Final Draft

Initial Study/Mitigated Negative Declaration

for the

Carmel Area Wastewater District
Wastewater Treatment Plant Perimeter Improvements Project

Prepared for:

Carmel Area Wastewater District
3945 Rio Road
Carmel, CA 93923

Prepared by:

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947 Cass Street, Suite 5
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September 2025

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Project Summary

1. **Project Title**: Wastewater Treatment Plant Perimeter Improvements Project ("Project" or "Proposed Project")

2. **Lead Agency:** Carmel Area Wastewater District

3. **Contact:** Jeff Bandy, P.E., Ph.D., Principal Engineer
   3945 Rio Road, Carmel, CA 93922
   (831) 624-1248

4. **Prepared By:** Denise Duffy and Associates, Inc ("DD&A")

5. **Date Prepared:** September 2025

6. **Project Location:** Carmel Area Wastewater District Wastewater Treatment Plant, Monterey County, California

7. **Name of Property Owner/Project Proponent:** Carmel Area Wastewater District

8. **Assessor's Parcel Number(s):** 009-521-004-000, 009-511-010-000, 009-521-002-000, and 009-541-021-000.

9. **Project Area of Disturbance:** Approximately 0.6 total acres (25,000 SF).

10. **Project Description:** Carmel Area Wastewater District (CAWD) proposes to conduct rehabilitation of several areas of the wastewater treatment plant to maintain the facilities in good operating condition. The Proposed Project consists of the removal of up to 85 invasive Eucalyptus trees at the wastewater treatment plant (WWTP). These trees were planted in the 1980s to act as a visual screen between the WWTP and local residential areas but are no longer necessary for visual screening. CAWD proposes removal of Eucalyptus trees from the site to prevent damage to the staff and facilities from falling branches and debris. Most of the Eucalyptus trees to be removed have trunks partially within five (5) feet of either side of the existing perimeter fence alignment. The remainder of the trees to be removed or pruned are within the WWTP fence line. The Proposed Project would also replace approximately 2,400 linear feet of existing, dilapidated perimeter security fencing around the WWTP with a new eight (8)-foot chain link fence and install new pedestrian and vehicle access gates.

11. **Local Coastal Plan Designations:** Public/Quasi-Public (APN 009-521-004-000) and Wetlands & Coastal Strand (APNs 009-511-010-000, 009-521-002-000, and 009-541-021-000)

12. **Zoning Districts**: Public-Quasi-Public-(Coastal Zone) ("PQP-D(CZ)"), and Resource Conservation (Coastal Zone) ("RC(CZ)").

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Chapter 1. Introduction and Project Description

1.1 INTRODUCTION

This Initial Study has been prepared to evaluate the potential environmental effects associated with the Carmel Area Wastewater District's ("CAWD's") Wastewater Treatment Plant Perimeter Improvements Project ("Project" or "Proposed Project"), located within the Coastal Zone in unincorporated Monterey County, California. This document has been prepared in accordance with the California Environmental Quality Act ("CEQA"), Public Resources Code §21000 et. seq., and the State CEQA Guidelines, California Code of Regulations ("CCR") §15000 et. seq.

An Initial Study is an informational document prepared by a Lead Agency to determine if a project may have a significant effect on the environment (CEQA Guidelines §15063, subd. (a)). If there is substantial evidence that a project may have a significant effect on the environment, an Environmental Impact Report ("EIR") must be prepared, in accordance with CEQA Guidelines §15064(a). However, if the Lead Agency determines that revisions in the project plans or proposals made by or agreed to by the applicant to mitigate the potentially significant effects to a less-than-significant level, a Mitigated Negative Declaration ("IS/MND") may be prepared instead of an EIR (CEQA Guidelines §15070, subd. (b)). Per CEQA Guidelines for an IS/MND, a Lead Agency prepares a written statement describing the reasons a proposed project would not have a significant effect on the environment and, therefore, why an EIR need not be prepared. This IS/MND conforms to the content requirements under CEQA Guidelines §15071.

CAWD is acting as the Lead Agency pursuant to CEQA Guidelines §15050(a). As the Lead Agency, CAWD has prepared this IS/MND pursuant to CEQA Guidelines §15063 and §15070 as the project does have some significant impacts on the environment that can be mitigated to less-than-significant with identified measures. CAWD, as the Lead Agency, will circulate this IS/MND for agency and public review during a 30-day public review period pursuant to CEQA Guidelines §15073. Comments received by CAWD on this IS/MND will be reviewed and considered as part of the deliberative process in accordance with CEQA Guidelines §15074.

Publication of this IS/MND marks the beginning of a 30-day public review and comment period. During this period, the IS/MND will be available to local, state, and federal agencies and to interested organizations and individuals for review. Written comments concerning the environmental review contained in this IS/MND during the 30-day public review period should be sent to:

Jeff Bandy, P.E., Ph.D., Principal Engineer
3945 Rio Road, Carmel, CA 93922
(831) 624-1248
bandy@cawd.org

This IS/MND and all documents referenced in it are available for public review at the CAWD office located at the above address. Following the conclusion of the public review period, CAWD will consider the adoption of the IS/MND for the Proposed Project at a regularly scheduled public hearing. CAWD shall consider the IS/MND together with any comments received during the public review process. Upon adoption of the IS/MND, CAWD may proceed with approval actions for the Proposed Project. If CAWD approves the Project, they will file a Notice of Determination ("NOD"), which will be available for public inspection and posted in 24 hours of receipt at the County Clerk's Office for 30 days. The filing of the

NOD starts a 30-day statute of limitations on court challenges to the approval under CEQA (CEQA Guidelines Section 15075(g)).

CAWD prepared the following section consistent with the requirements of CEQA Guidelines Section 15124 to the extent that it applies to the Proposed Project. The following section provides a discussion of key background details related to the Proposed Project, including project components, site and area characteristics, and applicable regulatory requirements.

1.2 PROJECT BACKGROUND

The Proposed Project would improve the existing wastewater treatment plant ("WWTP") and remove invasive Eucalyptus trees. The Eucalyptus trees were planted in the 1980s to provide screening between the wastewater treatment plant and adjacent residential land uses. However, operations at the wastewater treatment plant are impacted due to the risk of damage and injury from falling branches and debris from these trees and costs of ongoing maintenance of the trees, and the surrounding native vegetation has grown large enough to provide screening from adjacent residential land uses. Eucalyptus trees are a non-native, invasive species and are considered a high priority for removal to halt the spread of invasive species and restore native species within sensitive habitat areas. The Proposed Project would increase site safety and security replacing the existing fence, which is in poor overall condition with large holes in some areas and other fence segments having completely fallen down. **Figure 1** shows the regional location of the Project and **Figure 2** shows an aerial view of the overall project area.

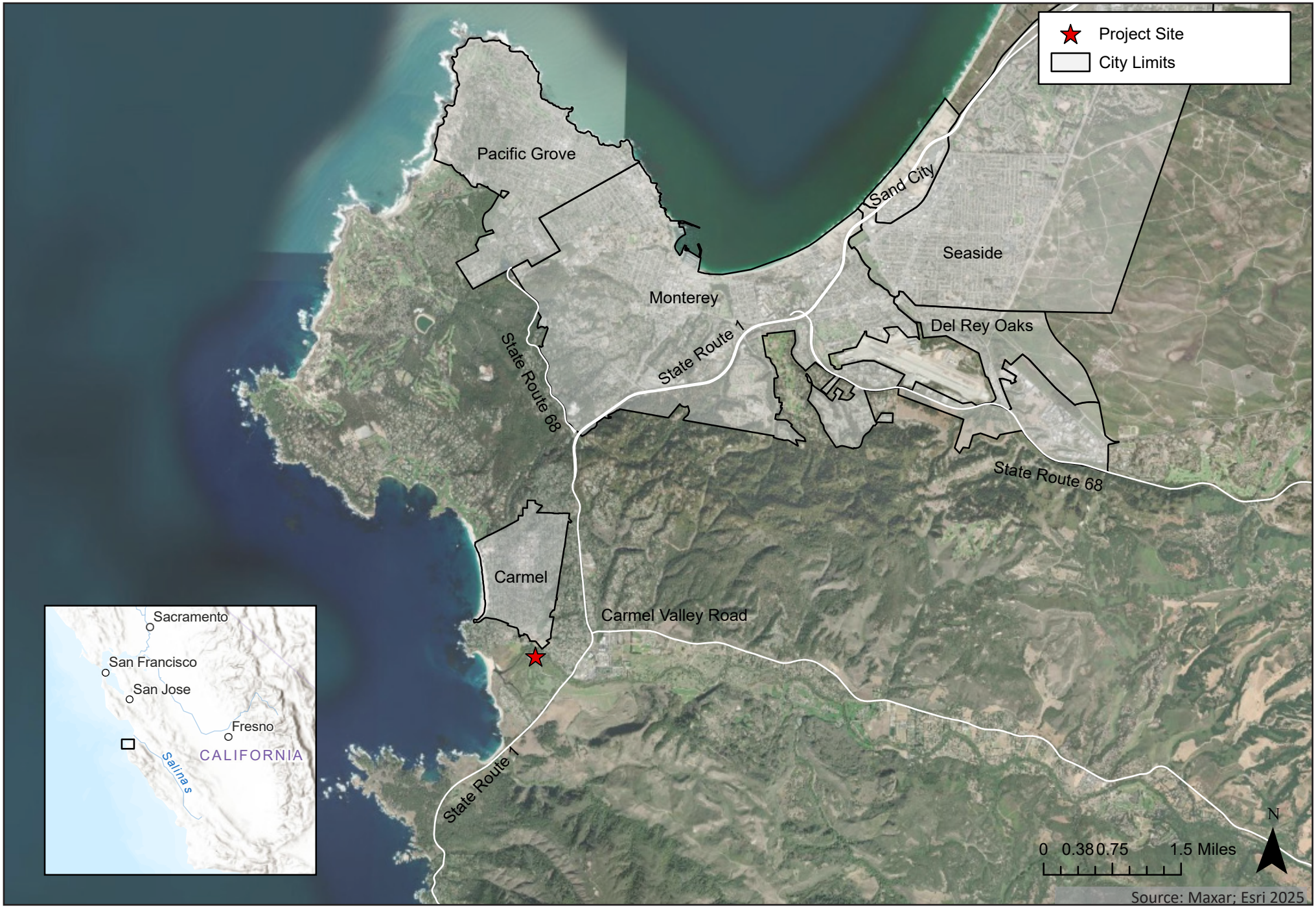
1.3 PROJECT LOCATION

The Proposed Project is located within and adjacent to the existing CAWD WWTP located within the Coastal Zone in unincorporated Monterey County. The Project site is subject to the policies and regulations of the Carmel Area Land Use Plan. The total area of disturbance associated with the Proposed Project is approximately 0.6 acres. The following list identifies the Assessor's Parcel Numbers ("APNs") where tree removals and site improvements would occur for the Project.

- 009-521-004-000
- 009-511-010-000
- 009-521-002-000
- 009-541-021-000

1.4 PROJECT CONSTRUCTION

The Proposed Project consists of the removal of approximately 76 Eucalyptus trees, removal of the existing exterior fence and footbridge pedestrian gate, and the installation of a new exterior fence with new pedestrian and vehicle access gates. Tree removal would also include the grinding of stumps. In addition, the Proposed Project includes cutting some of the Eucalyptus trees located within the fenceline from the fence replacement area to a maximum height of 20-feet and pruning of all tree limbs. A demolition plan showing removal of the existing fenceline and approximate number and location of trees to be removed is provided in **Figure 3**, and an overall site plan is provided in **Figure 4**. The Project will occur over a total of 2,400 linear feet ("LF") within an approximately 10-foot wide area for clearing, resulting in a total area of disturbance of approximately 0.6 acres. CAWD anticipates the use of the following equipment over the course of the Project:



Title:

Regional Map

Date	5/9/2025
Scale	N/A
Project	2025.25

Monterey | San Jose
Denise Duffy and Associates, Inc.
Environmental Consultants Resource Planners
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure
1

Title:

Project Location Map

Date	5/12/2025
Scale	N/A
Project	2025.25

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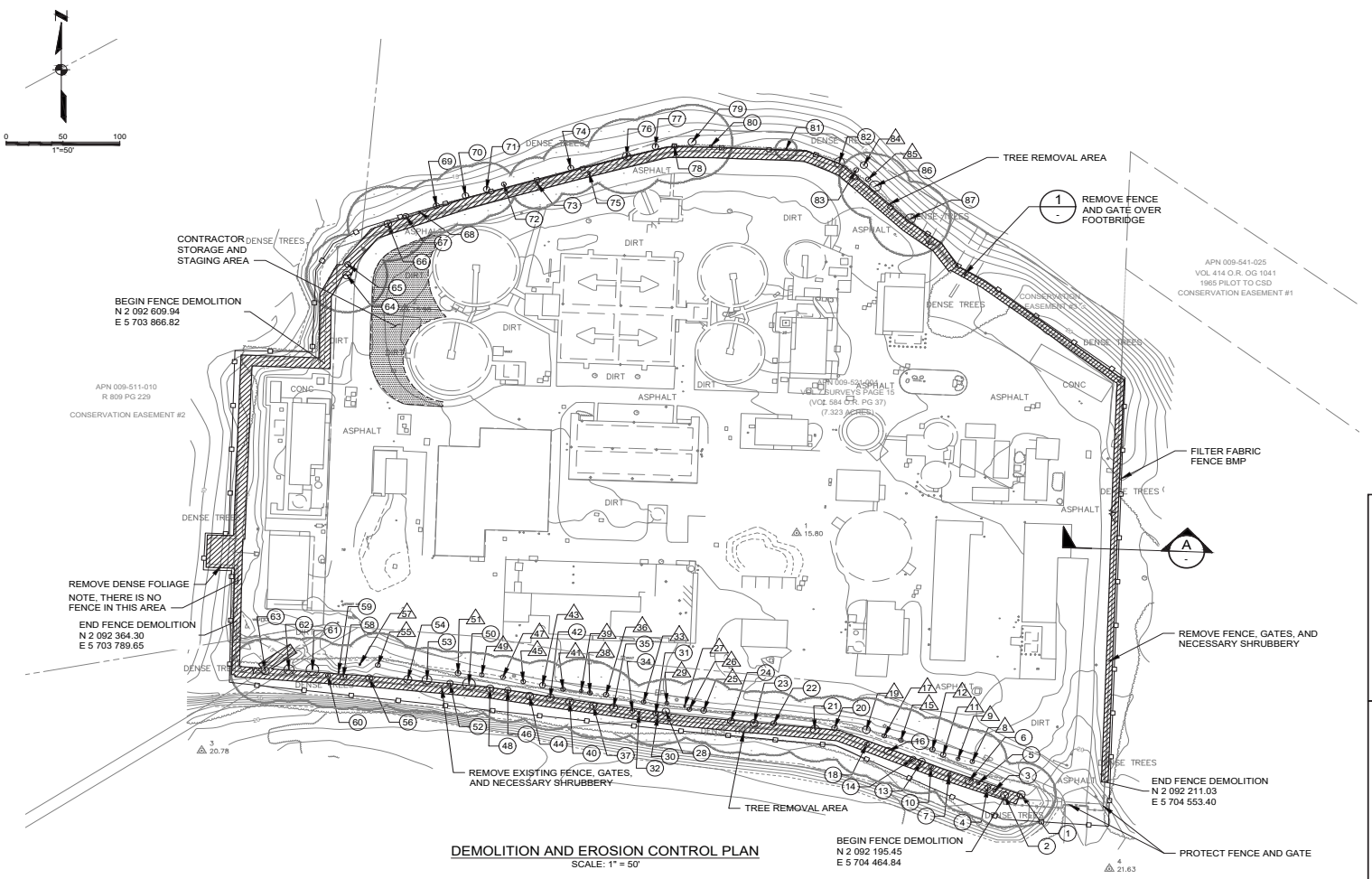
Figure 2



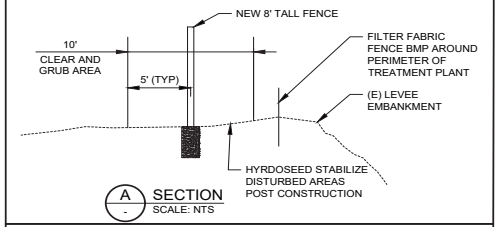
DEMOLITION AND EROSION CONTROL PLAN
SCALE: 1" = 50'

GENERAL SHEET NOTES

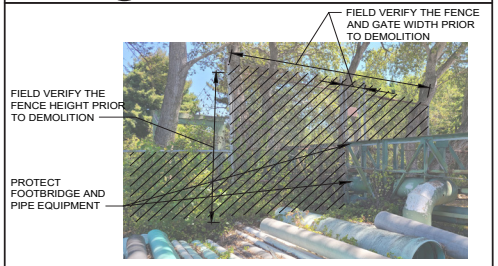
1. REMOVE FENCE IN ITS ENTIRETY, INCLUDING FOOTINGS. THE FENCE HAS POSTS EVERY 7 FEET AND EACH POST HAS A 3-FOOT DEEP CONCRETE BASE SIMILAR TO C-500, DETAIL 1.
2. ALL FACILITIES, EQUIPMENT PADS, EQUIPMENT WITHIN THE FENCE LINE ARE TO BE PROTECTED IN PLACE. WHEN WORKING ADJACENT TO NEARBY ITEMS CONTACT OWNER TO COORDINATE ACCESS.
3. PROTECT ALL TREES NOT IDENTIFIED FOR REMOVAL.
4. REMOVE SHRUB/TREES AS REQUIRED FOR FENCE INSTALLATION IN ACCORDANCE WITH SPECIFICATION SECTIONS 02050 AND 02200. TREE WOODCHIPS AND OTHER DEBRIS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. OBTAIN OWNER APPROVAL PRIOR TO CLEARING AND LIMIT REMOVAL TO MINIMAL AMOUNT REQUIRED TO PERFORM WORK.
5. CONTRACTOR TO SECURE WWTP WITH A TEMPORARY SECURITY FENCE AT ALL TIMES DURING REMOVAL OF FENCE AND INSTALLATION OF NEW FENCE OR CURING OF FENCE FOOTINGS.
6. CLEAR AND GRUB 10' WIDE AREA LONG FENCE ALIGNMENT.
7. EUCALYPTUS TREES TO BE REMOVED OR REMAIN ARE INDICATED ON THE PLAN WITH CIRCLES AND TRIANGLES. SEE TABLE 1 - SUMMARY OF TREE SURVEY ON SHEET C-003 FOR MORE INFORMATION. ALL OTHER VEGETATION (NON-EUCALYPTUS TREES, SHRUBS, ETC) WITHIN THE 10 FOOT CLEAR AND GRUB AREA SHALL BE REMOVED.
8. CONTRACTOR SHALL REMOVE STUMPS AND ROOTS IN THE IMMEDIATE FENCE ALIGNMENT AND FENCE POST BASES TO ALLOW THE INSTALLATION OF THE NEW FENCE AND BURIED FROG BARRIER. STUMPS OUTSIDE OF THE FENCE ALIGNMENT MAY REMAIN IN PLACE AND SHALL BE CUT TO WITHIN 12" OF GRADE.
9. ONCE TREE MATERIAL HAS BEEN REMOVED PLACE IMPORTED FILL TO GRADE AND COMPACT TO 90% RELATIVE COMPACTION.

