and would also likely become increasingly difficult to excavate with increasing depth due to potentially hard bedrock. It was anticipated that soil-nail walls would likely be good candidates for the support of the anticipated cuts on the upslope side of the development.

3 – Support of the buildings was to be accomplished using drilled piers where the foundations would be located on or within 15 feet of slopes steeper than 4:1. Again, there is a potential for caving of piers were they penetrate the gravelly materials (as was experienced in our boring). **Therefore, casing of the holes may be necessary.**

4 – Where competent bedrock is exposed, spread footings bearing on the bedrock could be used, provided there was a minimum of 15 feet of horizontal cover to the face of the footing.

5 – Design pressures were given for retaining walls which would be founded on drilled piers or spread footings, with the same limitations as the building foundations.

6 – Slabs could included either conventional slabs (areas bounded by spread footings), or by structurally supported slabs (areas abutting pier supported foundations).

7 – Good drainage practices should be followed to minimize potential problems due to water flows (surface and subsurface) at the site.

Site Visit

We returned to the site in August 2014 to observe the current site conditions to assist in our evaluation of any updates necessary to our original report. During our visit, we found that the site was in generally the same condition as that which existed at the time our original report was issued in 2002. Therefore, there are no updated findings, conclusions, or recommendations associated with the condition of the site.

UPDATED RECOMMENDATIONS

We have reviewed our original report for its conformance with current geotechnical practice and site conditions. During the course of our review, we find that there are a few findings, conclusions, and recommendations which should be updated to bring them current, and have therefore provided these updates in the following paragraphs:

Seismicity – the probabilities of seismic activity causing severe shaking at the site have not changed significantly over the years, nor have the associated seismic risks outlined in our previous report. However, the methodology used for designing structures for seismic shaking has changed. Current (2013) building code design may be followed by the structural engineer to minimize damages due to seismic shaking, using the following input parameters from the USGS Ground Motion Parameter Calculator following ASCE 7-10 (with 2013 erratta):

Site Class - C	SM_S = 2.453	SM_1 = 1.534	SD_S = 1.636	SD_1 = 1.022

Drilled Piers – we remind the designer and contractor that caving conditions were encountered in our small diameter boring, so there is a significant probability that casing of any pier holes may be necessary.

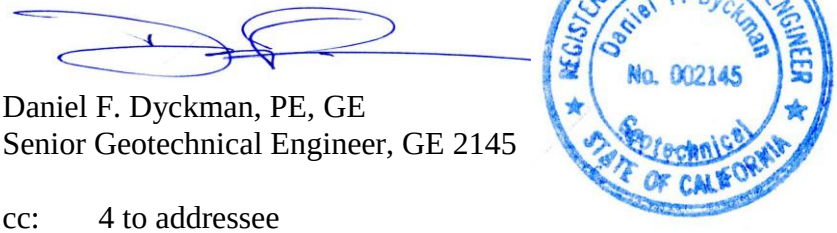
Slab Construction – under any interior or garage floor slabs, a vapor barrier conforming to ASTM E-1745-97 should be installed. We leave it to the structural engineer or architect as to whether sand is required above the vapor barrier.

Footing Drains – If crawlspaces are provided for the buildings, then a perimeter footing drain should be installed along the upslope sides of the buildings. If slab floors are used, then there should be a perforated pipe collection system installed in the base of the gravel layer under the vapor barrier.

Any finding, conclusion, or recommendation not specifically revised by the above paragraphs should be considered to remain valid, requiring no revision or update.

Should you have any questions please contact the undersigned.

Respectfully Submitted;
GeoForensics, Inc.



Daniel F. Dyckman, PE, GE
Senior Geotechnical Engineer, GE 2145

cc: 4 to addressee

Project No. E9127-04-01
June 24, 2019

Raney Planning & Management, Inc.
1501 Sports Drive, Suite A
Sacramento, California 95834

Attention: Mr. Rod Stinson

Subject: PROPOSED VISTA MAR TOWNHOME DEVELOPMENT
MONTEREY ROAD
PACIFICA, CALIFORNIA
GEOTECHNICAL PEER REVIEW

References:
1. *Geotechnical Investigation for Proposed New Townhouses at Monterey Road, Pacifica, California,* prepared by GeoForensics, Inc., dated April 29, 2002 (GeoForensics File No. 202049).
2. *Geotechnical Report Update, Monterey Townhouses, Monterey Road, Pacifica, California*, prepared by GeoForensics, Inc., dated September 2, 2014 (GeoForensics File No. 202049).
3. *Plans: Vista Mar Development, Monterey Road, APN: 009-381-010,* Sheets 1 through 9, prepared by JC Engineering, dated July 29, 2015 (JCE Project No. 2K1-0906) September 2, 2014 (GeoForensics File No. 202049).

Dear Mr. Stinson:

In accordance with your authorization of our proposal dated February 4, 2019, we have prepared this correspondence to present the results of our geotechnical peer review for the subject townhome development proposed on Monterey Road in Pacifica.

Our peer review was performed to provide a professional opinion on the appropriateness and adequacy of the referenced geotechnical report with respect to project conditions, regulatory requirements, and industry standards of practice. Our scope of geotechnical services consisted of:

- Performing a site visit to observe current site conditions.
- Reviewing the referenced geotechnical reports and published documents, geologic maps and other geological and geotechnical literature pertaining to the site to aid in evaluating soil and geologic conditions.
- Preparing the correspondence

SITE AND PROJECT DESCRIPTION

The project site is an approximately 1.2-acre parcel designated as San Mateo County APN 009-381-010. WGS 84 site coordinates are N 37.6504°, W -122.4805°. The irregularly shaped parcel is generally within a southwest facing cut slope that was graded with roadway development more than 50 years ago. Topographic information within the referenced plans indicates ground surface elevations range from a low of approximately 940 feet MSL at the extreme western end of site to 1,100 feet MSL at the east end. The western portion of cut slope was graded with two benches. Monterey Road winds along the southwestern margin of the site, at the toe of the cut slope. Roadway elevations range from 940 feet MSL to 1,000 feet MSL along the property frontage.

A drainage swale runs along the southeastern side of the site and conveys runoff to an on-site storm drain inlet. Aside from the storm drain inlet and associated headwall, no other infrastructure was observed. Heavy vegetation (tules, brush and grasses) and mature trees were observed throughout the slope, with the heaviest cover in the eastern portion of the parcel.

The plans indicate site development for the new townhomes will include underground utilities and a driveway that accesses Monterey Road at the southern corner of the parcel. Building pads for the eight proposed townhome units will be situated between the driveway and Monterey Road. Grading will involve heavy terraced cuts into the existing slope and numerous new retaining walls to establish driveway subgrade and building pads throughout the development. Cuts up to roughly 30 feet deep are planned. Grading will also include fills up to 20 feet in thickness at the western end of the access driveway. Relatively minor fills are planned at the front of the westernmost townhome pad. A 30- to 35-foot-high fill slope faced with a series of terraced retaining walls will make up the grade difference between the end of the driveway and existing grade at the western margin of the site.

A variety of geologic information by the United States Geological Survey (USGS) maps greenstone of the Jurassic-age Franciscan Complex throughout the majority of the site. The greenstone is described as altered volcanic rock that is mostly basalt. The rock is commonly gray and olive-gray except where highly weathered. The rock is hard where present in fresh exposures but weathered and firm to soft in most cases. An area of slope debris and ravine fill is mapped at the southwestern margin of the site.

Notable active faults in the area include the San Andreas Fault that is approximately one-third mile to the northeast and the San Gregorio Fault (offshore, approximately 4½ miles southwest of the site). Web-based mapping the USGS does not show soils susceptible to liquefaction at the site.

DISCUSSION

We have conducted a site reconnaissance and reviewed the referenced geotechnical reports, relevant geologic and geotechnical references and other information in our files. Our review identified the following issues that should be addressed in an updated geotechnical report or addendum.

1. The project proposes significant cuts and tall terraced retaining wall systems along the northern margin of the development. Quantitative slope stability analyses of the wall system should be performed to confirm adequate factor of safety against instability. The basis for assigned bedrock strength properties should be presented.

2. The project proposes a 30- to 35-foot high fill slope at the western margin of the site. Quantitative slope stability analyses should be performed to confirm adequate factor of safety against instability and determine minimum shear strength properties for the fill materials.

3. Seismic earth pressure recommendations should be provided for the design of site retaining walls, where applicable.

4. Soil borings for the referenced geotechnical studies did not extend through the proposed cut depths. The potential for adverse geologic conditions, including groundwater seepage, and the impact on project design and construction should be discussed.

5. The fill slope at the western end of the development will be placed against an existing slope face. Grading recommendations should be provided for keyways, benching, subsurface drainage, etc.

It should be noted that geotechnical studies at project planning stages are generally performed to identify major geotechnical or geologic constraints that could impact the feasibility of the project e.g. geologic hazards or adverse geotechnical conditions that would preclude the project or require significant mitigation. Some of the items noted above would typically be included in a design-level geotechnical investigation. At a minimum,

the geotechnical engineer should provide a formal response with professional opinions on project feasibility and the items noted above.