LEGEND

- (#) TREE TO BE REMOVED, SEE NOTE 7
- (#) TREE TO REMAIN, SEE NOTE 7
- STORMWATER BMP



A - SECTION
SCALE: NTS



1 - FOOTBRIDGE GATE DEMOLITION
SCALE: NTS

Source: Kennedy Jenks, 2025

Title:
Demolition Plan

Date 6/12/2025
Scale N/A
Project 2025.25

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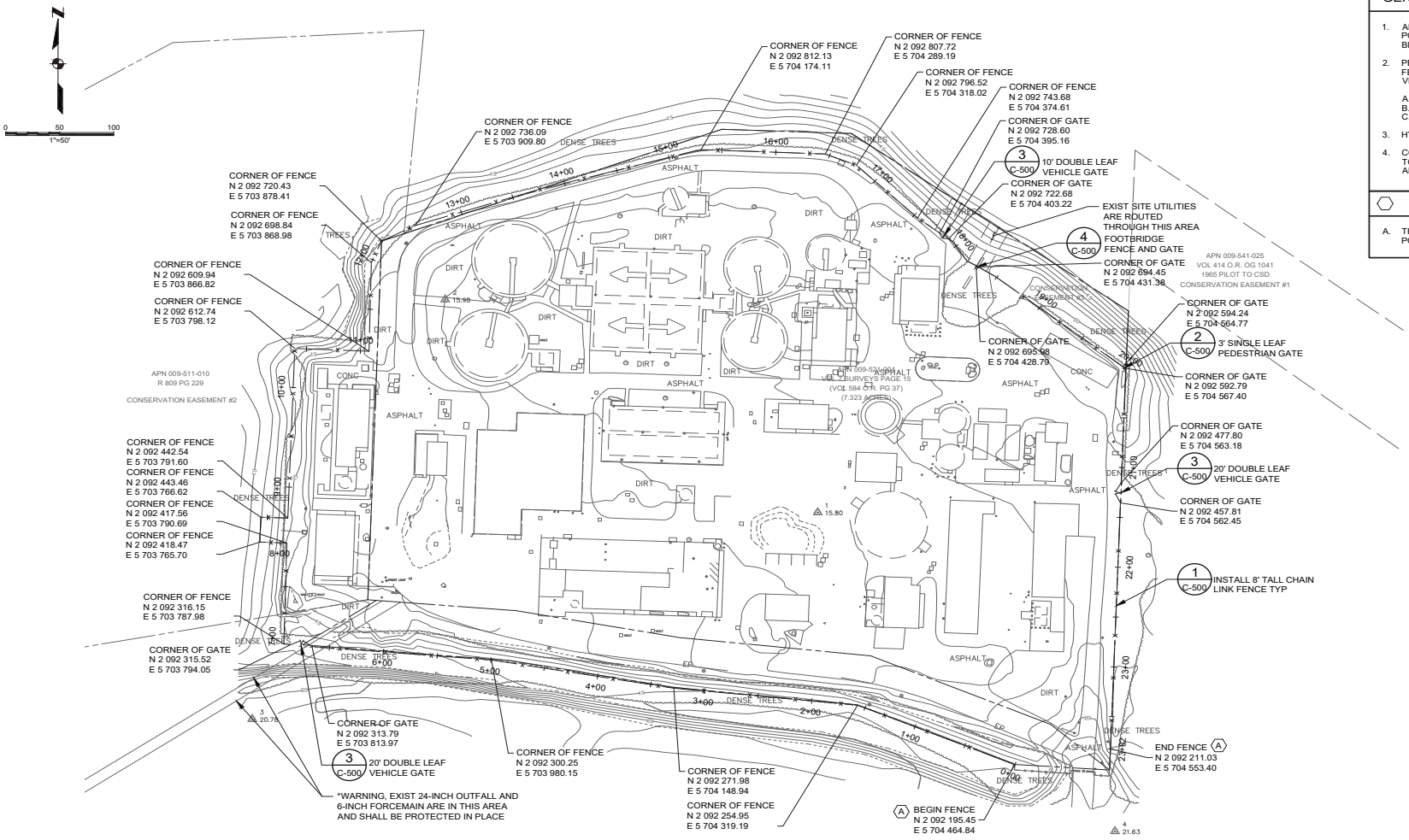
Figure
3



GENERAL SHEET NOTES

1. ALL COORDINATES PROVIDED ARE TO THE CENTER OF FENCE POST AND IDENTIFY A CHANGE IN DIRECTION OF THE FENCE OR BEGINNING AND END OF ALL GATES.
2. PERIMETER FENCE CONSISTS OF APPROXIMATELY 2,400 LF OF FENCING NOT INCLUDING THE AUTOMATIC MAIN ENTRANCE VEHICLE GATE.
   A. (1) DOUBLE LEAF 10' VEHICLE GATE.
   B. (2) 20' DOUBLE SWING VEHICLE GATES.
   C. (2) 3' PEDESTRIAN GATES
3. HYDROSEED STABILIZE DISTURBED AREAS POST CONSTRUCTION.
4. CONTRACTOR SHALL PERFORM USA FOR UTILITY LOCATES PRIOR TO PERFORMING WORK. PROTECT ALL EXIST UTILITIES IN PLACE AND CORRDINATE WITH CAWD LOCATING EXIST CAWD UTILITIES.

SHEET KEYNOTES

A. THE CHAIN LINK FENCE IS TO BE FASTENED TO THE EXIST FENCE POST NEAR THE ENTRANCE GATE.

Source: Kennedy Jenks, 2025

Title:

Site Plan

Date 6/12/2025
Scale N/A
Project 2025.25

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Figure 4

- Up to three (3) work trucks
- Stump grinder
- Man lift (cherry picker)
- Chainsaws
- Dump truck
- Small backhoe/skid steer with post hole auger
- Small Front-end loader

The Proposed Project would require an average of three (3) to four (4) construction personnel during tree removal and pruning and a maximum of four (4) to six (6) personnel during fence replacement. In the event that phases overlap, a maximum of ten (10) construction workers could be located on site at the peak of construction. Construction would occur from 8:00 am to 5:00 pm, Monday through Friday. No construction is proposed on weekends or holidays. Ground disturbing activities would be restricted to the dry season of June through October. Construction of the Proposed Project is anticipated to last 90 total workdays. Fence replacement and tree removal/pruning may overlap but Project activities would not occur simultaneously in the same location. Project activities associated with each major component of the Proposed Project are described in more detail in the following sub-sections.

Refueling of mechanized construction equipment would occur on the Project site. Refueling would be limited to designated refueling areas within the boundaries of the CAWD WWTP as shown on **Figure 4**. Refueling would take place at designated fueling stations at the WWTP, which are located more than 100 feet from riparian habitat and/or the Carmel River and areas that could potentially flow into the Carmel River in the event of an accidental spill. Refueling areas would include fuel containment equipment (i.e., absorbent sheets and waddles) as part of construction Best Management Practices.

The Proposed Project would utilize silt fencing to control erosion during ground disturbing activities. Silt fencing would be installed according to the slope contours of the Project site to ensure maximum effectiveness.

Tree Removal and Pruning

The Proposed Project would remove approximately 22 trees from the north side of the site and approximately 54 trees from the south side of the site, for a total of approximately 76 trees to be removed. The majority of the Eucalyptus trees to be removed have trunks that are all or partially within five (5) feet of either side of the fence alignment. Stumps would be ground using a stump grinder to facilitate future landscaping around the WWTP perimeter.[1] The Proposed Project also includes cutting of other Eucalyptus trees within the fenceline from the fence replacement area to a height of 20-feet and the pruning of all tree limbs. The Project would transport removed trees to the nearest waste processing facility for composting. No burning of organic materials is anticipated for trees removed as part of the Proposed Project. **Figure 3** shows a markup of the locations of surveyed trees within five (5) feet of either side of the fence alignment based on an aerial view of the site.

[1] Future landscaping improvements are undefined at this time and as a result are not considered as part of the Proposed Project

Fence Removal and Replacement

The Proposed Project would remove 2,400 LF of the existing exterior fence and footbridge pedestrian gate and retain the main access gate and immediately adjacent fenceline segments. The Project would replace all other segments of fencing (including all damaged and/or fallen-down segments of fencing), and the Project includes replacement pedestrian and vehicle access gates and the addition of one additional vehicle access gate. The Proposed Project also includes new interior fencing within the WWTP site. CAWD would dispose of waste generated from fence removal and installation of new fencing at a local landfill in accordance with applicable regulations.

The Proposed Project also includes the installation of a secondary wildlife exclusion device on the perimeter fence for the purposes of excluding California Red-legged Frog and other wildlife from entering the WWTP at the request of the U.S. Fish and Wildlife Service. The exclusionary fencing would be attached around the entire fenced perimeter of the WWTP.

1.5 PROJECT OPERATION

Following completion of Project activities, operations at the wastewater treatment plant would continue in a manner consistent with current operation. The Proposed Project would provide greater accessibility to the site for CAWD employees due to the replacement of access gates for vehicles and pedestrians and the addition of one new vehicle access gate for use in case of emergency. In addition, the replacement fencing would increase site safety and security by ensuring that the perimeter of the WWTP is protected by a complete and secure perimeter fencing.

1.6 OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED

County of Monterey

- Coastal Development Permit
- Monterey County Construction Permit

Chapter 2. Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by the Proposed Project, involving at least one (1) impact that is a "potentially significant impact," as discussed in the Initial Study analysis on the following pages.

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

Environmental Factors Not Affected

The following environmental resources were considered as part of the scoping and environmental analysis conducted for the Proposed Project. The potential for adverse impacts to these resources were not identified. Consequently, there is no further discussion regarding these resources in this document.

Agricultural Resources: The California Department of Conservation identifies and designates important farmland throughout the State as part of the Farmland Mapping and Monitoring Program ("FMMP"). Farmland is classified as follows:

- **Prime Farmland.** Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. These are Class I and Class II soils.
- **Farmland of Statewide Importance.** Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Unique Farmland.** Farmland of lesser quality soils used to produce the state's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climactic zones in California.
- **Grazing Land.** Government Code §65570(b)(3) defines Grazing Land as: "...land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock." The minimum mapping unit for Grazing Land is 40 acres. Grazing Land does not include land previously designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance, and heavily brushed, timbered, excessively steep, or rocky lands which restrict the access and movement of livestock.
- **Urban and Built-Up Land.** Land occupied by structures with a building density of at least one (1) unit to 1.5 acres, or approximately six (6) structures to a 10-acre parcel. This land is used for

residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

- **Other Land.** Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas, not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded by urban development and greater than 40 acres is mapped as Other Land.

California Public Resources Code §4526 and the California Board of Forestry and Fire Protection define "Timberland" as land not owned by the federal government nor designated as experimental forest land, which is capable of and available for growing any commercial tree species.

The Proposed Project is located at the existing CAWD WWTP where no agricultural activities occur. The FMMP designates the Project site as *Urban and Built-Up Lands* (Monterey County, 2025). The Project site is not governed by a contract under the Williamson Act (Monterey County, 2025). CEQA requires the evaluation of forest and timber resources where they are present. The Proposed Project site is surrounded by forest land as defined in Public Resources Code ("PRC") Section 12220(g) due to the presence of 10-percent or greater coverage of native tree cover. The Project site does not include any land designated as timberland as defined by Public Resources Code Section 4526 or timberland zoned Timberland Production as defined by Government Code Section 51104(g).

The Proposed Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, to non-agricultural use. No agricultural uses occur on the Proposed Project site and none of these parcels where the Proposed Project would occur are governed under a Williamson Act Contract. While the Proposed Project would involve tree removal and pruning, no forest land (as defined in Public Resources Code section 12220(g)) would be impacted as the Project does not include the removal of any native tree species. In addition, the Project site does not contain land designated as timberland (as defined by Public Resources Code section 4526) or timberland production (as defined by Government Code section 51104(g)), nor is there land designated as timberland or timberland production in the vicinity of the Proposed Project site. In addition, native trees and vegetation would remain in place following completion of the Proposed Project. Therefore, no loss of forest land or conversion of forest land to non-forest use would occur as part of the Project. The Project does not include any new land uses that would involve changes to the existing environment or that could result in the conversion of farmland to non-agricultural use or forest land to non-forest use. No impact would occur.

Land Use and Planning: The Project is located across several parcels in unincorporated Monterey County. The Proposed Project is located at the existing CAWD WWTP, which is located in the Coastal Zone. The 1982 Monterey County General Plan, instead of the 2010 Monterey County General Plan, regulates activities within the Coastal Zone in Monterey County. Therefore, the 1982 Monterey County General Plan regulates land use policies in the Proposed Project area. In addition, the Carmel Area Land Use Plan provides regulations and polices relevant to the Proposed Project site. The land use designations for the Project site include Public/Quasi-Public (APN 009-521-004-000) and Wetlands & Coastal Strand (APNs 009-511-010-000, 009-521-002-000, and 009-541-021-000). Zoning designations for the Project site include Public-Quasi-Public-(Coastal Zone) ("PQP-D(CZ)"), and Resource Conservation (Coastal Zone) ("RC(CZ)") (Monterey County, 2025).

The Proposed Project consists of the removal, cutting, and pruning of Eucalyptus trees and the replacement of fencing at the existing CAWD WWTP. While residential uses are located to the north of the Project site, work would be confined to the Project parcels and would not create a barrier that would divide an established community. In addition, all improvements are located within the existing WWTP, and the Proposed Project does not propose any new development and would not conflict with policies, goals, and objectives of the 1982 Monterey County General Plan and the Carmel Area Land Use Plan. For these reasons, the Proposed Project would have no impact on land use and planning. Therefore, no further discussion is necessary.

Mineral Resources: The Surface Mining and Reclamation Act ("SMARA") of 1975 and the California Geological Survey ("CGS") define and map regional significant mineral resources. The CGS delineates Mineral Resource Zones ("MRZs") based on their mineral resource potential. The Proposed Project is located in MRZ-3, which the CGS defined as an area containing known or inferred construction aggregate resources of undetermined mineral resource significance. The Proposed Project is located at the existing wastewater treatment plant and is not located in an area reserved or analyzed for future mineral extraction (CGS, 2021). For this reason, the Proposed Project would have no impact on mineral resources. Therefore, no further discussion is necessary.

Population and Housing: The Proposed Project is located within unincorporated Monterey County. The population of unincorporated Monterey County is approximately 105,334 people inhabiting 40,652 residential units within unincorporated areas based on the California Department of Finance's average of 2.56 persons per residential units (Department of Finance, 2024). The Proposed Project consists of tree removal, tree cutting, tree pruning, and replacement of existing fencing at the CAWD WWTP and does not involve new residential or commercial development that could result in a population increase.

The Proposed Project improvements are intended to improve existing operation of the WWTP, and the Proposed Project does not include any treatment capacity upgrades that would indirectly result in population growth. Furthermore, the Proposed Project would not displace existing people or housing. For these reasons, the Proposed Project would have no impact on population and housing. Therefore, no further discussion is necessary.

Recreation: There are several parks in the region, including Garland Ranch Regional Park and Cachagua Community Park operated by MPRPD. Additionally, the Mission Trail Nature Preserve, located in and operated by the City of Carmel, is located approximately 0.2 mile north of the Project site. The Proposed Project consists of tree removal, tree cutting, tree pruning, and fence replacement at the existing CAWD WWTP. The Proposed Project would not include new development that could introduce new residents to the area that would place additional demand on existing park facilities or require the expansion of existing park facilities or construction of new park facilities. The Proposed Project does not include new recreational facilities or require the construction or expansion of existing recreational facilities that would have an adverse impact on the environment. For these reasons, the Proposed Project would have no impact on recreation. Therefore, no further discussion is necessary.

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Chapter 3. Determination

On the basis of this initial evaluation:

☐ 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 project proponent. 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" impact 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 or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Proposed Project, nothing further is required.

Jeff Bandy — Signature

9/16/25 — Date

Jeff Bandy, P.E., Ph.D., Principal Engineer

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Chapter 4. Environmental Setting and Impacts

The following chapter assesses the environmental impacts associated with the Proposed Project and identifies mitigation measures to reduce potentially significant impacts to less-than-significant, as appropriate.

Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the Project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the Project will not expose sensitive receptors to pollutants, based on project-specific screening analysis).
2. All answers must consider the whole action involved, including offsite as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less-than-significant with mitigation, or less-than-significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less-Than-Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-Than-Significant Impact." The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less-than-significant level.
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration (Section 15063(c)(3)(D)). In this case, a brief discussion should identify the following:
    a) Earlier Analysis Used. Identify and state where they are available for review.
    b) Impacts Adequately Addressed. Identify which effects from the above checklist were in the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c) Mitigation Measures. For effects that are "Less-than-Significant with Mitigation Measures Incorporated," describe the mitigation measures, which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the Project.
6. Lead agencies are encouraged to incorporate information sources for potential impacts (e.g., general plans, zoning ordinances) into the checklist references. Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used, or individuals contacted should be cited in the discussion.