LIMITATIONS AND CLOSURE

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.

Should you have any questions regarding this correspondence, or if we may be of further service, please contact the undersigned at your convenience.

Sincerely,

GEOCON CONSULTANTS, INC.

DRAFT

Shane Rodacker, GE
Senior Engineer

(1/e-mail) Addressee

GEOFORENSICS INC. **Consulting Soil Engineering**

303 Vintage Park Drive, Suite 220, Foster City, CA 94404 Phone: (650) 349-3369 Fax: (650) 571-1878

File: 202049
August 3, 2019

Miramar Enterprises
c/o Javier Chavarria
848 Burns Court
Pacifica, CA 94044

Subject: **Monterey Townhouses**
Monterey Road
Pacifica, California
RESPONSE TO GEOTECHNICAL REVIEW COMMENTS

Mr. Chavarria:

This letter has been prepared to provide responses to the review comments issued by the Town's review consultant, GeoCon Consultants, in their letter of June 24, 2019. In this response letter, we have maintained the numbering system used by GeoCon on Page 2 of their letter in providing the following numbered responses:

1. During the design level analysis for the proposed grading, our office will prepare slope stability calculations for the cut and fill slopes proposed for the project. Bedrock strength properties for the stability analyses may be determined from our previous laboratory testing, by testing on new site samples, or using published values from similar bedrock materials identified in the various nearby State Seismic Hazard reports. At this point, we fully anticipate that the calculations for the bedrock cuts will indicate adequate levels of stability, as the cuts will be retained by conventional concrete walls where cuts are relatively short, and by concrete walls/facias augmented by tie-backs/soil nails where taller walls/cuts are required.

2. As discussed above, slope stability analyses will be provided for both cut and fill slopes designed for the project. Our original investigation found the bedrock to be both strong, and quite shallow. Hence, we again anticipate that fairly reasonable strength parameters will be required to achieve stable slopes at a 2:1 gradient. Steeper slopes may require grid reinforcement.

3. It is our opinion that a supplemental seismic loading for short retaining walls (i.e. less than 12 feet tall) is not necessary. However, if desired, the designer may also apply a uniform seismic force of 10H psf to the retaining wall in addition to the normal active pressures.

4. The reviewer is correct, our borings did not always penetrate to the depths that the current designer is proposing to excavate. Therefore, it is possible that varying conditions may be encountered. We have required that the project geotechnical engineer or geologist observe all cuts to verify that conditions have not changed, or if they have, to identify those changes so that any necessary revisions to the design and construction can be properly implemented. Interception of ground water would likely require temporary, and likely permanent, dewatering, and possibly staged excavation/construction, to address short and long term slope stability.

5. All unretained fills to be placed on slopes steeper than 6 to 1 (horizontal to vertical, H:V) will need to be keyed and benched into competent native materials (i.e. weathered bedrock). Any retained fills will need to be benched into competent native materials, however, a formal keyway is not required. The entire base of any keyway should extend into competent bedrock materials, located about 1 to 5 feet below grade. The entire bases of all benches should also extend into competent materials, as identified in the field by representatives from our office. It should be anticipated that the outer edge of bench excavations will extend at least 3 feet below existing grades. Keyways and benches should be sloped back into the hillside at a minimum 2% gradient.

   For fills over 5 feet thick, or where deemed necessary by our personnel, a blanket drain should be provided within any keyway excavations, and chimney drains should be provided at the back of any benches identified by our office in the field. The blanket drain should cover the entire keyway and consist of a minimum 6 inch thick layer of clean crushed drain rock completely covered (top and sides) with filter fabric (Mirafi 140N or approved equivalent). Chimney drains should consist of a minimum 6 inch wide column of clean crushed drain rock, also wrapped with filter fabric, for at least half the height and for the full width of the bench. Alternatively, the chimney drains may consist of Miradrain panels extended up the full height of the cut, with the 4 foot wide panels spaced no further apart than 4 feet. These systems should drain to 4 inch diameter perforated pipes, placed at the base of the drain rock chimney (or a drain rock filled collector trench at the base of the miradrain panels). The pipes should consist of Schedule 40 PVC or SDR 35. No flexible, corrugated pipe may be used within any drainage system installed as part of this project. The bench drain pipes may connect to the keyway blanket drain pipe. A solid line should be used to convey the water to an appropriate discharge point. We note that *Caltrans Class 2 permeable rock* is an acceptable substitution for clean drain rock and filter fabric.

As noted in the GeoCon review letter, the above responses have been provided for identifying geotechnical constraints that could affect the feasibility of the project, not to be indicative of final requirements for structural design. Those further calculations (and accompanying report) will be performed once planning approval of the project has been concluded, so that final design can be completed.

Should you have any questions please contact the undersigned.

Respectfully Submitted;
GeoForensics, Inc.

Daniel F. Dyckman, PE, GE
Senior Geotechnical Engineer, GE 2145

Email cc: 1 to addressee

Appendix E

Environmental Noise Assessment

Environmental Noise Assessment

Vista Mar Residential

City of Pacifica, California

September 9, 2019

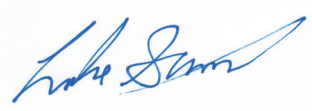
Project # 190401

Prepared for:

Raney Planning & Management, Inc.
1501 Sports Drive
Sacramento, California 95834

Prepared by:

Saxelby Acoustics LLC



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INTRODUCTION

The Vista Mar residential project is located along the east side of Monterey Road, south of Hickey Boulevard in the City of Pacifica, California. The project consists of the construction of an 8-unit townhouse development on a vacant lot.

Figure 1 shows the project site plan. **Figure 2** shows an aerial photo of the project site.

ENVIRONMENTAL SETTING

BACKGROUND INFORMATION ON NOISE

Fundamentals of Acoustics

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

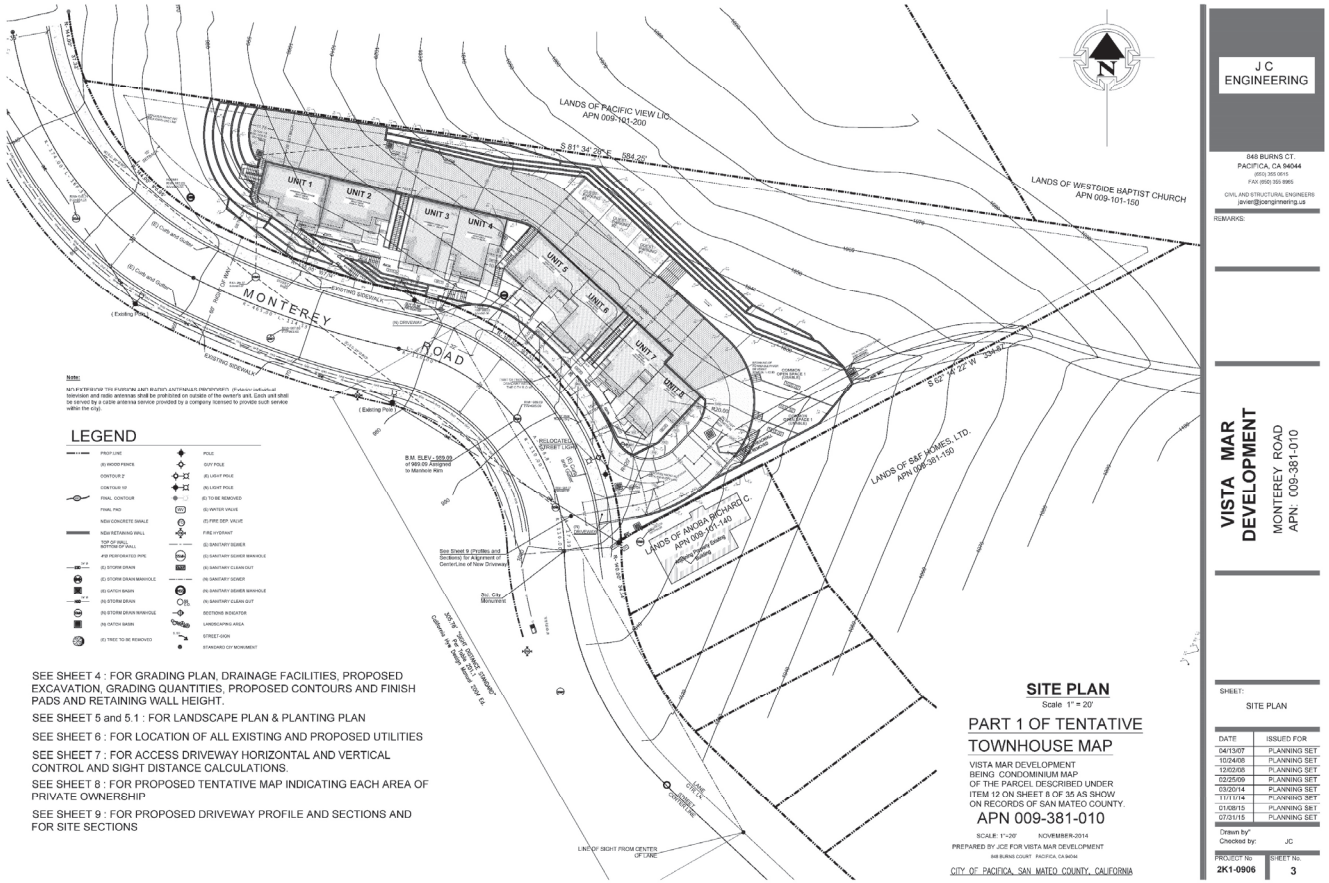
The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.

Vista Mar Residential

City of Pacifica, California

Figure 1

Project Site Plan



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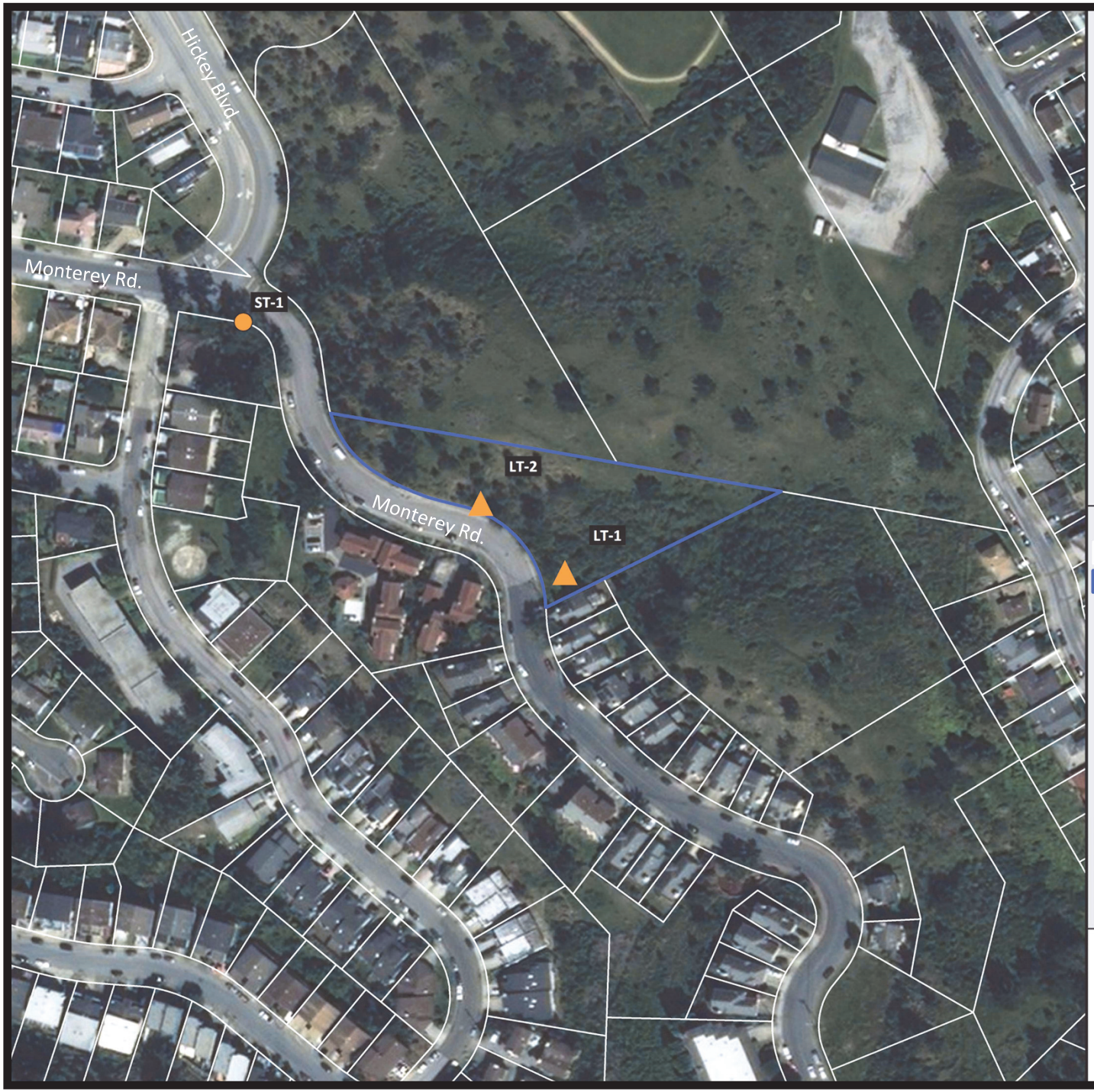

Vista Mar Residential

City of Pacifica, California

Figure 2

Noise Measurement Sites

Legend

- Parcels
- Project Site
- Noise Measurement - Long Term
- Noise Measurement - Short Term

0 m 30 m 60 m 90 m

Projection: State Plane (California Zone 3) / NAD83 / meters
Rev. Date: 06/25/2019

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The decibel scale is logarithmic, not linear. In other words, two sound levels 10-dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10-dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The day/night average level (DNL or L_{dn}) is based upon the average noise level over a 24-hour day, with a +10-decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Table 1 lists several examples of the noise levels associated with common situations. **Appendix A** provides a summary of acoustical terms used in this report.

TABLE 1: TYPICAL NOISE LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft.)	--100--	
Gas Lawn Mower at 1 m (3 ft.)	--90--	
Diesel Truck at 15 m (50 ft.), at 80 km/hr. (50 mph)	--80--	Food Blender at 1 m (3 ft.) Garbage Disposal at 1 m (3 ft.)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft.)	--70--	Vacuum Cleaner at 3 m (10 ft.)
Commercial Area Heavy Traffic at 90 m (300 ft.)	--60--	Normal Speech at 1 m (3 ft.)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. September, 2013.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6-dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

EXISTING AND FUTURE NOISE AND VIBRATION ENVIRONMENTS

EXISTING NOISE RECEPTORS

Some land uses are considered more sensitive to noise than others. Land uses often associated with sensitive receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Sensitive noise receptors may also include threatened or endangered noise sensitive biological species, although many jurisdictions have not adopted noise standards for wildlife areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise.

Sensitivity is a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved. In the vicinity of the project site, sensitive land uses include existing single-family residential uses located towards the southwest, across Monterey Road, and adjacent to the southeast boundary of the project site.

EXISTING GENERAL AMBIENT NOISE LEVELS

The existing noise environment in the project area is primarily defined by local neighborhood traffic.

To quantify the existing ambient noise environment in the project vicinity, Saxelby Acoustics conducted continuous (24-hr.) noise level measurements at three locations on the project site.

Noise measurement locations are shown on **Figure 2**. A summary of the noise level measurement survey results are provided in **Table 2**. **Appendix B** contains the complete results of the noise monitoring.

The sound level meters were programmed to record the maximum, median, and average noise levels at each site during the survey. The maximum value, denoted L_{max}, represents the highest noise level measured. The average value, denoted L_{eq}, represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period. The median value, denoted L_{50}, represents the sound level exceeded 50 percent of the time during the monitoring period.

Larson Davis Laboratories (LDL) model 820 and 812 precision integrating sound level meters were used for the ambient noise level measurement survey. The meters were calibrated before and after use with a B&K Model 4230 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

TABLE 2: SUMMARY OF EXISTING BACKGROUND NOISE MEASUREMENT DATA

Site	Date	Average Measured Hourly Noise Levels, dBA						
			Daytime (7:00 am - 10:00 pm)			Nighttime (10:00 pm – 7:00 am)		
		CNEL/L_{dn}	L_{eq}	L_{50}	L_{max}	L_{eq}	L_{50}	L_{max}
LT-1	04/30/19-05/01/19	58	54	46	71	51	38	69
	05/01/19-05/02/19	57/56	53	44	71	49	36	68
LT-2	04/30/19-05/01/19	59	55	47	72	52	41	70
	05/01/19-05/02/19	59/58	55	46	72	51	37	68
ST-1	07/30/18-9:15 a.m.	N/A	64	51	84	N/A	N/A	N/A
Source: Saxelby Acoustics – 2019								

Construction Noise Environment

The Federal Highway Administration's (FHWA) Roadway Construction Noise Model (RCNM) was used to predict noise levels for standard construction equipment used for roadway improvement projects. The assessment of potential significant noise effects due to construction is based on the standards and procedures described in the Federal Transit Authority (FTA) guidance manual and FHWA's RCNM.

The RCNM is a Windows-based noise prediction model that enables the prediction of construction noise levels for a variety of construction equipment based on a compilation of empirical data and the application of acoustical propagation formulas. It enables the calculation of construction noise levels in more detail than the manual methods, which eliminates the need to collect extensive amounts of project-specific input data. RCNM allows for the modeling of multiple pieces of construction equipment working either independently or simultaneously, the character of noise emission, and the usage factors for each piece of equipment.