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:

    a) The significance criteria or threshold, if any, used to evaluate each question; and
    b) The mitigation measure identified, if any, to reduce the impact to less-than-significance.

4.1. Aesthetics

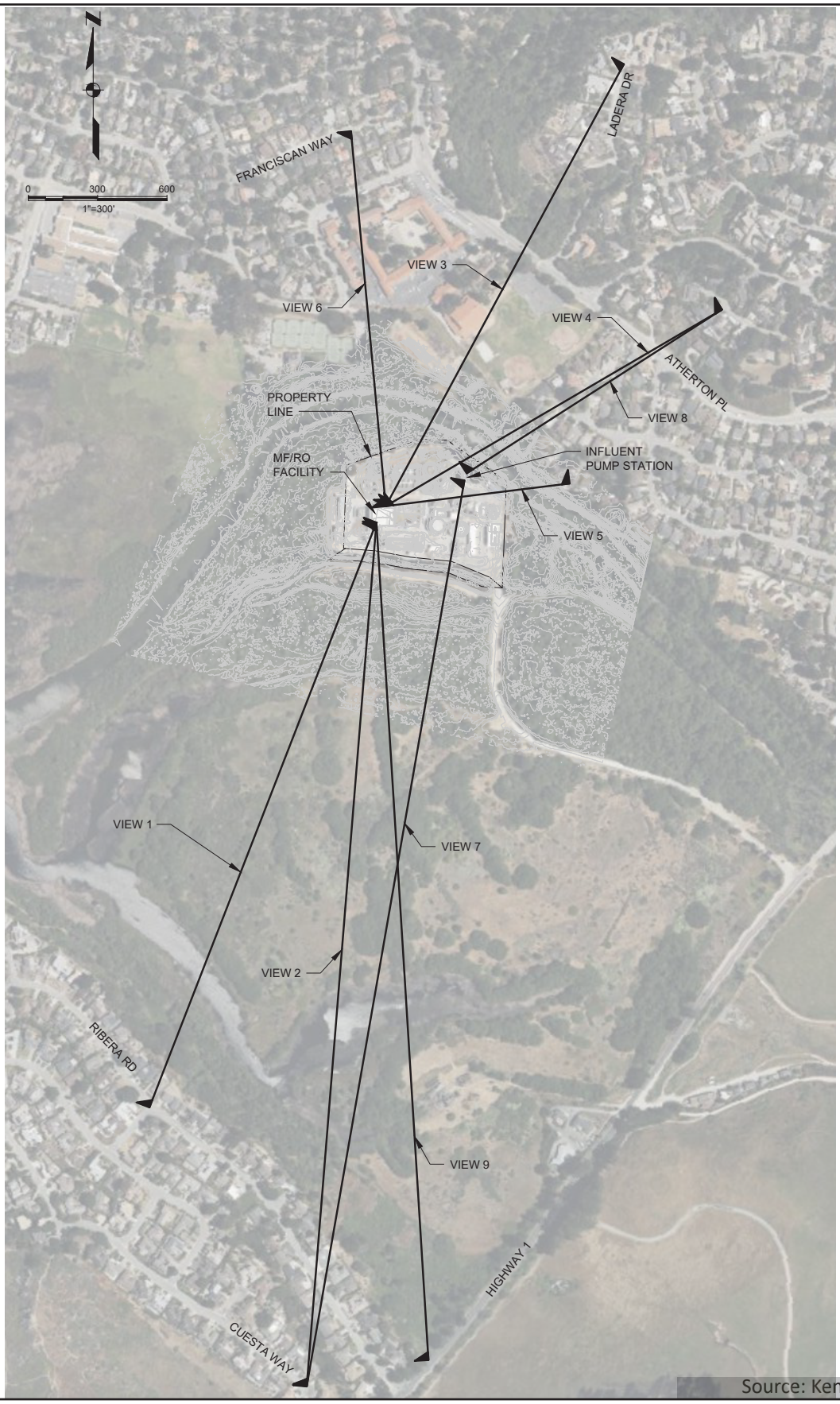
Environmental Setting

The Proposed Project is located in the Coastal Zone, within the unincorporated Monterey County. Carmel Valley is located to the east of the Project site, and residential uses are located to the north. Dense vegetation surrounds the Project site in all directions. In addition, the Project site is located near the Carmel River, which winds around the eastern, northern, and western boundaries of the site.

The Project site is located at the existing CAWD WWTP and is surrounded by trees on all sides. The Carmel River winds around the site to the east, north, and west, and the Pacific Ocean is located further to the west of the site. Views of the existing CAWD WWTP are largely screened from public viewpoints by existing topography and vegetation. CAWD planted the Eucalyptus trees proposed for removal, cutting, and pruning as part of the Project for screening purposes in the 1980s. The Proposed Project site is located in an area of high visual sensitivity by the County (County, 2025).

Kennedy Jenks prepared a Tree Perimeter Line of Sight Analysis for the WWTP to evaluate the feasibility of removing the non-native Eucalyptus trees while maintaining a visual screen from adjacent land uses using existing native vegetation (**Appendix A**). Kennedy Jenks commissioned a Light Detection and Ranging ("LiDAR") survey of the area around the WWTP to analyze the predicted line of sight from six (6) representative vantage points selected by CAWD. The LiDAR survey provided updated ground surface elevations and tree heights in and adjacent to the Project site.

Kennedy Jenks utilized the data procured from the LiDAR survey to analyze the lines of sights from various viewpoints as depicted in **Figure 5**. Kennedy Jenks supplemented the LiDAR survey data with an additional three (3) viewpoints that used approximate ground surface elevations sourced from Google Earth. The top of the Microfiltration/Reverse Osmosis facility was the reference point for WWTP visibility as it is the tallest point of the existing facility (approximately 28-feet from ground level). The top of the Influent Pump Station was used as a secondary reference point as the second-highest point of the existing facility (approximately 25 feet from ground level). Views from off-site were assumed to be from a six (6) foot tall pedestrian from ground level or the second level of a typical two-story house. In addition, one (1) of the three (3) added views included a viewpoint from State Route ("SR") 1 near Ribera Road to evaluate possible scenic highway impacts from SR 1 at heights of four (4) and seven (7) feet from ground level.



Source: Kennedy Jenks, 2025

Title:

LiDAR View Locations

Date 5/20/2025

Scale N/A

Project 2025.25

Monterey | San Jose

Denise Duffy and Associates, Inc.

Environmental Consultants Resource Planners

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Figure

5

Regulatory Framework

State

***California Scenic Highways Program*:** The Legislature created the California State Scenic Highway program in 1963. This program's purpose is to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways. The program includes a list of highways that are either designated or eligible for designation as a scenic highway. The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Sections 260 through 263. A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. In Monterey County, the closest officially designated state scenic highway is the portion of SR 1 located to the east of the Carmel Views component of the Proposed Project (Caltrans, 2025).

Local

***1982 Monterey County General Plan*:** The 1982 Monterey County General Plan includes goals and policies related to the preservation of visual integrity. The following goal from the 1982 Monterey County General Plan may apply to the Proposed Project:

Goal 1: To retain the character and natural beauty of Monterey County by the preservation, conservation, and maintenance of open space within constitutional constraints.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the preservation of visual integrity. The following policies from the Carmel Area Land Use Plan may apply to the Proposed Project:

2.2.3.1: The design and siting of structures, whether residential, commercial, agricultural, or public, and the access roads thereto, shall not detract from the natural beauty of the scenic shoreline and the undeveloped ridgelines and slopes in the public viewshed.

2.2.3.6: Structures shall be subordinate to and blended into the environment, using appropriate materials that that effect. Where necessary, modification of plans shall be required for siting, structural design, color, texture, building materials, access, and screening.

2.2.3.8: Landscape screening and restoration shall consist of plant and tree species consistent with the surrounding vegetation. Screening on open grassy slopes and ridges should be avoided.

5.3.2.4: Existing visual access from scenic viewing corridors (e.g., Highway 1, Scenic Road, Spindrift Road, Yankee Point Drive) and from major public viewpoints, and future opportunities for visual access from the frontal ridges east of Highway 1 should be permanently protected as an important component of shoreline access and public recreational use.

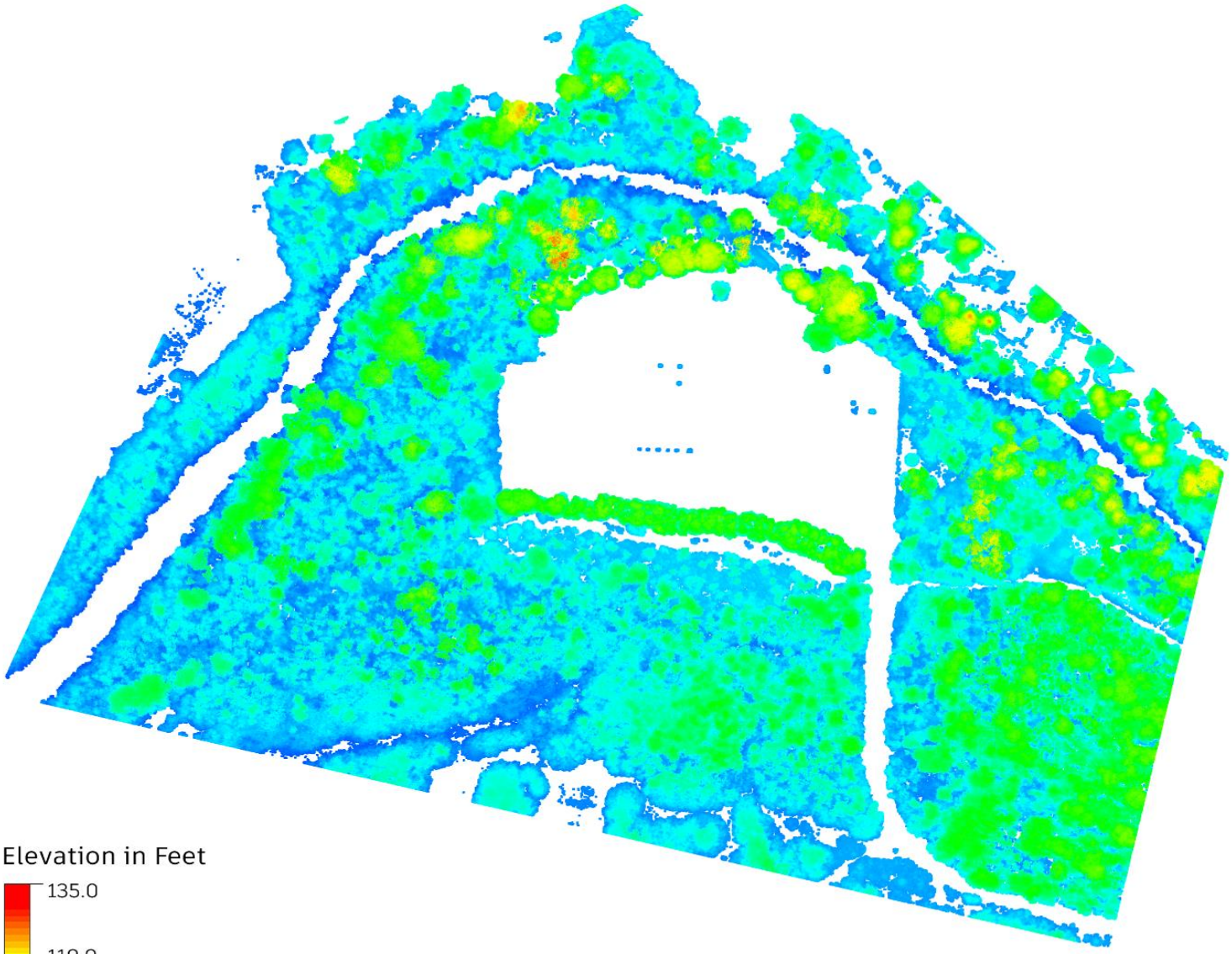
Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	■	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings in a state scenic highway?	☐	☐	■	☐
c)	In nonurbanized 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?	☐	☐	■	☐

Impact Discussion

a. Would the project have a substantial adverse effect on a scenic vista?

The Project site is located within parcels designated by the County of Monterey as being of high visual sensitivity (Monterey County, 2025). The Proposed Project would remove Eucalyptus trees planted in the 1980s for the purpose of screening the WWTP from adjacent public viewpoints. Potential impacts to scenic vistas were evaluated as part of the LiDAR-based analysis conducted for the Proposed Project (**Appendix A**) which evaluated potential views of the Project site from a mix of private and public viewpoints. All viewpoints that were analyzed show that existing trees will likely provide a line-of-sight barrier after removal, cutting, and pruning of the Eucalyptus trees due to site topography and the remaining native vegetation surrounding the site as depicted in **Figure 6**. Therefore, the removal, cutting, and pruning of existing Eucalyptus trees would not significantly impact a scenic vista.

The Proposed Project includes replacement of the existing fence around the WWTP to increase site security and safety; however, the proposed replacement fencing would not be visible from adjacent land uses due to the remaining, existing vegetation and topography. However, CAWD has identified the potential for local and regional sea level rise ("SLR") as a potential threat to native vegetation, including cottonwoods, sycamores and willows, as a result of increasing salinity of local groundwater. This native vegetation would be relied on for screening and so the potential deaths of cottonwoods, sycamores and willows from SLR could result in a substantial impact on a scenic vista. CAWD directed Denise Duffy & Associates, Inc. ("DD&A") to reach out to the United States Department of Agriculture's ("USDA") Agricultural Water Efficiency and Salinity Research Unit located in Riverside, California to request data on the salinity tolerance for native vegetation surrounding the WWTP, including cottonwoods, sycamores and willows. Elia Scudiero of the Salinity laboratory indicated that they did not have salinity tolerance data for these species and suggested that DD&A and CAWD conduct independent research on the matter (Personal Communication with Elia Scudiero, June 2025).



CAWD WWTP Tree Elevations - 724177.01

Flight date: August 31, 2024

Source: Kennedy Jenks, 2025

Title:

Tree Elevation Heat Map

Date	5/20/2025
Scale	N/A
Project	2025.25

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Environmental Consultants Resource Planners
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Figure 6

According to the Urban Forest Ecosystems Institute, cottonwoods, sycamores and arroyo willows have a moderate ability to tolerate salt in the soil or in a coastal location (UFEI, 2025). Therefore, these species are anticipated to be resistant to SLR and provide screening of the WWTP from existing scenic vistas for the foreseeable future. The activities included as part of the Proposed Project would not directly contribute to SLR. For these reasons, the Proposed Project would have a less-than-significant impact on scenic vistas.

b. Would the project substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings in a state scenic highway?

The Proposed Project is located approximately 1,800 feet northwest of SR 1, which is designated as a state scenic highway (Caltrans, 2025). The Proposed Project includes removal, cutting, and pruning of Eucalyptus trees that were planted with the intention of screening the site from surrounding land uses and public access points, including approximately 63 trees along the southern boundary of the site closest to SR 1. Views from SR 1 in the vicinity of the Proposed Project were considered as part of **Appendix A.** Views of the WWTP site were found to remain screened from view from SR 1 by topography and the remaining existing vegetation. While the removal, cutting, and pruning of the Eucalyptus trees may alter views from this scenic highway, the WWTP would still be largely screened from site by the remaining vegetation and topography. In addition, Eucalyptus trees are not native to the Project area, and their removal would improve the overall scenic quality of the site by increasing visibility of native vegetation from SR 1. Therefore, the Project would have a less-than-significant impact related to substantially damaging scenic resources visible from a designated State scenic highway.

c. Would the project, in nonurbanized 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 points). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

The Proposed Project is surrounded by vegetated areas on all sides and is considered to be located in a non-urbanized area. The Proposed Project would remove Eucalyptus trees planted in the 1980s for the purpose of screening the WWTP from adjacent public viewpoints. However, the LiDAR survey conducted as part of **Appendix A** indicated that the remaining vegetation and site topography would sufficiently screen the existing WWTP from view and would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. The Proposed Project does not include new habitable structures that would increase the overall height or density of the WWTP facility in a manner that would impact the existing visual character of the site. The proposed replacement fencing would be screened from views by existing vegetation and topography along with the rest of the WWTP and would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. Therefore, the Proposed Project represents a less-than-significant impact with regards to the existing visual character or quality of public views.

d. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The Proposed Project consists of the removal, cutting, and pruning of existing Eucalyptus trees and the replacement of fencing at the CAWD WWTP. The Proposed Project would not introduce any new sources of light which could adversely affect day or nighttime views of the area. While the removal, cutting, and pruning of existing Eucalyptus trees could increase glare from existing sources of light at the

WWTP, the remaining vegetation would sufficiently screen the site and minimize impacts from glare on daytime and nighttime views of the Project site (**Appendix A**). No nighttime construction is proposed and construction equipment staged at the site would be screened from view by existing topography and vegetation. For these reasons, the Proposed Project would have a less-than-significant impact regarding light and glare.

4.2. Air Quality

Environmental Setting

The Proposed Project is in the North Central Coast Air Basin ("NCCAB"), which encompasses Santa Cruz, San Benito, and Monterey counties. The NCCAB is under the jurisdiction of the Monterey Bay Air Resources District ("MBARD"). MBARD is responsible for producing an Air Quality Management Plan ("AQMP") that reports air quality and regulates stationary air pollution sources throughout the NCCAB. MBARD is also responsible for measuring the concentration of pollutants and comparing those concentrations against the Ambient Air Quality Standards ("AAQS"). AAQS establish levels of air quality maintenance required to protect the public from the adverse effects of air pollution and are established for "criteria air pollutants," which include ozone, carbon monoxide, particulate matter less than 10 microns in diameter, particulate matter less than 2.5 microns in diameter, nitrogen dioxide, sulfur dioxide, and lead. MBARD is responsible for monitoring criteria pollutants to determine whether they are in attainment or not in attainment with the AQMP. **Table 1** illustrates the attainment status for criteria pollutants.