Construction noise varies depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week), and the duration of the construction work.

Noise sources in the RCNM database include actual noise levels and equipment usage percentages. This source data was used in this construction noise analysis. **Table 3** shows predicted construction noise levels for each of the project construction phases.

TABLE 3: CONSTRUCTION EQUIPMENT NOISE LEVELS FOR PRIMARY CONSTRUCTION PHASES

Equipment	Quantity	Usage (%)	Maximum, Lmax (dBA at 50 feet)	Hourly Average, Leq (dBA at 50 feet)
Site Preparation				
Graders	1	40	85	81
Rubber Tired Dozers	1	40	82	78
Tractors/Loaders/Backhoes	1	40	78	74
			Total:	**83**
Grading				
Graders	1	40	85	81
Rubber Tired Dozers	1	40	82	78
Tractors/Loaders/Backhoes	1	40	78	74
			Total:	**83**
Building Construction				
Cranes	1	16	81	73
Forklifts	1	40	83	79
Generator Sets	1	50	73	70
Tractors/Loaders/Backhoes	1	40	78	74
Welders	3	40	74	70
			Total:	**82**
Paving				
Cement and Mortar Mixers	1	40	79	75
Pavers	1	50	77	74
Paving Equipment	1	50	77	74
Rollers	1	20	80	73
Tractors/Loaders/Backhoes	1	40	78	74
			Total:	**81**
Architectural Coating				
Air Compressors	1	40	78	74
			Total:	**74**

Source: FHWA, Roadway Construction Noise Model (RCNM), January 2006.

Based upon the **Table 3** data, site preparation and grading are predicted to be the loudest phase of construction with an average noise exposure of 83 dBA at 50 feet. Saxelby Acoustics used the SoundPLAN noise model to calculate noise levels at the nearest sensitive receptors in terms of the City's day/night average (Ldn) noise level criterion. It should be noted that the Ldn calculation conservatively assumes twelve hours of continuous construction between the hours of 7:00 a.m. to 7:00 p.m. The results of this analysis are shown graphically on **Figure 3**. A summary of the noise prediction results for each phase of construction are shown in **Table 4**.

Vista Mar Residential

City of Pacifica, California

Figure 3

Predicted Loudest Construction Noise Levels (dBA, Ldn)

Signs and symbols

- Auxiliary building
- Receiver
- Haul Route
- Construction Area

Level tables

1 : 1378

0 5 10 20 30 40 m

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TABLE 4: PREDICTED CONSTRUCTION NOISE LEVELS BY LOUDEST PHASES

Receiver (Use)	Measured Daytime Noise Level, L_{dn}	Predicted Construction Noise Level, L_{dn}	Change
Site Preparation			
R1 (Residential)	56-59 dBA	61 dBA	+5 dBA
R2 (Residential)	56-59 dBA	67 dBA	+11 dBA
R3 (Residential)	56-59 dBA	68 dBA	+12 dBA
R4 (Residential)	56-59 dBA	76 dBA	+20 dBA
Grading			
R1 (Residential)	56-59 dBA	61 dBA	+5 dBA
R2 (Residential)	56-59 dBA	67 dBA	+11 dBA
R3 (Residential)	56-59 dBA	68 dBA	+12 dBA
R4 (Residential)	56-59 dBA	76 dBA	+20 dBA
Building Construction			
R1 (Residential)	56-59 dBA	60 dBA	+4 dBA
R2 (Residential)	56-59 dBA	66 dBA	+10 dBA
R3 (Residential)	56-59 dBA	67 dBA	+11 dBA
R4 (Residential)	56-59 dBA	75 dBA	+19 dBA
Paving			
R1 (Residential)	56-59 dBA	59 dBA	+3 dBA
R2 (Residential)	56-59 dBA	65 dBA	+9 dBA
R3 (Residential)	56-59 dBA	66 dBA	+10 dBA
R4 (Residential)	56-59 dBA	74 dBA	+18 dBA
Architectural Coating			
R1 (Residential)	56-59 dBA	52 dBA	+0 dBA
R2 (Residential)	56-59 dBA	58 dBA	+2 dBA
R3 (Residential)	56-59 dBA	59 dBA	+3 dBA
R4 (Residential)	56-59 dBA	67 dBA	+11 dBA

[1] As measured at Sites LT-1 and LT-2.

CONSTRUCTION VIBRATION ENVIRONMENT

The primary vibration-generating activities would be grading, utilities placement, and parking lot construction. **Table 5** shows the typical vibration levels produced by construction equipment.

TABLE 5: VIBRATION LEVELS FOR VARIOUS CONSTRUCTION EQUIPMENT

Type of Equipment	Peak Particle Velocity at 25 feet (inches/second)	Peak Particle Velocity at 50 feet (inches/second)	Peak Particle Velocity at 100 feet (inches/second)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210 (Less than 0.20 at 26 feet)	0.074	0.026

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

REGULATORY CONTEXT

FEDERAL

There are no federal regulations related to noise that apply to the Proposed Project.

STATE

The State Building Code, Title 24, Part 2 of the State of California Code of Regulations, establishes uniform minimum noise insulation performance standards to protect persons within new buildings which house people, including hotels, motels, dormitories, apartment houses, and dwellings other than single-family dwellings. Title 24 mandates that interior noise levels attributable to exterior sources shall not exceed 45 dB L_{dn} or CNEL in any habitable room. Title 24 also mandates that for structures containing noise-sensitive uses to be located where the L_{dn} or CNEL exceeds 60 dB, an acoustical analysis must be prepared to identify mechanisms for limiting exterior noise to the prescribed allowable interior levels. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior environment.

LOCAL

City of Pacifica 1980 General Plan

The 1980 City of Pacifica General Plan has a Noise Element. However, that document suggests that 60 dB CNEL / Ldn is considered to be a "higher noise level". The City staff have used the 60 dB threshold as the test of significance when evaluating projects. The City of Pacifica is in the process of updating the General Plan. However, that General Plan Update and associated EIR have not been adopted.

City of Pacifica General Plan Update

The noise level standards and guiding policies in the City of Pacifica General Plan are consistent with the State of California guidelines for determining land use compatibility and are similar to those used throughout the State. The thresholds for community land use compatibility which are contained within the proposed General Plan Noise Element are shown in **Table 6**. For proposed land uses in areas where noise exposure may be expected to be greater than the "normally acceptable" threshold, maximum allowable noise exposure with noise mitigation measure is defined in **Table 7**. **Table 8** provides noise emission standards for new stationary noise sources. Listed below are the noise goals, policies, and implementation measures that would be applicable to the proposed project:

Community Noise Exposure

Table 9-1 presents the community noise exposure matrix, establishing criteria the City can use to evaluate land use compatibility based on noise levels. This matrix is adapted from guidelines provided by the Office of Planning and Research. Noise exposure levels are classified as being "normally acceptable," "conditionally acceptable," "normally unacceptable," or "clearly unacceptable" for different land use types.

Normally Acceptable

- **Indoor Uses:** Either the activities associated with the land use are inherently noisy or standard construction methods will sufficiently attenuate exterior noise to an acceptable level; for land use types that are compatible because of inherent noise levels, sound attenuation must be provided for associated office, retail, and other noise-sensitive indoor spaces sufficient to reduce exterior noise to an interior maximum of 50 dB CNEL.
- **Outdoor Uses:** Outdoor activities associated with the land use may be carried out with minimal interference.

Conditionally Acceptable

- **Indoor Uses:** Noise reduction measures must be incorporated into the design of the project to attenuate exterior noise to the indoor noise levels listed in Table 9-2
- **Outdoor Uses:** Noise reduction measures must be incorporated into the design of the project to attenuate exterior noise to the outdoor noise levels listed in Table 9-2. Acceptability is dependent upon characteristics of the specific use

Normally Unacceptable

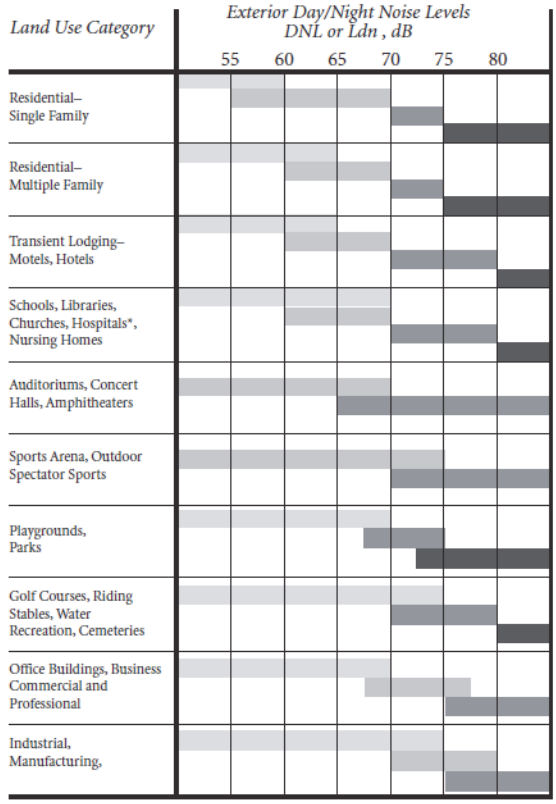
- **Indoor Uses:** Extensive mitigation techniques are required to make the indoor environment accept- able for indoor activities. Noise level reductions necessary to attenuate exterior noise to the indoor noise levels listed in Table 9-2 are difficult to achieve and may not be feasible.
- **Outdoor Uses**: Severe noise interference makes the outdoor environment unacceptable for out- door activities. Noise level reductions necessary to attenuate exterior noise to the outdoor noise levels listed in Table 9-2 are difficult to achieve and may not be feasible.

Clearly Unacceptable

- New construction or development should generally not be undertaken.

TABLE 6 : PROPOSED GENERAL PLAN UPDATE LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

TABLE 9-1: LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS



Source: Office of Planning and Research, State of California General Plan Guidelines, Appendix A: Guidelines for the Preparation and Content of the Noise Element of the General Plan,

*Because hospitals are often designed and constructed with high noise insulation properties, it is possible for them to be satisfactorily located in noisier areas.

INTERPRETATION

Normally Acceptable:
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements

Conditionally Acceptable:
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

Normally Unacceptable:
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable:
New construction or development clearly should not be undertaken.

TABLE 7 : PROPOSED GENERAL PLAN UPDATE ALLOWABLE NOISE EXPOSURE

TABLE 9-2: ALLOWABLE NOISE EXPOSURE			
	Outdoor Activity Areas[1]	Interior Spaces	
Noise-Sensitive Land Use	DNL/CNEL[2], dB	DNL/CNEL2, dB	Leq dB[3]
Residential	65	45	–
Transient Lodging (Hotels, Motels)	65	45	–
Hospitals, Nursing Homes	65	45	–
Theaters, Auditoriums, Music Halls	–	–	35
Churches, Meeting Halls	65	–	45
Office Buildings	–	–	45
Schools, Libraries, Museums	–	–	45

1 Outdoor activity areas generally include backyards of single-family residences and outdoor patios, decks or common recreation areas of multi-family developments.
2 The CNEL is used for quantification of aircraft noise exposure as required by CAC Title 21.
3 As determined for a typical worst-case hour during periods of use.

TABLE 8 : PROPOSED GENERAL PLAN NOISE LEVEL PERFORMANCE STANDARDS FOR STATIONARY NOISE SOURCES

TABLE 9-3: NOISE LEVEL PERFORMANCE STANDARDS FOR STATIONARY NOISE SOURCES[1]		
	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.)
Hourly Equivalent Sound Level (Leq), dBA	50	45
Maximum Sound Level (Lmax), dBA	70	65

1 As determined at the property line of the receiving noise-sensitive use.

Guiding Policies

NO-G-1 COORDINATION WITH OTHER AGENCIES

Continue to work with other agencies, airports and jurisdictions to reduce noise levels in Pacifica created by their operations.

NO-G-2 ACCEPTABLE NOISE ENVIRONMENT

Strive to achieve an acceptable noise environment for the environmental, health and safety needs of present and future residents of Pacifica.

NO-G-3 SENSITIVE LAND USES

Protect noise sensitive land uses, such as schools, hospitals, and senior care facilities, from encroachment of and exposure to excessive levels of noise.

Implementing Policies

NO-I-1 COMMUNITY NOISE LEVEL STANDARDS
Use the Community Noise Level Exposure Standards, shown in Table 9-1, as review criteria for new land uses. Require all new development that would be exposed to noise greater than the "normally accept- able" noise level range to reduce interior noise through design, sound insulation, or other measures.

NO-I-2 DESIGN FEATURES FOR NOISE REDUCTION
Require noise-reducing mitigation to meet allowable outdoor and indoor noise expo- sure standards in Table 9-2. Noise mitigation measures that may be approved to achieve these noise level targets include but are not limited to the following:

- Construct façades with substantial weight and insulation;
- Use sound-rated windows for primary sleeping and activity areas;
- Use sound-rated doors for all exterior entries at primary sleeping and activity areas;
- Use minimum setbacks and exterior barriers;
- Use acoustic baffling of vents for chimneys, attic and gable ends;
- Install a mechanical ventilation system that provides fresh air under closed window conditions.

Alternative acoustical designs that achieve the prescribed noise level standards may be approved, provided that a qualified Acoustical Consultant submits information demonstrating that the alternative designs will achieve and maintain the specific targets for outdoor activity areas and interior spaces.

NO-I-3 BEST AVAILABLE CONTROL TECHNOLOGY
Require new, fixed noise sources (e.g. mechanical equipment) to use best avail- able control technology (BACT) to minimize noise and vibration.

Noise from mechanical equipment can often be reduced by applying soundproofing materials, mufflers, or other controls provided by the manufacturer.

NO-I-4 MECHANICAL EQUIPMENT FOR NEW RESIDENTIAL DEVELOPMENT
Ensure that building regulations require that noise-generating appliances serving new multi-family or mixed-use residential development are located or adequately insulated to protect residents from the noise.

NO-I-5 NOISE CRITERIA FOR CITY EQUIPMENT
Develop noise criteria for new equipment purchased by the City.

NO-I-6 CONSTRUCTION NOISE
Continue to limit hours for certain construction and demolition work to reduce construction-related noises.

NO-I-7 NOISE FROM HIGHWAYS AND BUSES

Work with Caltrans and Sam Trans to mitigate transportation-related noise impacts on residential areas and sensitive uses. This may include encouraging installation of sound barriers or bus stop relocation in selected locations.

NO-I-8 AIRPORT NOISE DISCLOSURE REQUIREMENTS

Update the Municipal Code to ensure that special disclosure requirements concerning airport noise refer to the most current CNEL noise contours developed for San Francisco International Airport.

NO-I-9 AIRPORT NOISE ABATEMENT PROGRAM

Continue to work with the airport in improving and implementing its noise abatement program.

NO-I-10 RESIDENTIAL SOUND INSULATION PROGRAM

If the airport's federally-approved 65 dB CNEL annual noise contour is mapped within the City, request that the San Fran- cisco Airport's Residential Sound Insulation Program allocate available federal and airport funding to sensitive, noise-affected properties in Pacifica.

NO-I-11 NOISE ORDINANCE

Update the noise ordinance to implement General Plan policies and noise standards.

NO-I-12 NOISE ENFORCEMENT

Establish a Noise Abatement Unit made up of members of the Police and other departments to enforce the City's noise regulations and assign primary responsibility for coordinating overall noise control effort to one City department.

City of Pacifica Municipal Code

The City of Pacifica Municipal Code - Section 8-1.08 limits hours of construction to 7:00 a.m. to 7:00 p.m. on weekdays, and 9:00 a.m. to 5:00 p.m. on weekends.

Criteria for Acceptable Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. **Table 9**, which was developed by Caltrans, shows the vibration levels which would normally be required to result in damage to structures. The vibration levels are presented in terms of peak particle velocity in inches per second.

Table 9 indicates that the threshold for architectural damage to structures is 0.20 in/sec p.p.v. A threshold of 0.20 in/sec p.p.v. is considered to be a reasonable threshold for short-term construction projects.

TABLE 9: EFFECTS OF VIBRATION ON PEOPLE AND BUILDINGS

Peak Particle Velocity		Human Reaction	Effect on Buildings
mm/second	in/second		
0.15-0.30	0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10-15	0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: *Transportation Related Earthborne Vibrations.* Caltrans. TAV-02-01-R9601. February 20, 2002.

IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Appendix G of the CEQA Guidelines states that a project would normally be considered to result in significant noise impacts if noise levels conflict with adopted environmental standards or plans or if noise generated by the project would substantially increase existing noise levels at sensitive receivers on a permanent or temporary basis. Significance criteria for noise impacts are drawn from CEQA Guidelines Appendix G (Items XI [a-f]).

Would the project:

a. Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

b. Expose persons to, or generate, excessive groundborne vibration or groundborne noise levels;

c. Cause a substantial permanent increase in ambient noise levels in the project vicinity above existing levels without the project;

d. Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels without the project;

e. Expose persons residing or working in the project area to excessive noise levels if located within an airport land use plan or where such a plan has not been adopted within 2 miles of a public airport or public use airport; or

f. Expose persons residing or working in the project area to excessive noise levels if located within the vicinity of a private airstrip.

The proposed project is not located within two miles of a public or private airport, therefore items "e" and "f" are not discussed any further in this study.

The City of Pacifica General Plan Noise Element does not establish any specific criteria for evaluating noise level increases. Therefore, the following increase criteria are recommended.