Table 1
Attainment Status for the NCCAB

Pollutants	State Designation	Federal Designation
Ozone (O_3)	Nonattainment – Transitional	Attainment
Inhalable Particulates (PM_{10})	Nonattainment	Attainment
Fine Particulates ($PM_{2.5}$)	Attainment	Attainment
Carbon Monoxide (CO)	Monterey Co. – Attainment	Attainment
Carbon Monoxide (CO)	San Benito Co. – Unclassified	Attainment
Carbon Monoxide (CO)	Santa Cruz Co. – Unclassified	Attainment
Nitrogen Dioxide (NO_2)	Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Lead	Attainment	Attainment

Source: Monterey Bay Air Resources District, 2017. 2012 – 2015 Air Quality Management Plan

MBARD has set air quality thresholds of significance for the evaluation of projects. **Table 2** illustrates the thresholds of significance used to determine if a project would have a significant air quality effect during implementation. In addition to these thresholds, MBARD has also determined a significant short-term construction generated impact would occur if more than 2.2 acres of major grading or excavation, or 8.1 acres of minimal earthmoving per day was to occur (MBARD, 2008).

Table 2
Thresholds of Significance for Project Emissions

Pollutant	Threshold of Significance (lb./day)
Nitrogen Oxides (NO_x)	173
Reactive Organic Gases (ROG)	137
Respirable Particular Matter (PM_{10})	82
Fine Particulate Matter ($PM_{2.5}$)	55
Carbon Monoxide (CO)	550

Source: MBARD, 2016.

The California Air Resources Board ("CARB") defines a sensitive receptor as children, elderly, asthmatic, and others who are at elevated risk of negative health outcomes due to exposure to air pollution (CARB, 2023). Pursuant to California Health and Safety Code Sec. 42705.5, a sensitive receptor includes hospitals, schools and day cares centers and such locations as the district or state board may determine. MBARD similarly defines sensitive receptors and requires any explanation of sensitive receptors to draw a relationship to the Proposed Project site and potential air quality impacts (MBARD, 2008). Sensitive receptors are more susceptible to the effects of air pollution than the general population. Land uses that are considered sensitive receptors include residences, schools, and health care facilities. Sensitive receptors in the vicinity of the Proposed Project area consist primarily of residences.

Common sources of odors and odor complaints include wastewater treatment plants, transfer stations, coffee roasters, painting/coating operations, and landfills.

Climate and Topography

Climatological conditions, an area's topography, and the quantity and type of pollutants released commonly determine ambient air quality. The NCCAB covers an area of 5,159 square miles along the Central Coast. The northwest sector of the NCCAB is dominated by the Santa Cruz Mountains. The Diablo Range marks the northeastern boundary of the basin. The Santa Clara Valley extends into the northeastern tip of the basin. Further south, the Santa Clara Valley becomes the San Benito Valley, which runs northwest-southeast, with the Gabilan Range as its western boundary. To the west of the Gabilan Range is the Salinas Valley, which extends from Salinas at the northwest end to south of King City. The coastal Santa Lucia Range defines the western side of the valley.

Climate, or the average weather condition, affects air quality in several ways. Wind patterns can remove or add air pollutants emitted by either stationary or mobile sources. Inversion, a condition where warm air traps cooler air underneath it, can hold pollutants near the ground by limiting upward mixing (dilution). Communities with cold climates may burn wood or other fuels for residential heating, whereas areas with hot climates may have higher emissions or some pollutants from automobiles. Topography also plays a part, and valleys often trap emissions by limiting lateral dispersal.

Regulatory Framework

Federal

***U.S. Environmental Protection Agency ("EPA")*:** At the federal level, the U.S. EPA implements national air quality programs. The Federal Clean Air Act ("FCAA"), signed in 1970, provides air quality mandates used by the U.S. EPA. Congress amended the FCAA in 1977 and again in 1990.

***Federal Clean Air Act*:** The FCAA required the U.S. EPA to establish National Ambient Air Quality Standards ("NAAQS") and set deadlines for their attainment. Two (2) types of NAAQS exist: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions. The FCAA allows states to adopt additional or more health-protective standards.

Pursuant to California Clean Air Act ("CCAA") and CCAA amendments, a region must participate in the State Implementation Plan if the state designates it as a maintenance region. The most recent Federal Plan prepared by MBARD to maintain the 1-hour ozone NAAQS is the 2007 Federal Maintenance Plan for Maintaining the National Ozone Standard in the Monterey Bay Region and adopted rules and regulations.

State

***California Air Resources Board*:** CARB is the agency responsible for coordinating and overseeing state and local air pollution control programs in California and implementing the CCAA of 1988. Other CARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control districts and air quality management districts, establishing California Ambient Air Quality Standards ("CAAQS"), which in many cases are more stringent than the NAAQS, and setting emissions standards for new motor vehicles.[2]

***California Clean Air Act*:** The CCAA requires all air districts in the state to endeavor to achieve and maintain CAAQS for Ozone, CO, SO_2, and NO_2 by the earliest practical date. The CCAA specifies that districts focus particular attention on reducing emissions from transportation and area-wide emission sources, and the Act provides districts with authority to regulate indirect sources of emissions. Each district plan is required to either: 1) achieve a five (5) percent annual reduction, averaged over consecutive three (3)-year periods, in district-wide emissions of each nonattainment pollutant or its precursors; or 2) provide for the implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

Local

***Monterey Bay Air Resources District*:** MBARD is the agency primarily responsible for ensuring that NAAQS and CAAQS are not exceeded and that air quality conditions are maintained in the NCCAB. Responsibilities of the MBARD include, but are not limited to, preparing plans for the attainment of ambient air quality standards, adopting, and enforcing rules and regulations concerning sources of air pollution, issuing permits for stationary sources of air pollution, inspecting stationary sources of air pollution, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, and implementing programs and regulations required by the FCAA and the CCAA. To achieve NAAQS and CAAQS and maintain air quality, the MBARD has most recently completed the 2012-2015 AQMP for achieving the state ozone standards and the 2007 Federal Maintenance Plan for maintaining federal ozone standards (MBARD, 2017). MBARD regulates burning of vegetation piles cleared from 10 or more acres of land as a result of wildland vegetation management via the issuance of Prescribed Burn Permits.

[2] The emission standards established for motor vehicles differ depending on various factors including the model year, and the type of vehicle, fuel, and engine used.

***1982 Monterey County General Plan*:** None of the policies provided by the 1982 Monterey County General Plan related to air quality are applicable to portions of the Proposed Project.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the regulation of air quality. None of the air quality-related goals from the Carmel Area Land Use Plan may apply to the Proposed Project.

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?	☐	☐	■	☐

Impact Discussion

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

CEQA Guidelines Section 15125(b) requires that a project be evaluated for consistency with applicable regional plans, including the AQMP. The most recent AQMP update was approved in March 2017. This plan addresses attainment of the State ozone standards and federal air quality standard. The AQMP accommodates growth by projecting growth in emissions based on population forecasts prepared by the Association of Monterey Bay Area Governments ("AMBAG"). Consistency determinations are issued for commercial, industrial, residential, and infrastructure-related projects that have the potential to induce population growth. A project is inconsistent with the AQMP if it has not been accommodated in the forecast projections considered in the AQMP.

The Proposed Project consists of the removal, cutting, and pruning of existing Eucalyptus trees and the replacement of fencing at the CAWD WWTP. The Proposed Project is intended to improve the existing WWTP by removing debris from Eucalyptus trees and replacing existing fencing and secondary access points to the site, as well as to remove invasive Eucalyptus trees. In addition, the replacement fence would provide greater site security and safety. No changes to the overall WWTP are included under the Project. The Proposed Project is an alteration to an existing facility and would not facilitate additional development or growth that could exceed AMBAG population forecasts or result in growth that was unaccounted for in population forecast contained in MBARD's AQMP. The Proposed Project would not conflict with and/or otherwise obstruct implementation of the AQMP. For these reasons, the Project would have a less-than-significant impact with regards to conflicting with or otherwise obstructing implementation of the AQMP.

b. Would the project 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?

The MBARD 2016 CEQA Air Quality Guidelines contain standards of significance for evaluating potential air quality effects of projects subject to the requirements of CEQA. According to MBARD, a project would violate an air quality standard and/or contribute to an existing or projected violation if it would emit (from all sources, including exhaust and fugitive dust) more than:

- 137 pounds per day of oxides of nitrogen (NO_x),
- 137 pounds per day of reactive organic gases (ROG),
- 82 pounds per day of respirable particulate matter (PM_{10}),
- 55 pounds per day of fine particulate matter ($PM_{2.5}$), and
- 550 pounds per day carbon monoxide (CO).

Detailed air quality modeling was not performed for the Proposed Project. As a result, air quality impacts are assessed qualitatively.

The Proposed Project consists of the removal, cutting, and pruning of existing Eucalyptus trees and the replacement of fencing at the CAWD WWTP. The Proposed Project would result in limited earth disturbance associated with tree and fence removal and the installation of replacement fencing. No grading that would result in substantial release of air pollutants is proposed as part of the Proposed Project. The Proposed Project is anticipated to generate 12 vehicle trips per day at the peak of implementation (assuming maximum of six (6) workers making one (1) trip to and one (1) trip from the Project site each day, with no carpooling). Given the limited number of vehicle trips and the temporary nature of Project implementation, these vehicle trips would not generate significant quantities of air pollutants. Collected vegetation materials would be composted, and no burning of collected vegetation materials is proposed. Therefore, the Proposed Project would have a less-than-significant impact from resulting in the cumulatively considerable net increase of criteria pollutants.

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

A "sensitive receptor" is generally defined as: any residence including private homes, condominiums, apartments, or living quarters; education resources such as preschools and kindergarten through grade twelve (k-12) schools; daycare centers; and health care facilities such as hospitals or retirement and nursing homes. Sensitive receptors in the vicinity of the Project components are limited to some residential land uses located as close as 185 feet northeast of the Project site. In addition, Carmel River Elementary School is located approximately 1,100 feet to the northwest of the site. There are no day care centers or health care facilities within or adjacent to the Project site. The Proposed Project would result in limited earth disturbance associated with tree and fence removal and the installation of replacement fencing. No grading that would result in substantial pollutant concentrations at these sensitive receptors is proposed as part of the Proposed Project. In addition, the Proposed Project would comply with MBARD Rule 402,[3] which would minimize potential nuisance impacts to occupants of

[3] MBARD Rule 402 "Nuisance" states, "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals."

nearby land uses. The Proposed Project would have a less-than-significant impact with respect to exposing sensitive receptors to substantial pollutant concentrations.

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Odors could be generated during Project implementation. The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies. The Project may require the use of gasoline or diesel-powered equipment during construction that would emit exhaust fumes, including vehicle trips to and from the Project site. Exhaust fumes, particularly diesel exhaust, may be considered objectionable by some people. There are residential sensitive receptors as close as 185 feet to the Project site. However, construction-generated emissions would occur intermittently throughout the workday and would dissipate rapidly within increasing distance from the source. In addition, work tasks would be located throughout the site perimeter and would not be concentrated in single locations for extended periods of time. The Project may also result in the emission of odors associated with tree removal, cutting, and pruning. However, odors from tree removal, tree cutting, tree pruning, and other vegetation removal are not typically considered objectionable odors. Trees would be hauled offsite for disposal and/or composting and would not result in objectionable odors at sensitive receptors within the Project area. As a result, short-term construction activities would not expose a substantial number of people to frequent odorous emissions. While the Proposed Project is located at the existing CAWD WWTP, which may be source of local odor, the Project does not include any changes to WWTP operation that could result in new permanent sources of objectionable odor or other emissions. Therefore, the Proposed Project represents a less-than-significant impact.

4.3. Biological Resources

Burleson Consulting, Inc. ("Burleson") prepared a Biological Resources Report for the Proposed Project (July 2023). In addition, Burleson prepared a species-specific site assessment for California red-legged frog (July 2023). DD&A conducted a supplemental biological analysis as a part of this document to analyze impacts to additional special-status species that may have been listed since the 2023 Report was prepared.[4] Two (2) additional special-status wildlife species, Northern California legless lizard and Southwestern pond turtle, were added to this document as a result of the supplemental analysis. The supplemental biological analysis is included as **Appendix B** of this document.

Terminology

Special-Status Species

Special-status species are those plants and animals that have been formally listed or proposed for listing as endangered or threatened or are candidates for such listing under the Federal Endangered Species Act ("ESA") or the California Endangered Species Act ("CESA"). Listed species are afforded legal protection under the ESA and CESA. Species that meet the definition of rare or endangered under the CEQA Section 15380 are also considered special-status species. Animals on the CDFW's list of "species of

[4] **Appendix B** contains a California Natural Diversity Database Report generated for the USGS quadrangle containing the project site and all surrounding quadrangles in June 2025.

special concern" (most of which are species whose breeding populations in California may face extirpation if current population trends continue) meet this definition and are typically provided management consideration through the CEQA process. Although, "species of special concern" are not legally protected under the ESA or CESA. Additionally, the CDFW also includes some animal species that are not assigned any of the other status designations on their "Special Animals" list; however, these species have no legal or protection status.

Plants listed as rare under the California Native Plant Protection Act ("CNPPA") or included in the California Native Plant Society ("CNPS") California Rare Plant Ranks ("CRPR") 1A, 1B, 2A, and 2B are also treated as special-status species as they meet the definitions of Sections 2062 and 2067 of the CESA and in accordance with CEQA Guidelines Section 15380. In general, the CDFW requires that plant species on CRPR 1A (Plants presumed extirpated in California and Either Rare or Extinct Elsewhere), CRPR 1B (Plants rare, threatened, or endangered in California and elsewhere), CRPR 2A (Plants presumed extirpated in California, but more common elsewhere); and CRPR 2B (Plants rare, threatened, or endangered in California, but more common elsewhere) of the CNPS *Inventory of Rare and Endangered Vascular Plants of California* be fully considered during the preparation of environmental documents relating to CEQA (CNPS, 2023). CNPS' CRPR 4 species (plants of limited distribution) may, but generally do not, meet the definitions of Sections 2062 and 2067 of the CESA, and are not typically considered in environmental documents relating to CEQA. While other species (i.e., CRPR 3 or 4 species) are sometimes found in database searches or in the literature, these were not included in the analysis as they did not meet the definitions of Section 2062 and 2067 of the CESA.

Fish and Game Code Section 3503.5 protects raptors (e.g., eagles, hawks, and owls) and their nests in California. Section 3503.5 states that it is "unlawful to take, possess, or destroy the nest or eggs of any such bird except otherwise provided by this code or any regulation adopted pursuant thereto." Additionally, fully protected species under the Fish and Game Code Section 3511 (birds), Section 4700 (mammals), Section 5515 (fish), and Section 5050 (reptiles and amphibians) are also considered special-status animal species. Species with no formal special-status designation but thought by experts to be rare or in serious decline may also be considered special-status animal species in some cases, depending on project-specific analysis and relevant, localized conservation needs or precedence.

Sensitive Habitats

Sensitive habitats include riparian corridors, wetlands, habitats for legally protected species, areas of high biological diversity, areas supporting rare or special-status wildlife habitat, and unusual or regionally restricted vegetation types. Vegetation types considered sensitive include those listed on CDFW's *California Natural Communities List* (i.e., those habitats that are rare or endangered in the borders of California), those that are occupied by species listed under the ESA or are critical habitat in accordance with the ESA, and those that are defined as Environmentally Sensitive Habitat Areas under the California Coastal Act (CDFW, 2023). Specific habitats may also be identified as sensitive in city or county general plans or ordinances. Sensitive habitats are regulated under federal regulations (such as the Clean Water Act and Executive Order 11990 – Protection of Wetlands), state regulations (such as CEQA and the CDFW Streambed Alteration Program), or local ordinances or policies (such as city or county tree ordinances and general plan policies).

Environmental Setting

Survey Methodology

Burleson conducted a site reconnaissance and biological survey of the Proposed Project site on February 23, 2023. The surveys consisted of walking the entire perimeter site to identify general and sensitive habitat types and conducting a reconnaissance-level habitat survey to identify suitable habitat for or presence of any special-status plant or wildlife species. Data collected during the surveys was used to assess the environmental conditions of the area and its surroundings, evaluate environmental constraints at the site and within the local vicinity, and provide a basis for recommendations to minimize and avoid impacts.

Habitats

Descriptions of each of the habitat types identified by Burleson within the Project site are provided below.

Eucalyptus Groves: The Eucalyptus (*Eucalyptus globulus*; blue gum) habitat present in the Project site consists of two long rows of trees planted to create a visual screen to the WWTP. There is a southern grove and a northern grove, and each varies in canopy density. The groves are not protected from high winds that often occur from offshore or winter storms. CAWD conducted Eucalyptus tree trimming from November 2021 – January 2022 as a separate project.

Riverine: Riverine habitat consists of slow glides, riffles, runs, and pools of the Carmel River. The banks of the Carmel River opposite and roughly parallel to the northern boundary of the Project area contain a mix of emergent vegetation and open, relatively steep slopes. The Carmel River approaches within 30 meters of the northern boundary of the WWTP.

Riparian: Riparian habitat is abundant around the northern, western and eastern boundaries of the WWTP. Dominant vegetation includes red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), black cottonwood (*Populus trichocarpa*), bigleaf maple (*Acer macrophyllum*) and box elder (*A. negundo*). The understory is generally dominated by wild cucumber (*Marah fabacea*), stinging nettle (*Urtica dioica*), mugwort (*Artemisia douglasiana*), poison oak (*Toxicodendron diversilobum*), California blackberry (*Rubus ursinus*), Himalayan blackberry (*Rubus armeniacus*), greater periwinkle (*Vinca major*) and iceplant (*Carpobrotus edulis*).

Upland: Abundant upland habitat exists primarily adjacent to the southern boundary of the WWTP. Dominant vegetation includes red willow, California buckeye (*Aesculus californica*), coyote brush (*Baccharis pilularis*), California coffeeberry (*Frangula californica*), poison hemlock (*Conium maculatum*), wild radish (*Raphanus sativus*), and annual grasses such as wild oat (*Avena barbata*), rip gut brome (*Bromus diandrus*) and soft chess (*B. hordeaceus*).