Noise Level Increase Criteria for Long-Term Project-Related Noise Level Increases

The California Environmental Quality Act (CEQA) guidelines define a significant impact of a project if it "increases substantially the ambient noise levels for adjoining areas." Generally, a project may have a significant effect on the environment if it will substantially increase the ambient noise levels for adjoining areas or expose people to severe noise levels. In practice, more specific professional standards have been developed. These standards state that a noise impact may be considered significant if it would generate noise that would conflict with local project criteria or ordinances, or substantially increase noise levels at noise sensitive land uses. The potential increase in traffic noise from the project is a factor in determining significance. Research into the human perception of changes in sound level indicates the following:

- A 3-dB change is barely perceptible,
- A 5-dB change is clearly perceptible, and
- A 10-dB change is perceived as being twice or half as loud.

A limitation of using a single noise level increase value to evaluate noise impacts is that it fails to account for pre-project-noise conditions. **Table 10** is based upon recommendations made by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been accepted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn}.

TABLE 10: SIGNIFICANCE OF CHANGES IN NOISE EXPOSURE

Ambient Noise Level Without Project, Ldn	Increase Required for Significant Impact
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

Source: Federal Interagency Committee on Noise (FICON)

Based on the **Table 10** data, an increase in the traffic noise level of 5 dB or more would be significant where the pre-project noise levels are less than 60 dB Ldn, or 3 dB or more where existing noise levels are between 60 to 65 dB Ldn. Extending this concept to higher noise levels, an increase in the traffic noise level of 1.5 dB or more may be significant where the pre-project traffic noise level exceeds 65 dB Ldn. The rationale for the **Table 10** criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause annoyance.

Noise Level Increase Criteria for Short-Term Noise Level Increases

For short-term noise associated with project construction, Saxelby Acoustics recommends use of the Caltrans increase criteria of 12 dBA (Caltrans 2011).

PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES

IMPACT 1: WOULD THE PROJECT RESULT IN EXPOSURE OF PERSONS TO OR GENERATION OF NOISE LEVELS IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES?

Exterior noise at New Sensitive Receptors

Based upon ambient noise measurements conducted on the project site, exterior noise levels ranged between 56-59 dBA Ldn. This complies with the City of Pacifica existing General Plan standard of 60 dBA Ldn, and proposed General Plan update standard of 65 dBA Ldn.

Operational Noise Increases

The proposed project would include typical residential noise which would be compatible with the adjacent existing single-family residential uses.

This is a **less-than-significant** impact and no mitigation is required.

IMPACT 2: WOULD THE PROJECT RESULT IN EXPOSURE OF PERSONS TO OR GENERATION OF EXCESSIVE GROUNDBORNE VIBRATION OR GROUNDBORNE NOISE LEVELS?

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural.

With the exception of vibratory compactors, the **Table 5** data indicate that construction vibration levels anticipated for the project are less than the 0.2 in/sec threshold at distance of 20 feet. However, the proposed project includes construction of a driveway within approximately 7 feet from the adjacent single-family residential use towards the southeast. Therefore, the project construction could cause vibrations in excess of 0.2 in/sec. Therefore, this is a **significant** impact.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

MM1: For construction activity within 26 feet of the adjacent single-family residential use located towards the southeast, a pre-construction crack documentation and construction vibration monitoring could be conducted to ensure that construction vibrations do not cause damage to the adjacent structure.

IMPACT 3: WOULD THE PROJECT RESULT IN A SUBSTANTIAL PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE PROJECT VICINITY ABOVE LEVELS EXISTING WITHOUT THE PROJECT?

Traffic Noise Increases

The proposed project is consistent with the City's General Plan and no traffic study was required for the project. Therefore, no substantial increases in traffic noise are predicted.

Operational Noise Increases

The proposed project would include typical residential noise which would be compatible with the adjacent existing residential uses.

This is a **less-than-significant** impact and no mitigation is required.

IMPACT 4: WOULD THE PROJECT RESULT IN ASUBSTANTIAL TEMPORARY OR PERIODIC INCREASE IN AMBIENT NOISE LEVELS IN THE PROJECT VICINITY ABOVE LEVELS EXISTING WITHOUT THE PROJECT?

ON-SITE CONSTRUCTION NOISE

During the construction phases of the project, noise from construction activities would add to the noise environment in the immediate project vicinity. Based upon the **Table 4** data, the proposed project is predicted to generate construction noise levels ranging between 52-76 dBA L_{dn} at the nearest noise-sensitive receptors. Measured ambient noise levels were found to be between 56-59 dBA L_{dn} in the vicinity of these uses. Therefore, the proposed project construction could result in periods of construction noise +3 to +20 dBA higher than ambient noise in the project area.

OFF-SITE HAULAGE NOISE

Noise would also be generated during the construction phase by increased truck traffic on area roadways. A project-generated noise source would be truck traffic associated with transport of heavy materials, removal of approximately 3,000 cubic yards of soil, and equipment to and from the construction site. This noise increase would be of short duration and would likely occur primarily during daytime hours. It is estimated that off-site truck haulage would be approximately 375 total trips, or approximately 8 trips per day during the two month grading phase of the project. A typical heavy truck passby results in a sound exposure level (SEL) of 85 dBA at 50 feet. Based upon 8 daytime trips per day, the day/night average (Ldn) noise level for truck haulage would be 45 dBA Ldn. Existing noise level along Monterey Road were measured to be 56-59 dBA Ldn at approximately 50 feet from the roadway centerline. Therefore, haulage of material off-site is not predicted to result in a substantial increase in daily noise levels at receptors along the project haul route.

The City of Pacifica Noise Ordinance exempts construction activities from the noise standards, provided that they take place between the hours of 7:00 AM and 6:00 PM Monday through Saturday and 9:00 AM and 6:00 PM Sundays and holidays.

However, construction activities could result in periods of noise which exceed existing noise levels by 20 dBA. This is more than the 12 dBA increase criteria. Therefore, construction of the project would result in a short-term ***significant*** impact. In order to reduce construction noise levels at the nearest uses, a temporary sound wall 8-feet in height was evaluated along the southeast project boundary, adjacent to the existing residential use. **Figure 4** shows the resulting construction noise levels with the 8-foot tall temporary sound wall. The analysis indicates that the wall would reduce construction noise levels to 52-67 dBA Ldn at the nearest receptors and will limit construction noise to a maximum noise level increase of 11 dBA Ldn at the nearest receptors. This meets the recommended 12 dBA increase criteria.

Vista Mar Residential

City of Pacifica, California

Figure 4

Predicted Loudest Construction Noise Levels (dBA, Ldn) – with 8' Wall at R4

Signs and symbols

- 8' Wall
- Auxiliary building
- Receiver
- Haul Route
- Construction Area

1 : 1378

0 5 10 20 30 40 m

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Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

MM2a: *An 8-foot tall temporary sound wall shall be located along the southeast boundary of the project site, adjacent to the existing residential use. The barrier shall consist of minimum 15/32" plywood or OSB. Alternate barriers or sound curtains having a sound transmission class (STC) rating of 25 would also be acceptable. Any barrier must not include gaps between panels or under the barrier that could transmit sound.*

MM2b: *Prior to issuance of a grading permit, the project applicant shall prepare a construction noise management plan that identifies measures to be taken to minimize construction noise on surrounding sensitive land uses and include specific noise management measures to be included within the project plans and specifications, subject to review and approval by the City Planning Division. The project applicant shall demonstrate, to the satisfaction of the City that the project complies with the following:*

- *Construction activities shall only take place between the hours limited 7:00 a.m. to 7:00 p.m. on weekdays, and 9:00 a.m. to 5:00 p.m. on Saturday and Sunday.*
- *All heavy construction equipment used on the proposed project shall be maintained in good operating condition, with all internal combustion, engine-driven equipment fitted with intake and exhaust mufflers that are in good condition.*
- *All mobile or fixed noise producing equipment used on the proposed project that is regulated for noise output by a local, state, or federal agency shall comply with such regulations while in the source of project activity.*
- *Where feasible, electrically-powered equipment shall be used instead of pneumatic or internal combustion powered equipment.*
- *All stationary noise-generating equipment shall be located as far away as possible from neighboring property lines.*
- *Signs prohibiting unnecessary idling of internal combustion engines shall be posted.*
- *A truck route haul plan shall be created to avoid residential areas.*
- *The use of noise-producing signals, including horns, whistles, alarms and bells shall be for safety warning purposes only.*
- *A noise complaint coordinator shall be retained amongst the construction crew to be responsible for responding to any local complaints about construction noise. When a complaint is received, the coordinator shall notify the City within 24 hours of the complaint and determine the cause of the noise complaint and shall implement reasonable measures to resolve the compliant, as deemed acceptable by the City.*

IMPACT 5: **FOR A PROJECT LOCATED WITHIN AN AIRPORT LAND USE PLAN OR, WHERE SUCH A PLAN HAS NOT BEEN ADOPTED, WITHIN TWO MILES OF A PUBLIC AIRPORT OR PUBLIC USE AIRPORT, WOULD THE PROJECT EXPOSE PEOPLE RESIDING OR WORKING IN THE PROJECT AREA TO EXCESSIVE NOISE LEVELS?**

There are no airports in the project vicinity. Therefore, this impact is not applicable to the proposed project.