Developed: The WWTP footprint is a developed site that houses treatment facilities, offices and machinery. Plant activity is high during work hours (7:00 am - 3:30 pm), with vehicles, equipment and personnel utilizing paved areas.

Special-Status Species

Published occurrence data within the Project area and surrounding USGS quadrangles were evaluated to compile a table of special-status species known to occur in the vicinity of the evaluation area. Each of these species was evaluated for their likelihood to occur within and immediately adjacent to the site, as described below.

California Red-Legged Frog ("CRLF")*:* Several CRLF occurrences and USFWS Designated Critical Habitat exist within one (1) mile of the Project site. There is low quality upland habitat present along the boundary of the WWTP and low quality dispersal habitat throughout the Project area. Burleson conducted a reconnaissance-level field survey of the entire perimeter of the WWTP to evaluate for aquatic, upland or dispersal features. While no suitable aquatic breeding or nonbreeding aquatic habitat is located within the Project site, the Carmel River borders the northern boundary of the WWTP. Both the adjacent Carmel River and the surrounding dense riparian woodland habitat may provide suitable aquatic breeding, nonbreeding, and dispersal habitat. In addition, low quality upland habitat exists along the fringe of the WWTP and throughout the WWTP site where there are elements (wood pallets, tarps, etc.) that could provide shade, shelter, moisture or cooler temperatures. CRLF are also known to occur within one (1)-mile of the site at the southern arm of the Carmel River Lagoon and upstream of the SR 1 bridge throughout the Carmel River watershed.

Northern California Legless Lizard ("NCLL"): Several NCLL occurrences exist within one (1) mile of the Project site. There is low quality habitat present along the boundary of the WWTP and throughout the WWTP site where there are elements (wood pallets, tarps, etc.) that could provide shade, shelter, moisture or cooler temperatures. Both the adjacent Carmel River and the surrounding dense riparian woodland habitat may provide suitable habitat. NCLL are known to occur within riparian habitat surrounding the Carmel River.

Southwestern Pond Turtle ("SPT"): One SPT occurrence exists within one (1) mile of the Project site, located approximately 0.4 miles southwest of the Project site within the Carmel River Lagoon (#308). There is low quality upland habitat present along the boundary of the WWTP and low quality dispersal habitat throughout the Project area. While no suitable aquatic habitat is located within the Project site, the Carmel River borders the northern boundary of the WWTP. Both the adjacent Carmel River and the surrounding dense riparian woodland habitat may provide suitable aquatic, nesting, and dispersal habitat. In addition, low quality upland habitat exists along the fringe of the WWTP and throughout the WWTP site where there are elements (wood pallets, tarps, etc.) that could provide shade, shelter, moisture or cooler temperatures. SPT are also known to occur upstream of the SR 1 bridge throughout the Carmel River watershed.

Western Monarch*:* Western monarch overwintering population occurrences exist within three (3) miles of the Project site. Low quality overwintering habitat is present in the Eucalyptus trees that border the WWTP; however, the trees are not protected by prevailing winds and monarchs have not been recorded here in the past. A Mitigated Negative Declaration adopted by CAWD in April 2021 for pruning of the WWTP perimeter Eucalyptus trees included a determination that these trees are not suitable habitat for Western Monarchs as the trees are not protected from high winds.

Nesting Birds*:* The database queries identify multiple special-status bird species protected by the federal Migratory Bird Treaty Act ("MBTA") and State Fish and Game Codes ("CFGC") 3503 (prohibits taking or destroying nests or eggs) and 3503.5 (prohibits taking, possessing, or destroying birds-of-prey or their

eggs). Impacts to these species will be avoided as a survey will be conducted prior to construction, a biological monitor would be present during work, and all fence replacement-related activities would occur inside the developed WWTP.

Other Special-Status Species: Based on the literature review and field survey, no other special-status species listed in the IPaC list, CNDDB 5-grid query, and CNPS rare plant list have the potential to occur on the Project site. Impacts to special-status plants would be avoided because all equipment, vehicles and personnel on site for construction activities would be located on paved roads, cleared staging areas or previously disturbed work zones. The Carmel River was designated as critical habitat for South/Central California Coast ("S-CCC") Distinct Population Segment ("DPS") steelhead (*Oncorhynchus mykiss irideus*) in September 2005, but all tree and fence removals and installation of the fence are strictly confined to the WWTP developed footprint and do not have the potential to impact steelhead.

Regulatory Environment

Federal

***Federal Endangered Species Act*:** Provisions of the ESA of 1973 (16 USC 1532 et seq., as amended) protect federally listed threatened or endangered species and their habitats from unlawful take. Listed species include those for which proposed and final rules are published in the Federal Register. The ESA is administered by the U.S. Fish and Wildlife Service ("Service") or National Oceanic and Atmospheric Administration ("NOAA") National Marine Fisheries Service ("NMFS"). In general, NMFS is responsible for the protection of ESA-listed marine species and anadromous fish, whereas other listed species are under Service's jurisdiction.

Section 9 of ESA prohibits the take of any fish or wildlife species listed under ESA as endangered or threatened. Take, as defined by ESA, is "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." The ESA defines harm as "any act that kills or injures the fish or wildlife…including significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife." Additionally, Section 9 prohibits removing, digging up, and maliciously damaging or destroying federally listed plants on sites under federal jurisdiction. Section 9 does not prohibit the take of federally listed plants on sites not under federal jurisdiction. If there is the potential for incidental take of a federally listed fish or wildlife species, take of listed species can be authorized through either the Section 7 consultation process for federal actions or a Section 10 incidental take permit process for non-federal actions. Federal agency actions include activities on federal land, conducted by a federal agency, funded by a federal agency, or authorized by a federal agency (including issuance of federal permits).

***Clean Water Act*.** The U.S. Army Corps of Engineers ("USACE") and U.S. EPA regulate discharge of dredged and fill material into waters of the U.S. under Section 404 of the Clean Water Act ("CWA"). Waters of the U.S. are defined broadly as waters susceptible to use in commerce (including waters subject to tides, interstate waters, and interstate wetlands) and other waters (such as interstate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds) (33 Code of Federal Regulations ["CFR"] 328.3). Potential wetland areas are identified as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils conditions."

Under Section 401 of the CWA, any applicant receiving a Section 404 permit from the USACE must also obtain a Section 401 Water Quality Certification from the Regional Water Quality Control Board ("RWQCB"). A Section 401 Water Quality Certification is issued when a project is demonstrated to comply with state water quality standards and other aquatic resource protection requirements.

State

***California Endangered Species Act*:** The CESA was enacted in 1984. The CCR (Title 14, §670.5) lists animal species considered endangered or threatened by the State. Section 2090 of CESA requires State agencies to comply with endangered species protection and recovery and to promote conservation of these species. Section 2080 of the Fish and Game Code prohibits "take" of any species the commission determines to be an endangered species or a threatened species. Section 86 of the Fish and Game Code defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Section 2081 of the Fish and Game Code concerns Incidental Take Permits from the CDFW, which may be obtained to authorize "take" of any State listed species.

***California Native Plant Protection Act*:** The CNPPA of 1977 directed CDFW to conduct the legislature's intent to "preserve, protect and enhance rare and Endangered plants in the State." The CNPPA prohibits importing rare and Endangered plants into California, taking rare and Endangered plants, and selling rare and Endangered plants. The CESA and CNPPA authorized the Fish and Game Commission to designate endangered, threatened, and rare species and to regulate the taking of these species (Section 2050-2098, Fish and Game Code). Plants listed as rare under the CNPPA are not protected under CESA; however, these plants may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research.

***California Fish and Game Code*:** Section 3503 of the Fish and Game Code states that it is "unlawful to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Section 3503.5 prohibits the killing, possession, or destruction of any birds in the orders Falconiformes or Strigiformes (birds-of-prey). Section 3511 prohibits the take or possession of fully protected birds. Section 3513 prohibits the take or possession of any migratory nongame birds designated under the federal MBTA. Section 3800 prohibits the take of nongame birds.

The classification of Fully Protected was the state's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced extinction. Lists were created for fish (Section 5515), mammals (Section 4700), amphibians and reptiles (Section 5050), and birds (Section 3511). Most Fully Protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

The CDFW also maintains a list of wildlife "species of special concern." Although these species have no legal status, the CDFW recommends considering these species during analysis of Project impacts to protect declining populations and avoid the need to list them as endangered in the future.

Local

***1982 Monterey County General Plan*:** The following goals, objectives, and policies of the 1982 Monterey County General Plan could apply to the Proposed Project:

Goal 7: To preserve the diversity and conserve the extent of the County's native vegetation.

Policy 7.1.1: Development shall be carefully planned in, or adjacent to, areas containing limited or threatened plant communities, and shall provide for the conservation and maintenance of the plant communities.

Policy 7.1.2: The County shall encourage the protection of limited or threatened plant communities through dedications of permanent conservation easements and other appropriate means.

Policy 7.2.1: Landowners and developers shall be encouraged to preserve the integrity of existing terrain and natural vegetation in visually sensitive areas such as hillsides and ridges.

Objective 8.2: Encourage conservation of native trees as a component for attaining broad conservation and open space goals.

Goal 9: To conserve the abundance and diversity of the County's wildlife.

Policy 9.2.1: Land use practices which could result in siltation and pollution of inland and marine waters shall be carefully managed in order to assure a clean and productive habitat.

Objective 10.1: Promote protection of the native plant and animal communities of the Pacific Ocean along the coast of Monterey County.

Goal 11: To conserve natural habitats for native plant and animal species and to promote preservation of rare and endangered plant and animal species.

Objective 11.2: Maintain and regularly update information regarding areas of particular environmental sensitivity or concern, and coordinate these efforts with the appropriate resource agencies.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the preservation of biological resources. The following policies from the Carmel Area Land Use Plan may apply to the Proposed Project:

GP 2.2-7: Structures shall be located and designed to minimize tree removal and grading for the building site and access road. Where earth movement would result in extensive slope disturbance or scarring visible from public viewing points and corridors, such activity will not be allowed. Extensive landform alteration shall not be permitted.

2.3.3.1: Development, including vegetation removal, excavation, grading, filling, and the construction of roads and structures, shall be avoided in critical and sensitive habitat areas, riparian corridors, wetlands, sites of known rare and endangered species of plants and animals, rookeries and major roosting and haul-out sites, and other wildlife breeding or nursery areas identified as critical. Resource-dependent uses, including nature education and research, hunting, fishing, and aquaculture, shall be allowed within environmentally sensitive habitats and only if such uses will not cause significant disruption of habitat values. Only small-scale development necessary to support the

resource-dependent uses may be located in sensitive habitat areas if they can not feasibly be located elsewhere.

Wetlands are defined as lands which may be covered periodically or permanently with shallow water and include saltwater marshes, fresh water marshes, open or closed brackish water marshes, swamps, mudflats and fens.

2.3.3.2: Land uses adjacent to locations of environmentally sensitive habitats shall be compatible with the long-term maintenance of the resource. New land uses shall be considered compatible only where they incorporate all site planning and design features needed to prevent habitat impacts and where they do not establish a precedent for continued land development which, on a cumulative basis, could degrade the resource.

2.3.3.5: Where private or public development is proposed in documented or expected locations of environmentally sensitive habitats - particularly those habitats identified in General Policy No. I - field surveys by qualified individuals or agency shall be required to determine precise locations of the habitat and to recommend mitigating measures to ensure its protection. This policy applies to the entire segment except the internal portions of Carmel Woods, Hatton Fields, Carmel Point (Night heron site excluded), Odello, Carmel Meadows, and Carmel Riviera. If any habitats are found on the site or within 100 feet from the site, the required survey shall document how the proposed development complies with all the applicable habitat policies.

2.3.3.6: The County shall require deed restrictions or dedications of permanent conservation easements in environmentally sensitive habitat areas where development is proposed on parcels containing such habitats. Where development has already occurred in areas supporting sensitive habitat, property owners should be encouraged to voluntarily establish conservation easements or deed restrictions.

2.3.3.7: Where development is permitted in or adjacent to environmentally sensitive habitat areas, the County, through the development review process, shall restrict the removal of indigenous vegetation and land disturbance (grading, excavation, paving, etc.) to that needed for the structural improvements themselves.

2.3.3.8: The County shall require the use of appropriate native species in proposed landscaping.

2.3.4.1: Riparian plant communities shall be protected by establishing setbacks consisting of a 150-foot open space buffer zone on each side of the bank of perennial streams and 50 feet on each side of the bank of intermittent streams, or the extent of riparian vegetation, whichever is greater. No new development, including structural flood control projects, shall be allowed within the riparian corridor. However, improvements to existing dikes and levees shall be allowed if riparian vegetation damage can be minimized and at least an equivalent amount and quality of replacement vegetation is planted. In addition, exceptions may be made for carefully sited recreational trails. The setback requirement may be modified if it can be demonstrated that a narrower corridor is sufficient to protect existing riparian vegetation. Riparian vegetation is an association of plant species which typically grows adjacent to freshwater courses and needs or tolerates a higher level of soil moisture than dryer upland vegetation.

2.3.4.2: The County shall assist the maintenance and protection of the Carmel River lagoon and marsh by encouraging the retention of sufficient instream flows and controlling erosion and sedimentation from surrounding and upstream areas.

GP 2.5-2: All cutting or removal of trees shall be in keeping with the broad resource protection objectives of this plan. Specific policies, criteria, and standards of other sections of this plan shall govern both commercial and noncommercial tree removal.

GP 2.5-3: Restoration of native forest resources is encouraged for public agencies and residents as a means of maintaining and enhancing the Carmel area's natural character. Removal of non-native tree species is encouraged except where such vegetation provides important wildlife habitat.

2.5.3.2 All cutting or removal of trees shall be in keeping with the broad resource protection objectives of this plan. Specific policies, criteria and standards of other sections of this plan shall govern both commercial and noncommercial tree removal.

2.5.3.3 Restoration of native forest resources is encouraged for public agencies and residents as a means of maintaining and enhancing the Carmel area's natural character. Removal of non-native tree species is encouraged except where such vegetation provides important wildlife habitat.

GP 2.5-8: In addition to compliance with forestry and soils resources policies, all developments, forest management activities and tree removal shall specifically conform to the LCP policies regarding water and marine resources, sensitive habitat area and coastal visual resources.

4.4.3.A.1: Only the minimum level of facilities essential to the support of recreational, educational, or scientific use of Resource Conservation areas shall be permitted. Facilities shall be sited so as to avoid adverse impacts to environmentally sensitive habitats and wildlife.

4.4.3.B.2: Development that would threaten rare and endangered plant and animal species in the Resource Conservation areas shall not be allowed.

Monterey County Code: Title 20 of the Monterey County Municipal Code regulates land uses within the Coastal Zone of unincorporated Monterey County. The Proposed Project occurs on parcels zoned as Public-Quasi Public ("PQP-CZ") and Resource Conservation ("RC-CZ"). Chapter 20.40 of Title 20 regulates land uses in the PQP-CZ zoning district. Section 20.40.030 of Title 20 states that a Coastal Development Permit is required for any project within PQP-CZ involving development within one hundred (100) feet of mapped or field identified environmentally sensitive habitats. Section 20.36.030 likewise requires a Coastal Development Permit for any project within RC-CZ involving development within one hundred (100) feet of mapped or field identified environmentally sensitive habitats.

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	☐	■	☐	☐

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
regulations, or by the California Department of Fish and Game 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, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	■	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (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, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■

Impact Discussion

a. Would the project 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 Game or U.S. Fish and Wildlife Service?

The Proposed Project involves the removal, cutting, and pruning of invasive Eucalyptus trees and the replacement of existing fencing at the CAWD WWTP. The Project area is considered to be sensitive for candidate, sensitive, and special-status species, including but not limited to, CRLF, Western monarch, and various species of nesting birds. The Proposed Project could potentially result in substantial adverse effects to these species. The Proposed Project includes the following mitigation measures to reduce impacts to special-status species to a less-than-significant level.

> **Mitigation Measure BIO-1**: Prior to construction, all personnel associated with the Proposed Project tree removal, tree cutting, tree pruning, and/or fence removal activities shall attend Worker Environmental Awareness Program ("WEAP") training, conducted by a qualified biologist, to aid workers in recognizing special-status species and sensitive biological resources that may occur on site. The WEAP shall include identification of the special-status species and their habitats, a description of the regulatory status and general ecological characteristics of

sensitive resources, and a review of the limits of the work area and conservation measures required to reduce impacts to biological resources within the work area. If a trained contractor identifies that any of the species or habitats detailed in the training have the potential to be impacted they shall contact the on-call qualified biologist required in **MM BIO-2**. A fact sheet conveying this information shall be prepared for distribution to all workers and other personnel involved with the Project. All employees shall sign a form documenting that they have attended the WEAP and understand the information presented to them. The signed forms shall be provided to CAWD for their records.

Mitigation Measure BIO-2: CAWD shall retain a qualified biologist to be present during all fence removal activities to monitor such activities for compliance and protection of all special status species and natural resources. The qualified biologist shall have the authority to stop work in the event any special-status species are encountered that may be at risk of injury or death due to Project activities. The qualified biologist shall establish appropriate buffers for any special-status species discovered on site and allow these individuals to move away on their own volition before work commences. If any special status species is encountered during biological monitoring, CDFW and the Service shall be notified immediately.

Mitigation Measure BIO-3: Throughout construction, the construction crew shall ensure that all stockpiles are placed where debris cannot pass into "Waters of the U.S. and State," including the Carmel River which borders the northern WWTP boundary. All stockpiles shall be inspected for special status species by the qualified biologist before and during removal from the WWTP.

Mitigation Measure BIO-4: During fence replacement, tree removal, tree cutting, and tree pruning work activities, the construction contractor shall properly contain, remove from the work area, and dispose of regularly all trash that could attract predators. Following construction, the construction contractor shall remove all trash and construction debris from the Project site.

Mitigation Measure BIO-5: The qualified biologist shall report any special-status species or natural communities detected during project surveys or monitoring to the California Natural Diversity Database (“CNDDB”).