IMPACT 6: **FOR A PROJECT WITHIN THE VICINITY OF A PRIVATE AIRSTRIP, WOULD THE PROJECT EXPOSE PEOPLE RESIDING OR WORKING IN THE PROJECT AREA TO EXCESSIVE NOISE LEVELS?**

There are no private airstrips in the project vicinity. Therefore, this impact is not applicable to the proposed project.

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Appendix A: Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
ASTC	Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by +5 dBA and nighttime hours weighted by +10 dBA.
DNL	See definition of Ldn.
IIC	Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
NIC	Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation.
NNIC	Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation.
Noise	Unwanted sound.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
RT60	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
SPC	Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

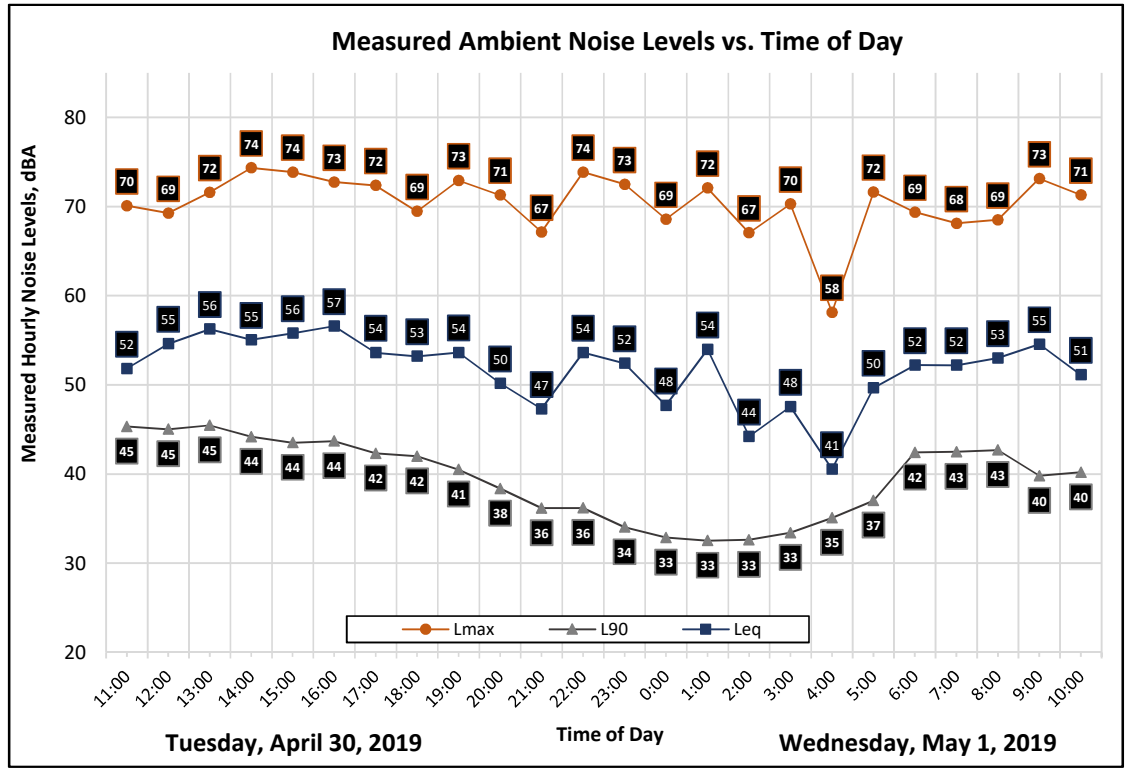
Appendix B: Continuous and Short-Term Ambient Noise Measurement Results

Appendix B1: Continuous Noise Monitoring Results

Site: LT-1
Project: Vista Mar Residential
Location: Southern Boundary Adjacent to Monterey Rd.
Coordinates: 37.6498723°, -122.4796240°
Meter: LDL 820-1
Calibrator: B&K 4230

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Tuesday, April 30, 2019	11:00	52	70	48	45
Tuesday, April 30, 2019	12:00	55	69	49	45
Tuesday, April 30, 2019	13:00	56	72	50	45
Tuesday, April 30, 2019	14:00	55	74	48	44
Tuesday, April 30, 2019	15:00	56	74	47	44
Tuesday, April 30, 2019	16:00	57	73	48	44
Tuesday, April 30, 2019	17:00	54	72	46	42
Tuesday, April 30, 2019	18:00	53	69	46	42
Tuesday, April 30, 2019	19:00	54	73	44	41
Tuesday, April 30, 2019	20:00	50	71	42	38
Tuesday, April 30, 2019	21:00	47	67	40	36
Tuesday, April 30, 2019	22:00	54	74	40	36
Tuesday, April 30, 2019	23:00	52	73	37	34
Wednesday, May 1, 2019	0:00	48	69	36	33
Wednesday, May 1, 2019	1:00	54	72	36	33
Wednesday, May 1, 2019	2:00	44	67	35	33
Wednesday, May 1, 2019	3:00	48	70	36	33
Wednesday, May 1, 2019	4:00	41	58	38	35
Wednesday, May 1, 2019	5:00	50	72	41	37
Wednesday, May 1, 2019	6:00	52	69	46	42
Wednesday, May 1, 2019	7:00	52	68	46	43
Wednesday, May 1, 2019	8:00	53	69	48	43
Wednesday, May 1, 2019	9:00	55	73	45	40
Wednesday, May 1, 2019	10:00	51	71	44	40

Statistics	Leq	Lmax	L50	L90
Day Average	54	71	46	42
Night Average	51	69	38	35
Day Low	47	67	40	36
Day High	57	74	50	45
Night Low	41	58	35	33
Night High	54	74	46	42
Ldn	58	Day %		77
CNEL	58	Night %		23