Mitigation Measure BIO-6: The qualified biologist shall develop and submit a biological monitoring report documenting construction progress, conservation measures implemented, and special status species encountered. Photographs of all activities shall be included to support documentation.

Mitigation Measure BIO-7: If construction is timed between February 1 through September 15, CAWD shall retain a qualified biologist to conduct a pre-activity nesting bird survey no more than 10 days prior to the start of work. The qualified biologist shall survey the Project site within a 500-foot radius for birds of prey and within a 250-foot radius for other avian species.

If an active nest is found, the qualified biologist shall contact the CAWD Project Engineer to coordinate an appropriate exclusion zone radius or monitoring strategy for the species. If any federal or state-listed endangered or threatened species are found during nesting bird surveys, the biologist shall immediately notify the CAWD Project Engineer and facilitate consultation between CAWD and the Service and/or CDFW.

If active nests are discovered during the nesting season when work is to occur, a qualified biologist shall continuously monitor nests during the work to detect behavioral changes resulting from the work. If behavioral changes occur, work that is causing the behavioral change shall be halted. If continuous monitoring is not feasible, a no-disturbance buffer of 250 feet shall be established around active nests of bird species and a 500-foot no-disturbance buffer around active nests of raptors. A qualified wildlife biologist shall advise and support any variance from these buffers and notify the Service and CDFW in advance of implementing a variance.

Mitigation Measure BIO-8: CAWD shall retain a qualified biologist to conduct a pre-activity survey for CRLF, NCLL, and SPT no more than 24 hours prior to the start of vegetation disturbance. In the event a special-status species is discovered during the preconstruction survey, the Service shall be immediately notified, avoidance buffers shall be established, and the qualified biologist shall monitor the individual until it has moved out of the Project area on its own volition.

Mitigation Measure BIO-9: Each morning before the beginning of work, a trained contractor shall inspect the work area (including under staged equipment and vehicles) for any life stage of CRLF. All staging and storage areas for equipment, materials, fuels, lubricants and solvents shall be located inside of the WWTP property on areas previously cleared by the biologist. Fueling and maintenance of vehicles and other equipment shall occur at least 100 feet from any riparian or wetland habitat. Any equipment or vehicles driven or operated during the Project must be checked and maintained daily to prevent leaks of materials that could be deleterious to biological life. A qualified biologist shall monitor the work site on an ongoing basis for CRLF. If individuals are discovered and are likely to be killed or injured by work activities, a no disturbance buffer shall be established, and the special status species shall be allowed to move away at its own volition before work can commence in the area. Any sightings and/or injuries of CRLF shall be immediately reported to the Service.

Mitigation Measure BIO-10: If non-native predators of the California red-legged frog, such as bullfrogs, are encountered during Project activities, they shall be captured and permanently removed from within the Project limits during Project activities, and if permissible by state law.

Mitigation Measure BIO-11: CAWD shall retain a qualified biologist to conduct a pre-activity survey for monarch butterflies no more than 10 days prior to the start of vegetation disturbance if work will occur within the overwintering period (November through February). Work shall not proceed if aggregations of monarch butterflies are present.

Mitigation Measure BIO-12: If any other special-status species are encountered, the qualified biologist shall establish an appropriate no-disturbance buffer until the individual(s) have moved out of the Project area of their own volition before work can recommence.

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

The Project site is limited to the existing WWTP. However, riparian habitat is abundant around the northern, western and eastern boundaries of the WWTP. The Proposed Project does not include any work within riparian habitat. In addition, the Proposed Project includes **Mitigation Measure BIO-3** to

prevent the release of debris into Waters of the State, which would also prevent impacts to riparian habitat. Therefore, the Proposed Project would have a less-than-significant impact with mitigation incorporated.

c. Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

The Project site is limited to the existing WWTP. No federally protected wetlands are located within the Project site. However, the Proposed Project is located adjacent to the Carmel River and associated riparian habitat. **Mitigation Measure BIO-3** would prevent the release of debris into Waters of the State, which would reduce potential impacts to wetland habitat. Therefore, the Proposed Project would have a less-than-significant impact with mitigation incorporated.

d. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The Proposed Project is located at the existing CAWD WWTP. The Project consists of the replacement of existing fencing and the removal, cutting, and pruning of non-native Eucalyptus trees. The Proposed Project site is not a wildlife corridor as it is an urbanized WWTP facility located within a wooded area. Any wildlife travelling through the Project area are likely to avoid the Project site due to its developed nature and the proximity of wooded areas. Therefore, the Proposed Project would not interfere with the movement of any native resident or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native nursery sites. This impact is less-than-significant, and no mitigation is required.

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The Proposed Project involves the removal, cutting, and pruning of non-native Eucalyptus trees that were planted in the 1980s to provide screening of the WWTP from adjacent land uses. The Proposed Project would remove approximately 22 trees from the north side of the site and approximately 54 trees from the south side of the site, for a total of approximately 76 trees to be removed. The Project site lies within the California Coastal Zone. Development, including tree removal, within the site is regulated by the Carmel Area Land Use Plan (“LUP”), the certified Local Coastal Program for the region, and the Carmel Area Coastal Implementation Plan (“CIP”). In accordance with the Carmel Area LUP and CIP, a Coastal Development Permit (“CDP”) and a Forest Management Plan (“FMP”) are required to remove trees greater than 12 inches in diameter within the boundaries of the Carmel Area LUP and CIP, with the following exceptions:

- Removal of non-native or planted trees, except where this would result in the exposure of structures in the critical viewshed area; where defined as habitat; where previously protected by coastal permit or forest management plan or scenic/conservation easement;
- Removal of hazardous trees which pose an immediate danger to life or structures;
- Thinning of small (less than 12" in diameter) or dead trees from densely forested areas, especially as needed to reduce unsafe fuel accumulations adjacent to existing occupied buildings;

- Prescribed burning, crushing, lopping or other methods of brush clearing which do not materially disturb underlying soils; or
- A Timber Harvest Plan is required for the tree removal, in accordance with State requirements.

Removal, cutting, and pruning of the Eucalyptus trees would not require approval of a discretionary tree removal permit from the County of Monterey since they are a non-native tree species. Therefore, the Proposed Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. This represents a less-than-significant impact.

f. Would the project 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 Proposed Project is not located within an area included in an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. In addition, the Project includes removal, cutting, and pruning of non-native trees. No impact would occur.

4.4 Cultural Resources

Pacific Legacy prepared a Cultural Resources Assessment for the Project site in September 2020.[5] The Cultural Resources Assessment includes the results of background research and field reconnaissance of the Proposed Project's Area of Potential Effect ("APE"). Background research consisted of a records search from the Northwest Information Center at Sonoma State University ("NWIC"). CAWD requested a Sacred Lands File ("SLF") search with the Native American Heritage Commission ("NAHC") and separately conducted Native American outreach to facilitate Tribal consultation under Assembly Bill ("AB") 52 on May 16, 2025 (see **Section 4.13** for additional details on tribal consultation). The field reconnaissance consisted of a pedestrian survey of the APE on September 10, 2020, which investigated the APE for cultural and Tribal cultural resources.

Environmental Setting

The Project site is located at the existing CAWD WWTP in unincorporated Carmel, Monterey County, California. The WWTP is located along the south bank of the Carmel River within the Carmel Lagoon, which is an area designated as having high sensitivity for pre-contact archaeological resources and a moderate sensitivity for historic-period archaeological resources. A search of the NWIC identified four (4) previous studies that included all or a portion of the Project site. No prehistoric or combined prehistoric or historic era sites or built environment resources have been recorded or reported in or adjacent to the Proposed Project site. CAWD's request to the SLF produced positive results for resources within the Project area. However, Pacific Legacy's pedestrian survey of the Proposed Project APE did not encounter evidence of archaeological deposits or other potential cultural resources (Pacific Legacy, 2020).

[5] Due to the potentially confidential nature of items in this report, this study is not included in the IS/MND. Qualified personnel may request a copy of this report from CAWD.

Regulatory Environment

State

California Environmental Quality Act: CEQA requires regulatory compliance for projects involving historic resources throughout the State. Under CEQA, public agencies must consider the effects of their actions on historic resources (Public Resources Code, Section 21084.1). The CEQA Guidelines define a significant resource as any resource listed in or determined to be eligible for listing in the California Register of Historical Resources ("California Register") [see Public Resources Code, Section 21084.1 and CEQA Guidelines Section 15064.5 (a) and (b)].

California Public Resources Code: Several sections of the California PRC protect cultural resources located on public land. Under PRC Section 5097.5, no person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site (including fossilized footprints), inscriptions made by human agency, rock art, or any other archaeological, paleontological, or historical feature situated on public lands, except with the express permission of the public agency that has jurisdiction over the lands. Violation of this section is a misdemeanor.

PRC Section 5097.98 states that if Native American human remains are identified within a project area, the landowner must work with the Native American Most Likely Descendant as identified by the NAHC to develop a plan for the treatment or disposition of the human remains and any items associated with Native American burials with appropriate dignity. These procedures are also addressed in Section 15064.5 of the State CEQA Guidelines. California Health and Safety Code Section 7050.5 prohibits disinterring, disturbing, or removing human remains from a location other than a dedicated cemetery. Section 30244 of the PRC requires reasonable mitigation for impacts on paleontological and archaeological resources that occur because of development on public lands.

California Health and Safety Code: California Health and Safety Code Section 7050.5 regulates the treatment of human remains. In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site, or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined that the remains are not subject to his or her authority. If the coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact the NAHC by telephone within 24 hours.

Local

***1982 Monterey County General Plan*:** The following goals and policies of the 1982 Monterey County General Plan could be applicable to the Proposed Project.

Goal 12: To encourage the conservation and identification of the County's archaeological resources.

Policy 12.1.3: All proposed development, including land divisions, within high sensitivity zones shall require an archaeological field inspection prior to project approval.

Policy 12.1.6: Where development could adversely affect archaeological resources, reasonable mitigation procedures shall be required prior to project approval.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the preservation of cultural resources. The following goals from the Carmel Area Land Use Plan may apply to the Proposed Project:

2.8.3.5: Archaeological surveys shall be required for all new subdivisions and for all other development within close proximity of known sites. Such surveys shall be performed by qualified individuals.

2.8.4.5: No development proposals in archaeologically sensitive areas shall be categorically exempt from environmental review.

2.8.4.6: When other site planning constraints do not permit avoidance of construction on archaeological or other types of a cultural sites, adequate preservation measures shall be required. Mitigation shall be designed in accord with guidelines of the State Office of Historic Preservation and the State of California Native American Heritage Commission.

Monterey County Code: Title 20 of the Monterey County Municipal Code regulates land uses within the Coastal Zone of unincorporated Monterey County. The Proposed Project occurs on parcels zoned as PQP-CZ and Resource Conservation RC-CZ. Chapter 20.40 of Title 20 regulates land uses in the PQP-CZ zoning district. Section 20.40.030 of Title 20 states that a Coastal Development Permit is required for any project within PQP-CZ involving development within a parcel with positive findings from an archaeological report. Section 20.36.030 likewise requires a Coastal Development Permit for any project within RC-CZ involving development within a parcel with positive findings from an archaeological report.

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 §15064.5?	☐	☐	☐	■
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	■	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	■	☐	☐

Impact Discussion

a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

CEQA Guidelines Section 15064.5 defines a historical resource as one being listed in or determined to be eligible by the State Historical Resources Commission for listing in the California Register. PRC Section 21084.1 states that a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment. No prehistoric or combined prehistoric or historic era sites or built environment resources have been recorded or reported within or immediately adjacent to the Proposed Project site. The nearest registered historic resource is Carmel Mission, located approximately 0.15 miles north of the Project site. However, the

Project would be limited to the existing WWTP and would not affect Carmel Mission or any other local historic resources. Therefore, the Proposed Project would not impact a historical resource.

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Section 21083.2 of the PRC requires lead agencies to assess potential impacts to archaeological resources and determine whether a project may cause a substantial adverse change in the significance of an archaeological resource. Pacific Legacy conducted a records search at the NWIC and completed a visual inspection of the Proposed Project APE. The results of these investigations were negative for sensitive resources. However, CAWD's SLF request to the NAHC was returned with positive results. As a result, unrecorded archaeological resources could be present below ground surface, and such resources could be exposed or damaged during Project construction. Therefore, to ensure impacts remain less-than-significant, the Proposed Project would implement **Mitigation Measure CUL-1**.

> **Mitigation Measure CUL-1**: CAWD shall note on any plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources including prehistoric Native American burials. Archaeological site information supplied to the Contractor shall be considered confidential.
>
> CAWD shall retain a Professional Archaeologist to inspect initial ground disturbing activities while exposed during construction. The Professional Archaeologist shall be retained on an "on-call" basis to visit the site and evaluate any potential finds during ground disturbing construction and to review, identify, and evaluate cultural resources that may be inadvertently exposed during construction. The archaeologist shall review and evaluate any discoveries to determine if they are historical resource(s) and/or unique archaeological resources or Tribal cultural resources under CEQA.
>
> If the Professional Archaeologist determines that any cultural resources exposed during construction constitute a unique archaeological resource or Tribal cultural resource under CEQA, he/she shall notify CAWD and other appropriate parties of the evaluation. The Professional Archaeologist shall recommend mitigation measures to mitigate to less-than-significant in accordance with California PRC Section 15064.5. Tribal cultural resources shall be evaluated with the assistance of Native American tribes and/or individual Tribal members who have previously been contacted and responded to outreach efforts by CAWD. Mitigation measures may include avoidance, preservation in-place, recordation, additional archaeological testing and data recovery among other options. The completion of a formal *Archaeological Monitoring Plan* ("AMP") and/or *Archaeological Treatment Plan* ("ATP") that may include data recovery may be recommended by the Professional Archaeologist if significant archaeological deposits (or Tribal cultural resources) are exposed during ground disturbing construction. Development and implementation of the AMP and ATP, and treatment of significant cultural resources and/or Tribal cultural resources will be determined by CAWD in consultation with any regulatory agencies and Native American Tribes and Tribal individuals.
>
> A *Monitoring Closure Report* shall be filed with CAWD at the conclusion of ground disturbing construction if archaeological and Native American monitoring was undertaken.

c. Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

No known human remains, including those interred outside of dedicated or formal cemeteries, are known to occur on the Proposed Project site. Additionally, Native Americans were consulted during the preparation of the Cultural Resources Report (see **Section 4.13, Tribal Cultural Resources**). The results of an SLF for the Proposed Project APE were positive as described above. As a result, the APE could feasibly contain previously unknown Native American or other human remains. To minimize potential impacts to a less-than-significant level, mitigation is necessary. The implementation of the following mitigation measure would ensure potential adverse impacts would be avoided.

Mitigation Measure CUL-2*:* Throughout the duration of ground disturbing activities, the treatment of human remains, and any associated or unassociated funerary objects discovered during any soil-disturbing activity within the Project site shall comply with applicable State laws. This shall include immediate notification of the Monterey County Sheriff's Office and CAWD.

In the event of the coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission, is required who shall appoint a Most Likely Descendant ("MLD") (PRC Section 5097.98).

CAWD, the Professional Archaeologist and MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. The California PRC allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the project will follow PRC Section 5097.98(b) which states that ". . . the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

4.5 Energy

Environmental Setting

Pacific Gas and Electric ("PG&E") provides electricity and natural gas throughout Monterey County, including the Proposed Project site. Beginning in 2018, all PG&E customers in Monterey, San Benito, and Santa Cruz Counties were automatically enrolled in Central Coast Community Energy ("3CE"). 3CE is a community choice energy agency that has committed to providing its customers with 100% carbon-free energy by the year 2030 (3CE, 2025). Community choice energy agencies allow local governments to procure power on behalf of their residents, businesses, and municipal accounts from an alternative supplier while still receiving transmission and distribution service from their existing utility provider (in this case, PG&E). This is typically an attractive option for communities that want more local control over their electricity sources, more clean energy than their default utility offers, and/or lower electricity prices. Per Public Utilities Code Section 366.2, customers have the right to opt out of the community choice energy program and continue to receive service from the incumbent utility (i.e., PG&E).

Regulatory Environment

Local

1982 Monterey County General Plan: There are no policies or goals from the 1982 Monterey County General Plan related to energy use that would be applicable to the Proposed Project.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the regulation of energy consumption. None of the energy-related goals from the Carmel Area Land Use Plan may apply to the Proposed Project.

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?	☐	☐	■	☐

Impact Discussion

a. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

The Proposed Project would require energy for removal of trees and fencing, installation of replacement fencing, and transport of material for construction and generated by demolition activities. In addition, energy would be consumed due to vehicle trips to and from the Project site during construction. Petroleum-based fuels such as diesel fuel and gasoline would be the primary sources of energy for vehicle trips and other activities. The Proposed Project would not result in inefficient, wasteful, or unnecessary consumption of energy because: 1) the Project schedule is designed to be efficient to avoid excess monetary costs, and 2) energy demand associated with demolition and construction activities would be temporary in nature. As a result, the Proposed Project would have a less-than-significant impact related to wasteful, inefficient, or unnecessary consumption of energy resources.

b. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

See *Response a.* above. Implementation of the Proposed Project would be subject to existing state energy standards and would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The Proposed Project would have a less-than-significant impact related to energy usage and efficiency.

4.6 Geology and Soils

Environmental Setting

Geotechnical Consultants, Inc. prepared a Geotechnical Report (**Appendix C**) for the WWTP in October 2014. While **Appendix C** was prepared for a previous project located at the WWTP, the Geological conditions at the Project site have not changed since the time of preparation of the Geotechnical Report. The following section is based on the findings of **Appendix C** as well as publicly available geological information.

The Proposed Project area is not in an Alquist-Priolo Act zone but is located in a seismically active region. The nearest active fault to the Project area is the Monterey Bay-Tularcitos fault zone located approximately 1.5 miles from the Proposed Project site (**Appendix C**).

The Carmel River Valley is primarily underlain by Quaternary alluvium, floodplain deposits, and channel deposits. Near the coast, the valley has widened into an estuarine environment and is partially underlain by estuarine silts and clays. The Project site is underlain with artificial fill, which overlies floodplain deposits of the Carmel River. Descriptions of the units that may be encountered during construction activities are summarized below.