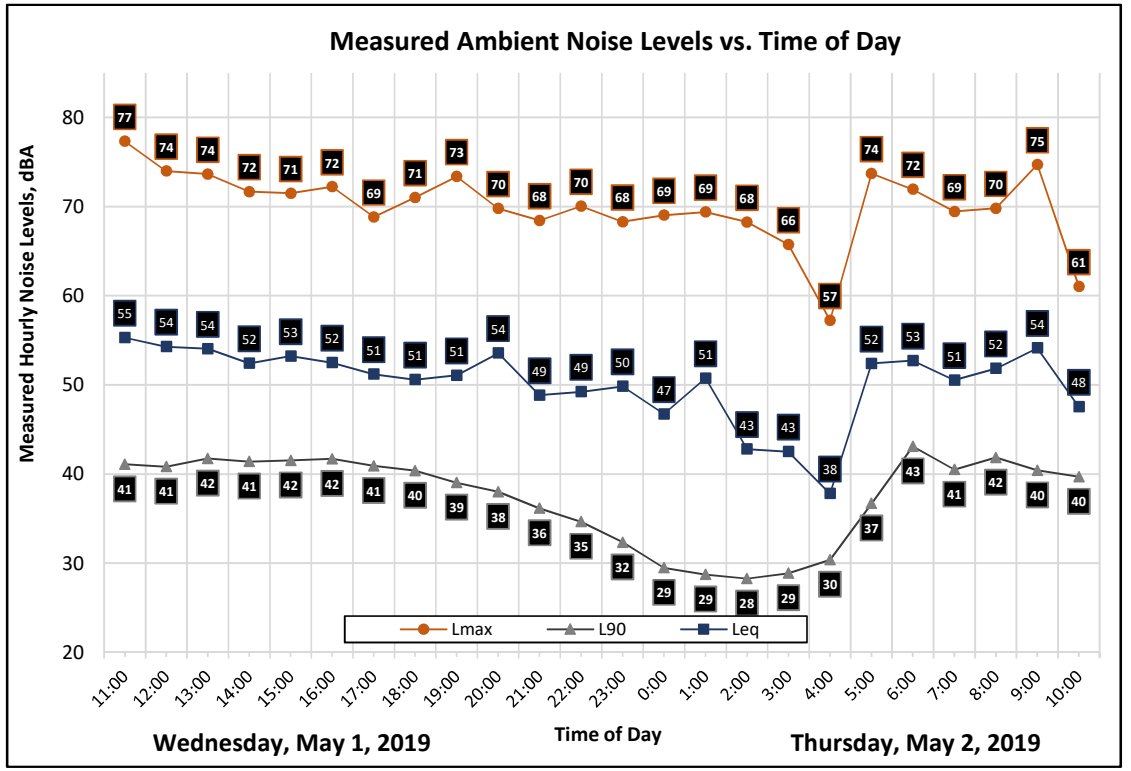


Appendix B2: Continuous Noise Monitoring Results

Site: LT-1
Project: Vista Mar Residential
Meter: LDL 820-1
Location: Southern Boundary Adjacent to Monterey Rd.
Calibrator: B&K 4230
Coordinates: 37.6498723°, -122.4796240°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Wednesday, May 1, 2019	11:00	55	77	45	41
Wednesday, May 1, 2019	12:00	54	74	44	41
Wednesday, May 1, 2019	13:00	54	74	46	42
Wednesday, May 1, 2019	14:00	52	72	44	41
Wednesday, May 1, 2019	15:00	53	71	45	42
Wednesday, May 1, 2019	16:00	52	72	45	42
Wednesday, May 1, 2019	17:00	51	69	44	41
Wednesday, May 1, 2019	18:00	51	71	44	40
Wednesday, May 1, 2019	19:00	51	73	42	39
Wednesday, May 1, 2019	20:00	54	70	43	38
Wednesday, May 1, 2019	21:00	49	68	39	36
Wednesday, May 1, 2019	22:00	49	70	37	35
Wednesday, May 1, 2019	23:00	50	68	36	32
Thursday, May 2, 2019	0:00	47	69	33	29
Thursday, May 2, 2019	1:00	51	69	32	29
Thursday, May 2, 2019	2:00	43	68	31	28
Thursday, May 2, 2019	3:00	43	66	32	29
Thursday, May 2, 2019	4:00	38	57	34	30
Thursday, May 2, 2019	5:00	52	74	42	37
Thursday, May 2, 2019	6:00	53	72	47	43
Thursday, May 2, 2019	7:00	51	69	44	41
Thursday, May 2, 2019	8:00	52	70	46	42
Thursday, May 2, 2019	9:00	54	75	45	40
Thursday, May 2, 2019	10:00	48	61	43	40

Statistics	Leq	Lmax	L50	L90
Day Average	53	71	44	40
Night Average	49	68	36	33
Day Low	48	61	39	36
Day High	55	77	46	42
Night Low	38	57	31	28
Night High	53	74	47	43
Ldn	56	Day %		78
CNEL	57	Night %		22

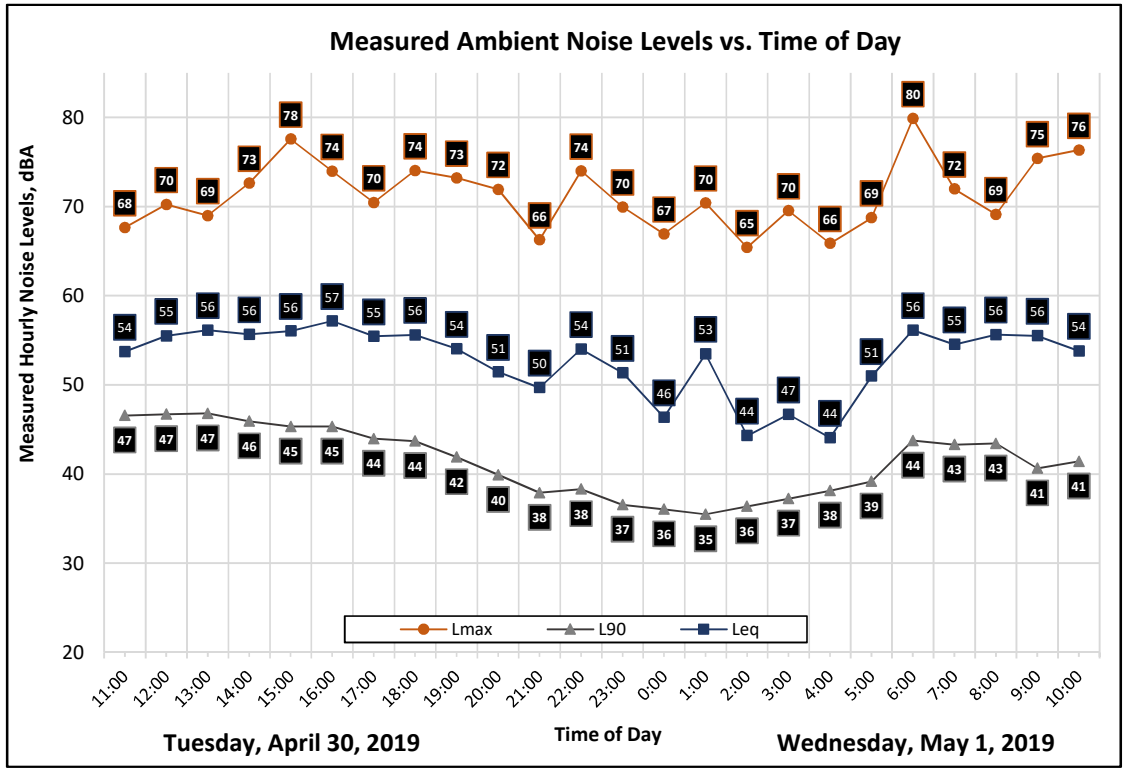


Appendix B3: Continuous Noise Monitoring Results

Site: LT-2
Project: Vista Mar Residential
Location: Southern Boundary Adjacent to Monterey Rd.
Coordinates: 37.6501113°, -122.4800062°
Meter: LDL 820-2
Calibrator: B&K 4230

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Tuesday, April 30, 2019	11:00	54	68	50	47
Tuesday, April 30, 2019	12:00	55	70	51	47
Tuesday, April 30, 2019	13:00	56	69	51	47
Tuesday, April 30, 2019	14:00	56	73	50	46
Tuesday, April 30, 2019	15:00	56	78	48	45
Tuesday, April 30, 2019	16:00	57	74	49	45
Tuesday, April 30, 2019	17:00	55	70	48	44
Tuesday, April 30, 2019	18:00	56	74	49	44
Tuesday, April 30, 2019	19:00	54	73	46	42
Tuesday, April 30, 2019	20:00	51	72	43	40
Tuesday, April 30, 2019	21:00	50	66	41	38
Tuesday, April 30, 2019	22:00	54	74	42	38
Tuesday, April 30, 2019	23:00	51	70	40	37
Wednesday, May 1, 2019	0:00	46	67	39	36
Wednesday, May 1, 2019	1:00	53	70	39	35
Wednesday, May 1, 2019	2:00	44	65	38	36
Wednesday, May 1, 2019	3:00	47	70	39	37
Wednesday, May 1, 2019	4:00	44	66	40	38
Wednesday, May 1, 2019	5:00	51	69	44	39
Wednesday, May 1, 2019	6:00	56	80	47	44
Wednesday, May 1, 2019	7:00	55	72	47	43
Wednesday, May 1, 2019	8:00	56	69	48	43
Wednesday, May 1, 2019	9:00	56	75	45	41
Wednesday, May 1, 2019	10:00	54	76	45	41

Statistics	Leq	Lmax	L50	L90
Day Average	55	72	47	44
Night Average	52	70	41	38
Day Low	50	66	41	38
Day High	57	78	51	47
Night Low	44	65	38	35
Night High	56	80	47	44
Ldn	59	Day %		79
CNEL	59	Night %		21



Appendix B4: Continuous Noise Monitoring Results

Site: LT-2
Project: Vista Mar Residential
Meter: LDL 820-2
Location: Southern Boundary Adjacent to Monterey Rd.
Calibrator: B&K 4230
Coordinates: 37.6501113°, -122.4800062°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Wednesday, May 1, 2019	11:00	56	81	47	43
Wednesday, May 1, 2019	12:00	56	77	46	42
Wednesday, May 1, 2019	13:00	55	70	47	43
Wednesday, May 1, 2019	14:00	54	70	46	43
Wednesday, May 1, 2019	15:00	54	74	46	43
Wednesday, May 1, 2019	16:00	55	73	47	43
Wednesday, May 1, 2019	17:00	54	68	46	42
Wednesday, May 1, 2019	18:00	54	70	46	42
Wednesday, May 1, 2019	19:00	52	69	44	41
Wednesday, May 1, 2019	20:00	54	70	44	40
Wednesday, May 1, 2019	21:00	50	67	41	37
Wednesday, May 1, 2019	22:00	47	66	39	36
Wednesday, May 1, 2019	23:00	50	67	37	34
Thursday, May 2, 2019	0:00	45	66	33	30
Thursday, May 2, 2019	1:00	49	69	33	29
Thursday, May 2, 2019	2:00	42	63	32	29
Thursday, May 2, 2019	3:00	40	63	33	30
Thursday, May 2, 2019	4:00	41	64	35	32
Thursday, May 2, 2019	5:00	55	78	44	38
Thursday, May 2, 2019	6:00	57	77	48	44
Thursday, May 2, 2019	7:00	56	76	46	42
Thursday, May 2, 2019	8:00	55	73	47	43
Thursday, May 2, 2019	9:00	57	77	47	42
Thursday, May 2, 2019	10:00	52	70	45	41

Statistics	Leq	Lmax	L50	L90
Day Average	55	72	46	42
Night Average	51	68	37	34
Day Low	50	67	41	37
Day High	57	81	47	43
Night Low	40	63	32	29
Night High	57	78	48	44
Ldn	58	Day %		78
CNEL	59	Night %		22