Artificial Fill. Artificial fill depths across the WWTP site range from approximately three (3) to nine (9) feet below ground surface ("bgs"). The artificial fill consists of loose to dense silty sand, clayey sand, and sandy silt, and medium stiff to stiff silt and elastic silt with local pockets of debris. Borings encountered five (5) to seven (7) feet of light brown, loose to medium dense silty sand with varying amounts of gravel.

Floodplain Deposits. Holocene aged floodplain deposits underlie the artificial fill and were encountered to the full depth of the borings conducted at the WWTP. The floodplain deposits include interfingered river channel gravel, alluvial sand and gravel, floodplain sand, silt, and clay, and estuarine silt and clay. Floodplain deposits encountered in the historic borings consist primarily of loose to medium dense sand and silty sand and medium stiff to very stiff sandy to clayey silt. Test borings encountered loose to dense sand with varying amounts of gravel and silt and silty sand. In GTC-B-2, approximately 30 feet of interbedded medium stiff to stiff silt and medium dense silty sand was encountered at a depth of approximately 42.5 feet bgs.

The Project site has been deemed to have low landslide susceptibility, low to high liquefaction potential, and a moderate to low erosion hazard rating (Monterey County, 2025).

Regulatory Environment

State

***Alquist-Priolo Earthquake Fault Zoning Act*:** The Alquist-Priolo Earthquake Fault Zoning Act, passed in 1972, seeks to mitigate surface faulting's hazard to structures for human occupancy. In accordance with this act, the State Geologist established regulatory zones, called "earthquake fault zones," around the surface traces of active faults and published maps showing these zones. In these zones, buildings for human occupancy cannot be constructed across the surface traces of active faults. Because many active

faults are complex and consist of more than one branch, each earthquake fault zone extends approximately 200 to 500 feet on either side of the mapped fault trace.

Title 14 of the CCR, Section 3601(e), defines buildings intended for human occupancy as those that would be inhabited for more than 2,000 hours per year. The Proposed Project does not include any habitable structures and none of the Project sites cross an Alquist-Priolo Earthquake Fault Zone. Therefore, these provisions of the Act do not apply to the Proposed Project.

Seismic Hazards Mapping Act: The purpose of the Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) is to reduce damage resulting from earthquakes. The Seismic Hazards Mapping Act addresses earthquake-related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. The State is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards. Cities and counties are required to regulate development in mapped Seismic Hazard Zones. Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites in Seismic Hazard Zones until appropriate site-specific geologic and/or geotechnical investigations have been conducted and measures to reduce potential damage have been incorporated into the development plans.

Local

***1982 Monterey County General Plan*:** The following goals, objectives, and policies from the 1982 Monterey County General Plan could be applicable to the Proposed Project.

Objective 3.1: Establish procedures for the prevention of soil erosion and the repairing of erosion damage in critical areas on both public and private lands.

Policy 3.1.1: Erosion control procedures shall be established and enforced for all private and public construction and grading projects.

Policy 3.1.3: In the absence of more detailed site specific studies, determinations of soil suitability for particular land uses shall be made according to the Soil Conservation Service's Soil Survey of Monterey County.

Goal 15: To minimize loss of life, injury, damage to property, and economic and social dislocations resulting from seismic and other geologic hazards.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the regulation of regional geology. The following policies from the Carmel Area Land Use Plan may apply to the Proposed Project:

2.4.4.C.4: The native vegetation cover, temporary vegetation, seeding, mulching, or other suitable stabilization methods shall be used to protect soils subject to erosion that have been disturbed during grading or development. All cut and fill slopes shall be stabilized as soon as possible with planting of native annual grasses and shrubs, appropriate non-native plants, or with approved landscaping practices.

2.4.4.C.5: Provisions shall be made to conduct, surface water to storm drains or suitable watercourses to prevent erosion. Onsite drainage devices shall be designed to

accommodate increased run-off resulting from site modification. Where appropriate, on-site retention of stormwater should be required.

2.7.4.1: All development shall be sited and designed to conform to site topography and to minimize grading and other site preparation activities. Applications for grading and building permits and applications for subdivisions shall be reviewed for potential impacts to onsite and offsite development arising from geologic and seismic hazards and erosion. Mitigation measures shall be required as necessary.

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?	☐	☐	■	☐
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 18-1-B of the Uniform Building Code (1994), creating substantial 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 paleontological resource or site or unique geologic feature?	☐	☐	☐	■

Impact Discussion

a. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

a.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?

The Proposed Project is not located in an Alquist-Priolo Earthquake Fault Zone. Additionally, there are no faults or fault zone hazard areas identified by the County of Monterey in the vicinity of the Project (**Appendix C**). The nearest fault zone is the Monterey Bay-Tularcitos fault zone located approximately 1.5 miles from the Proposed Project site. The Proposed Project consists of the removal of Eucalyptus trees and replacement of fencing at the CAWD WWTP and does not propose any new habitable structures that would result in risk of loss, injury, or death due to the proximity of a known earthquake fault. The Project would have a less-than-significant impact related to rupture of a known earthquake fault.

a.ii) Strong seismic ground shaking?

The Proposed Project is located in a seismically active region. The nearest fault zone is the Monterey Bay-Tularcitos fault zone located approximately 1.5 miles from the Proposed Project site (**Appendix C**). As a result, the Proposed Project sites could be subject to seismically induced hazards during implementation of the Project. However, the Proposed Project consists of the removal of Eucalyptus trees and replacement of fencing at the CAWD WWTP and does not propose any new habitable structures that would result in an increased risk of loss, injury, or death due to strong seismic ground shaking compared to existing conditions. Therefore, the Project would have a less-than-significant impact related to strong seismic ground shaking.

a.iii) Seismic-related ground failure, including liquefaction?

Surface ground rupture occurs at sites that are traversed by or lie very near an active fault. The Proposed Project is not located in any mapped earthquake fault zones (Department of Conservation, 2025). Therefore, there is a low potential for surface ground rupture within the Proposed Project area. Some parcels within the Project site are designated by the County as having low to high liquefaction potential (Monterey County, 2025). However, the Proposed Project consists of the removal of Eucalyptus trees and replacement of fencing at the CAWD WWTP and does not propose any new habitable structures that would result in risk of loss, injury, or death due to seismic related ground failure, including liquefaction. For these reasons, the Proposed Project would have a less-than-significant impact regarding seismic-related ground failure.

a.iv) Landslides?

Landslides are common in Monterey County due to the combination of uplifting mountains, fractured and weak rocks, and periodic intense rainfall along the coast. The level of susceptibility of an area is dependent on the local geologic conditions. The Project site is located in a relatively flat area that is considered to have low risk of landslide hazards (Monterey County, 2025). The Proposed Project consists of the removal of Eucalyptus trees and replacement of fencing at the CAWD WWTP and does not

propose any new habitable structures that would result in an increased risk of loss, injury, or death due to landslides compared to existing conditions. No impact would occur.

b. Would the project result in substantial soil erosion or the loss of topsoil?

The County's GIS database identifies the parcels comprising the Proposed Project site as having a moderate to low erosion potential (Monterey County, 2025). The Proposed Project consists of the removal of Eucalyptus trees and replacement of fencing at the CAWD WWTP. Ground disturbing activities associated with the Project activities could result in accelerated soil erosion and the loss of topsoil. However, the Project is limited to the perimeter of the WWTP, and ground disturbance would be limited to the alignment of the existing security fence. The Proposed Project would disturb less than one (1) acre of soil and would include the installation of temporary silt fencing in sloped areas during construction to prevent erosion and loss of topsoil. In addition, the Proposed Project would implement standard best management practices ("BMPs") during construction to reduce erosion and the loss of topsoil consistent with Section 16.08.340 of the County's Municipal Code. These BMPs are anticipated to include, but not be limited to, the following:

- Prepare and maintain all disturbed surfaces via re-planting as soon as practicable following soil disturbance.
- Conduct regular watering of planted areas to assure growth.
- Control dust emissions from disturbed surfaces by regularly watering disturbed surfaces.

As a result, the Proposed Project would have a less-than-significant impact related to causing substantial soil erosion and the loss of topsoil.

c. Would the project 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?

The Proposed Project is identified as having low potential for landslides and also considered to have low to high potential for liquefaction. The Proposed Project consists of the removal of Eucalyptus trees and replacement of fencing at the CAWD WWTP. The Proposed Project does not include the construction of any new habitable structures that would require significant earthmoving that would increase the risk of landslide, lateral spreading, liquefaction, or collapse. As a result, the Proposed Project would have a less-than-significant impact related to being located on a geologic unit or soil that is unstable.

d. Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Soils within the Proposed Project site are considered to be granular and non-expansive (**Appendix C**). The Proposed Project consists of the removal of Eucalyptus trees and replacement of fencing at the CAWD WWTP and does not propose any new habitable structures that would result in risks to life or property due to expansive soils. No offsite fill materials are anticipated to be required to complete the Proposed Project. No impact would occur.

e. Would the project 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?

The Proposed Project consists of the removal of existing Eucalyptus trees and the replacement of fencing at the CAWD WWTP and does not include the use of septic tanks or alternative wastewater disposal system; therefore, no impact would occur.

f. Would the project directly or indirectly destroy a paleontological resource or site or unique geologic feature?

Significant paleontological resources are fossils or assemblages of fossils that are unique, unusual, rare, uncommon, and diagnostically or stratigraphically important, as well as those that add to an existing body of knowledge in specific areas, stratigraphically, taxonomically, or regionally. They include fossil remains of large to very small aquatic and terrestrial vertebrates, remains of plants and animals previously not represented in certain portions of the stratigraphy and assemblages of fossils that might aid stratigraphic correlations – particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, paleoclimatology, and the relationships of aquatic and terrestrial species. Most of the fossils found in Monterey County are of marine life forms and create a record of the region's geologic history of advancing and retreating sea levels. A review of nearly 700 known fossils localities in the County was conducted in 2001; 12 fossil sites were identified as having outstanding scientific value (Rosenberg, 2001). None of these sites are located within or adjacent to the WWTP. The Proposed Project would not directly or indirectly destroy a paleontological resource or site or unique geologic feature, as none exist within the Proposed Project area. No impact would occur.

4.7 Greenhouse Gas Emissions

Environmental Setting

Global temperatures are affected by naturally occurring and anthropogenic-generated atmospheric gases, such as water vapor, carbon dioxide, methane, and nitrous oxide. Greenhouse gases ("GHGs") are gases that absorb and re-emit infrared radiation in the atmosphere. The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide ("CO_2"), methane ("CH_4"), nitrous oxide ("N_2O"), fluorinated gases such as hydrofluorocarbons ("HFCs") and perfluorocarbons ("PFCs"), and sulfur hexafluoride ("SF_6"). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

Emissions of GHGs from human activities, such as electricity production, motor vehicle use, and agriculture, are elevating the concentration of GHGs in the atmosphere. GHG emissions from anthropogenic sources are causing a trend of unnatural warming of the earth's climate, known as global warming or global climate change.

MBARD has not yet adopted a threshold for construction-related GHG emissions but recommends utilizing thresholds set by neighboring districts (e.g., Sacramento Metropolitan Air Quality Management District ["SMAQMD"]). The SMAQMD GHG threshold is defined in terms of carbon dioxide equivalent ("CO_2e"), a metric that accounts for emissions from various GHGs based on their global warming potential. According to SMAQMD, a Project would result in a significant GHG-related impact if the

Project would emit more than 1,100 metric tons of CO_2e per year ("$MTCO_2e$/year"). Operation of a stationary source project would not have a significant GHG impact if the project emits less than 10,000 $MTCO_2e$/year. Climate change has a cumulative impact; a project contributes to this impact through its incremental contribution of GHG emissions combined with the cumulative increase of all other sources of GHGs. If annual emissions of GHGs exceed these threshold levels, the Proposed Project would result in a cumulatively considerable contribution of GHG emissions and must implement mitigation measures (MBARD, 2016).

Regulatory Environment

Federal

***Federal Regulation and the Clean Air Act - Executive Order 13514*:** Executive Order 13514 is focused on reducing GHGs internally in federal agency missions, programs, and operations. Additionally, the executive order directs federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change.

On April 2, 2007, in Massachusetts v. U.S. EPA, 549 U.S. 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the FCAA and that the U.S. EPA has the authority to regulate GHGs. The Court held that the U.S. EPA Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution that may be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the U.S. EPA Administrator signed two (2) distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator found that the current and projected concentrations of the six (6) key well-mixed GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator found the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

Although these findings did not impose any requirements on industry or other entities, this action was a prerequisite to finalizing the U.S. EPA's *Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles* published on September 15, 2009. On May 7, 2010, the final *Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards* was published in the Federal Register.

U.S. EPA and the National Highway Traffic Safety Administration ("NHTSA") are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles and additional light-duty vehicle GHG regulations. President Obama outlined these steps in a Presidential Memorandum on May 21, 2010.

The final combined U.S. EPA and NHTSA standards making up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average

emissions level of 250 grams of carbon dioxide ("CO_2") per mile (the equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO_2 level solely through fuel economy improvements). Together, these standards will cut GHG emissions by an estimated 960 million metric tons ("MMT") and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016). On August 28, 2012, U.S. EPA and NHTSA issued their joint rule to extend this national program of coordinated GHG and fuel economy standards to model years 2017 through 2025 passenger vehicles.

State

***Assembly Bill 32 – California Global Warming Solutions Act*:** AB 32, the Global Warming Solutions Act of 2006, codifies the State of California's GHG emissions target by directing CARB to reduce the state's global warming emissions to 1990 levels by 2020. Governor Schwarzenegger signed and passed into law AB 32 on September 27, 2006. Since that time, the CARB, the California Energy Commission ("CEC"), the California Public Utilities Commission ("CPUC"), and the Building Standards Commission ("BSC") have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05.[6]

A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State of California's main strategies to reduce GHGs from business as usual ("BAU") emissions projected in 2020 back down to 1990 levels. BAU is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. This plan required CARB and other state agencies to develop and adopt regulations and other initiatives reducing GHGs by 2012.

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. On December 6, 2007, CARB staff resolved an amount of 427 MMT of CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector-or facility-specific limit. CARB updated the future 2020 BAU annual emissions forecast because of economic downturn, to 545 MMT of CO_2e. Two (2) GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT of CO_2e. Thus, an estimated reduction of 80 MMT of CO_2e is necessary to reduce statewide emissions to meet the AB 32 target by 2020.

CARB prepared an updated Scoping Plan which was released in 2017. The 2017 Scoping Plan identifies ways for California to reach the statewide 2030 climate target and next steps for reaching the 2050 target goal.

***Senate Bill 1368*:** SB 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 required the CPUC to establish a greenhouse gas emission performance standard. Therefore, on January 25, 2007, the CPUC adopted an interim GHG Emissions Performance Standard to help mitigate climate change. The Emissions Performance Standard is a facility-based emissions standard requiring all new long-term commitments for baseload generation to serve California consumers be with power plants that have emissions no greater than a combined cycle gas turbine plant. That level is established at 1,100 pounds of CO_2 per megawatt-hour. "New long-term commitment" refers to new plant investments (new construction), new or renewal contracts with a term

[6] Note that AB 197 was adopted in September 2016 to provide more legislative oversight of CARB.

of five (5) years or more, or major investments by the utility in its existing baseload power plants. Additionally, the CEC established a similar standard for local publicly owned utilities that cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural gas fired plant. On July 29, 2007, the Office of Administrative Law disapproved the CEC's proposed Greenhouse Gases Emission Performance Standard rulemaking action and subsequently, the CEC revised the proposed regulations. SB 1368 further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

***Senate Bill 350 – Clean Energy and Pollution Reduction Act*:** In September 2015, the California Legislature passed SB 350 (de Leon 2015), which increases the State's Renewables Portfolio Standard Program for content of electrical generation from the 33 percent target for 2020 to a 50 percent renewables target by 2030 (CPUC, 2025).

***Executive Order S-03-05*:** On June 1, 2005, Governor Schwarzenegger signed Executive Order S-03-05, the purpose of which was to implement requirements for the California Environmental Protection Agency ("CalEPA") to provide ongoing reporting on a biennial basis to the State Legislature and Governor's Office on how global warming is affecting the state. Required areas of impact reporting include public health, water supply, agriculture, coastline, and forestry. The CalEPA secretary is required to prepare and report on ongoing and upcoming mitigation designed to counteract these impacts.

***Executive Order B-30-15*:** On April 15, 2015, Governor Brown signed Executive Order B-30-15, the purpose of which is to establish a GHG reduction of 40 percent below 1990 levels by 2030. The Executive Order intended to help the state work towards a further emissions reduction target of 80 percent below 1990 levels by the year 2050. The order directed state agencies to prepare for climate change impacts through prioritization of adaptation actions to reduce GHG emissions, preparation for uncertain climate impacts through implementation of flexible approaches, protection of vulnerable populations, and prioritization of natural infrastructure approaches.

***Executive Order B-55-18 and SB 100 – 100 Percent Clean Energy Act of 2018*:** On September 10, 2018, Governor Brown signed both SB 100 – 100 Percent Clean Energy Act of 2018 and Executive Order B-55-18 To Achieve Carbon Neutrality. SB 100 sets California on course to achieving carbon-free emissions from the electric power production sector by 2045. SB 100 also increases the required emissions reduction generated by retail sales to 60 percent by 2030, an increase of 10 percent compared to previous goals. B-55-18 establishes a new goal of achieving statewide "carbon neutrality as early as possible and no later than 2045, and to achieve and maintain net negative emissions thereafter" (Governor Brown, 2018).

Local

Monterey Bay Air Resources District: To date, MBARD has not adopted regulations or CEQA guidance for analysis of GHG effects of land use projects; nor has it prepared a qualified GHG reduction plan for use or reference by local agencies. MBARD recommends utilizing thresholds set by neighboring districts, such as the SMAQMD. Therefore, the Proposed Project would be considered to result in a significant construction GHG related impact if the Proposed Project would emit more than 1,100 metric tons of CO_2e ("$MTCO_2e$") per year (SMAQMD, 2020).

1982 Monterey County General Plan: There are no policies or goals from the 1982 Monterey County General Plan that would be applicable to the Proposed Project.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the regulation of greenhouse gas emissions. None of the greenhouse gas-related goals from the Carmel Area Land Use Plan may apply to the Proposed Project.

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 gases?	☐	☐	■	☐

Impact Discussion

a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

The Proposed Project is in the NCCAB, where MBARD regulates air quality. For the purposes of this analysis, the SMAQMD's threshold of 1,100 $MTCO_2e$ is being utilized given the fact that MBARD has not yet adopted construction thresholds for GHG emissions. If a project emits less than 1,100 $MTCO_2e$ per year, its GHG emissions impact would be less-than-significant. The Proposed Project would generate temporary GHG emissions during tree removal and fence replacement. Detailed air quality modeling for construction of the Proposed Project was not performed. The Proposed Project consists of the removal of existing trees and fencing and the installation of replacement fencing, which would require the use of mechanized equipment that would emit GHGs. In addition, the Proposed Project would generate approximately 20 vehicle trips per day from workers entering and leaving the Project site at peak conditions (assuming ten (10) inbound and ten (10) outbound trips with no carpooling). Vegetation removed would be hauled offsite for composting at a local facility and non-organic waste would be transported to a local waste processing facility for recycling and/or disposal. The Proposed Project would require a maximum of ten (10) workers onsite at the peak of implementation, which represents a minimal increase in vehicle trips compared to existing conditions. Project activities are estimated to last approximately 90 workdays. As a result, any potential effects from GHG generation during implementation would be temporary and would not exceed the SMAQMD threshold of 1,100 $MTCO_2e$ per year. GHG emissions from ongoing maintenance of the new fence would be significantly below initial implementation and would not exceed the SMAQMD threshold of 1,100 $MTCO_2e$ per year as no changes to the existing WWTP are proposed as part of the Project. Therefore, initial implementation of the Proposed Project and ongoing maintenance activities would have a less-than-significant impact related to generation of GHG emissions.

b. Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

As described above, the Proposed Project is not expected to generate GHG emissions that would exceed applicable thresholds. In addition, the Proposed Project would not conflict with any applicable plan,

policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases, as the Proposed Project would not generate long-term emissions of GHGs. This represents a less-than-significant impact.

4.8 Hazards and Hazardous Materials

Environmental Setting

Hazardous materials, as defined by the CCR, are substances with certain physical properties that could pose a substantial present or future hazard to human health or the environment when improperly handled, disposed, or otherwise managed. Hazardous waste is any hazardous material that is discarded, abandoned, or slated to be recycled. Hazardous materials and waste can result in public health hazards if improperly handled, released into the soil or groundwater, or through airborne releases in vapors, fumes, or dust. Soil and groundwater having concentrations of hazardous constituents higher than specific regulatory levels must be handled and disposed of as hazardous waste when excavated or pumped from an aquifer.

Government Code Section 65962.5 requires CalEPA to develop a Cortese List that is updated at least annually. While CalEPA no longer maintains a single Cortese List, CalEPA uses the following database and list to meet the requirements of Government Code Section 65962.5.

- List of Hazardous Waste and Substances sites from Department of Toxic Substances Control ("DTSC") EnviroStor database.
- List of Leaking Underground Storage Tank ("LUST") Sites from the State Water Resources Control Board's ("SWRCB") GeoTracker database.
- List of solid waste disposal sites identified by the SWRCB or a RWQCB with waste constituents above hazardous waste levels outside the waste management unit.
- List of "active" Cease and Desist Orders ("CDO") and Clean-up and Abatement Orders ("CAO") from the SWRCB.
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC.

In addition to these databases, the SWRCB and the DTSC maintain databases of other hazardous material release sites with documented environmental contamination (DTSC, 2024). No hazardous materials release records are known to occur within the Proposed Project area based on a search of SWRCB and DTSC regulatory databases.

Regulatory Environment

Federal

Environmental Protection Agency: The EPA is responsible for enforcing regulations at the federal level pertaining to hazardous materials and waste. The primary federal hazardous materials and wastes laws are contained in the Resources Conservation and Recovery Act ("RCRA") of 1976 and in the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") of 1980.

Comprehensive Environmental Response, Compensation and Liability Act: CERCLA, more commonly known as Superfund, established the National Priorities List for identifying and obtaining funding for

remediation of severely contaminated sites. Federal regulations pertaining to hazardous materials and wastes are contained in 40 CFR. The regulations contain specific guidelines for determining whether a waste is hazardous, based on either the source of generation or the characteristics of the waste.

U.S. Department of Transportation: The U.S. Department of Transportation ("DOT") regulates transportation of hazardous materials by truck and rail. DOT regulations establish criteria for safe handling procedures. The California Administrative Code also includes federal safety standards.

***Solid Waste Disposal Act/Federal Resource Conservation and Recovery Act*:** RCRA manages solid waste, landfills, and medical wastes. Under this act, solid wastes include hazardous materials. The act provides provisions for the generation, storage, treatment, and disposal of hazardous waste.

Toxic Substances Control Act: The Toxic Substances Control Act ("TSCA"), passed in 1976, requires the EPA to report, test, place restrictions on, and keep record of chemical substances and mixtures. The EPA has authority over the use, production, importation, and disposal of specific chemicals. Some chemicals include polychlorinated biphenyls ("PCBs"), asbestos, radon, and lead paint.

State

***California Environmental Protection* Agency:** The EPA has delegated much of its regulatory authority to individual states whenever adequate state regulatory programs exist. The DTSC Division of CALEPA is the agency empowered to enforce federal hazardous materials and waste regulations in California, in conjunction with the EPA.

California hazardous materials and waste laws incorporate federal standards, but in many respects, are stricter. For example, the California Hazardous Waste Control Law, the State equivalent of RCRA, contains a much broader definition of hazardous materials and waste. The CCR, Titles 22 and 26, contain State hazardous materials waste laws. Regulations implementing the California Hazardous Waste Control Law list hazardous chemicals; establish criteria for identifying, packaging, and labeling hazardous wastes; prescribe management of hazardous wastes; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills.

Local

***Regional Water Quality Control Board*:** The Central Coastal RWQCB is the lead agency responsible for identifying, monitoring, and remediating leaking underground storage tanks on the Central Coast. Local jurisdictions may take the lead agency role as a Local Oversight Program ("LOP") entity, implementing State as well as local policies.

1982 Monterey County General Plan: The following objective from the 1982 Monterey County General Plan could be applicable to the Proposed Project:

Objective 18.1: Reduce the level of risk from hazardous chemicals to an acceptable level by regulating the storage of hazardous chemicals.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the regulation of hazards and hazardous materials. None of the hazard and hazardous materials-related goals from the Carmel Area Land Use Plan may apply to the Proposed Project.

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 release of hazardous materials into the environment?	☐	☐	■	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste in 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 in an airport land use plan or, where such a plan has not been adopted, in 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 a significant risk of loss, injury or death involving wildland fires?	☐	☐	■	☐

Impact Discussion

a and b. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

The Project does not include the use of significant quantities of hazardous materials. However, construction equipment utilized for tree removal and fence replacement may require the use of or generate limited quantities of acutely hazardous materials, substances, or waste (such as fuels, solvents, etc.). It is unlikely that implementation of the Proposed Project would create a significant impact due to the routine transport, use, or disposal of hazardous materials, as the construction contractor would be required to implement best management practices for the use, storage, and transport of hazardous materials for fueling equipment and disposing of construction waste. The Project is within 100 feet of the Carmel River, and spills of limited quantities hazardous during equipment maintenance and refueling

could result in in a potentially significant impact involving reasonably foreseeable accident conditions. However, the WWTP has on-site refueling stations located more than 100 feet from riparian habitat, the Carmel River, and areas that could potentially flow into the Carmel River in the event of an accidental spill. In addition, the Proposed Project would utilize fuel containment equipment (i.e., absorbent sheets and waddles) at the refueling site as a construction Best Management Practices. Therefore, the Proposed Project would have a less-than-significant impact with respect to creating a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials and/or reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste in one-quarter mile of an existing or proposed school?

Carmel River Elementary School is located within a quarter of a mile of the Project site. The Project does not include the use of significant quantities of hazardous materials. While the Project could emit limited quantities of hazardous emissions (air quality pollutants, dust, etc.) or require handling small quantities hazardous or acutely hazardous materials, substances, or waste (such as fuels, solvents, etc.), the construction contractor would handle and store all such materials in accordance with applicable manufacturers' recommendations. Therefore, the Project would have a less-than-significant impact regarding the emission or handling of hazardous materials within one-quarter mile of an existing school.

d. Would the project 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?

As discussed above, CalEPA uses the DTSC EnviroStor and the SWRCB's GeoTracker databases in conjunction with lists of solid waste disposal sites and active CDO and CAO from the SWRCB to identify hazardous materials sites across the State. No active hazardous materials sites are known to occur within the vicinity of the Proposed Project site. Therefore, the Project would have no impact related to being located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

e. For a project located in 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?

The closest active airport to the Proposed Project area is the Monterey Regional Airport, which is located approximately 4.6 miles northeast of the Project. The Proposed Project would not result in a safety hazard or exposure to excessive noise for people residing or working in the Proposed Project area as there are no airports within two (2) miles of the site. No impact would occur.

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The *County of Monterey Multi-Jurisdictional Hazard Mitigation Plan* does not identify specific designated evacuation routes, since evacuation routes are considered dynamic and would change based on the nature and location of an emergency. As a result, all local roadways within the vicinity of each component of the Proposed Project area could potentially be utilized as evacuation routes during an

emergency. The Proposed Project consists of the removal of existing Eucalyptus trees and the replacement of fencing at the CAWD WWTP. No temporary roadway or lane closures would be required as a result of the Project. The Project would require a maximum of ten (10) personnel on site at the peak of Project activities, which would generate additional traffic on local roadways in case of an emergency. However, this increase in traffic during an emergency would be accommodated by existing roadways and would not impair implementation or physically interfere with emergency response or evacuation. Therefore, the Proposed Project would not impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, the Proposed Project represents a less-than-significant impact.

g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

The Proposed Project is located entirely within a local responsibility area and is not designated as a high or very high fire hazard severity zone (Monterey County, 2025). The Proposed Project consists of tree removal of Eucalyptus trees and the replacement of fencing at the existing CAWD WWTP. Project activities would utilize mechanized equipment that has the potential to produce sparks. However, equipment would be fitted with spark arrestors in compliance with all applicable State and local regulations, which would substantially reduce the risk of wildland fire as a result of construction. In addition, the Proposed Project would reduce long-term fire risk by removing flammable Eucalyptus trees and associated debris from the Project site. For these reasons, the Proposed Project would have a less-than-significant impact related to directly or indirectly exposing people or structures to wildland fire.

4.9 Hydrology and Water Quality

Environmental Setting

The Project is underlain by the Carmel Valley Groundwater Basin, which is managed by the Monterey Peninsula Water Management District ("MPWMD"). The Carmel Valley Groundwater Basin is designated by the California Department of Water Resources ("DWR") as a medium priority basin (SWRCB, 2025).

Regulatory Environment

Federal

***National Flood Insurance Program*:** FEMA established the National Flood Insurance Program ("NFIP") to reduce flooding on private and public properties. The program provides subsidized flood insurance to communities that comply with FEMA regulations protecting development in floodplains. As part of the program, FEMA publishes Flood Insurance Rate Maps ("FIRM") that identify Special Flood Hazard Areas ("SFHA"). An SFHA is an area that would be inundated by the one-percent annual chance flood, which is also referred to as the base flood or 100-year flood.

***Porter-Cologne Water Quality Act*:** The Porter-Cologne Act delegates authority to the SWRCB to establish regional water quality control boards. The Central Coast RWQCB has authority to use planning, permitting, and enforcement to protect beneficial uses of water resources in the Project region. Under the Porter-Cologne Water Quality Control Act (California Water Code Sections 13000 - 14290), the RWQCB is authorized to regulate the discharge of waste that could affect the quality of the State's waters, including projects that do not require a federal permit through the USACE. To meet RWQCB 401

Certification standards, all hydrologic issues related to a project must be addressed, including the following:

- Wetlands
- Watershed hydrograph modification
- Proposed creek or riverine related modifications
- Long-term post-construction water quality

Any construction or demolition activity that results in land disturbance equal to or greater than one (1) acre must comply with the Construction General Permit ("CGP"), administered by the SWRCB. The CGP requires the installation and maintenance of best management practices to protect water quality until the site is stabilized. The total area of disturbance associated with the Proposed Project is approximately 0.6 acres, so the Proposed Project would not be required to obtain coverage under the RWQCB National Pollutant Discharge Elimination System ("NPDES") General Storm Water Permit.

State

***Statewide Construction General Permit*:** The SWRCB has implemented an NPDES CGP for the State of California. For projects disturbing one (1) acre or more, a Notice of Intent ("NOI") and SWPPP must be prepared by a qualified professional prior to commencement of construction. The CGP includes requirements for training, inspection, record keeping, and for projects of certain risk levels, monitoring. The general purpose of the requirements is to minimize the discharge of pollutants and to protect beneficial uses and receiving waters from the adverse effects of construction-related storm water discharges.

Local

***1982 Monterey County General Plan Policies*:** The 1982 Monterey County General Plan includes goals and policies related to hydrology and water quality that could apply to the Proposed Project:

Objective 5.1: Protect and preserve watersheds and recharge areas, particularly those critical for the replenishment of reservoirs and aquifers.

Policy 5.1.1: Vegetation and soil shall be managed to protect critical watershed areas.

Policy 5.1.2: Land use and development shall be accomplished in a manner to minimize runoff and maintain groundwater recharge in vital water resource areas.

Objective 5.2: Preserve vegetation where necessary to protect water ways from bank erosion and siltation.

Policy 5.2.1: Owners of property adjacent to waterways or responsible agencies shall be encouraged to maintain healthy vegetation along the drainage course, or provide other suitable means of preventing bank erosion or siltation.

Goal 16: To minimize the risk from the damaging effects of flooding and erosion.

Policy 16.2.4: All new development, including filling, grading, and construction, within designated 100-year floodplain areas shall conform to the guidelines of the National Flood Insurance

Program and policies established by the County Board of Supervisors, with the advice of the Monterey County Flood Control and Water Conservation District.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the regulation of hydrology and water quality. The following goals from the Carmel Area Land Use Plan may apply to the Proposed Project:

2.7.4.1: The County's primary means of minimizing risk from flood hazards shall be through land use planning. Open space uses such as agriculture, passive to low intensity recreation, and wildlife habitat are considered acceptable land uses in the 100-year floodplain.

2.7.4.5: Where development is allowed or structural flood control measures are required, restoration of waterway banks and disturbed areas to a natural vegetated appearance shall be required. Landscaping themes shall emphasize the use of native plants which are appropriate to riparian corridors. Revegetation of disturbed riparian corridors by planting of native trees shall be encouraged due to their role in absorbing and channeling the force of floods away from adjacent banks.

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 groundwater 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?	☐	☐	■	☐
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?	☐	☐	☐	■

Impact Discussion

a. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Implementation of the Proposed Project would not require grading and excavation that could result in temporary water quality impacts. The Project does not include the use of significant quantities of hazardous materials. However, water quality impacts could occur as a result of the use of hazardous materials (e.g., diesel fuel, gasoline, etc.) during Project implementation. The Carmel River is located within 100 feet from the Project site. The construction contractor would be required to implement best management practices for the use, storage, and transport of hazardous materials for fueling equipment and disposing of construction waste. To minimize water quality impacts, the contractor will be required to use the on-site refueling stations at the WWTP, which are located more than 100 feet from surface waterways and/or riparian habitats to reduce impacts from potential spills, including impacts related to violation of water quality standards. The waste generated by the Proposed Project would be a mix of organic materials from tree removal and non-organic materials from fence replacement. All organic and non-organic waste generated by the Project would be disposed of in accordance with all waste discharge requirements. Therefore, the Project would have a less-than-significant impact related to violating applicable water quality standards or waste discharge requirements, or otherwise degrading the quality of surface water or groundwater.

b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

The Proposed Project consists of the removal of existing Eucalyptus trees and the replacement of fencing at the CAWD WWTP and does not include any new impervious surfaces that would interfere with groundwater recharge. The Proposed Project would not introduce any new water uses that could substantially decrease groundwater supplies. No impact would occur.

c. Would the project 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-off site, 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?

The Proposed Project consists of the removal of existing Eucalyptus trees and the replacement of fencing at the CAWD WWTP. The Proposed Project would not result in new impervious surfaces that would result in additional runoff that would exceed the capacity of existing or planned stormwater systems or substantially alter the existing drainage pattern of the Project site. The Project would not substantially increase the rate or amount of service runoff or impede or redirect flood flows. The Project includes tree and fence removal that could result in increased erosion or siltation on-or-offsite. However, the Proposed Project would implement best management practices, as discussed in **Section 4.7**, during construction to reduce erosion and the loss of topsoil. Therefore, the Project would have a less-than-significant impact with regards to substantial alteration of existing drainage pattern of the Project site.

d. Would the project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

The existing WWTP plant is located just outside of the tsunami hazard zone as delineated by the California Department of Conservation (Department of Conservation, 2025). However, the parcels to the west and north of the WWTP where tree removal and fence replacement would occur are located in the tsunami hazard zone. The Proposed Project involves the removal of Eucalyptus trees and the replacement of an existing fence and would not result in the risk of pollutants due to inundation from a tsunami. There are no stationary bodies of water located in the vicinity of the Proposed Project. As a result, the Proposed Project would not result in the risk or release of pollutants due to inundation from a seiche.

The Project site is located within FEMA Flood Zone AE (Monterey County, 2025). FEMA Flood Zone AE is defined as a zone with a one (1) percent annual chance of flooding. Flooding of the Project site during implementation of the Project could potentially risk pollutant release. However, by Project design, the staging and fueling areas for the Project would be located away from this area. All potential pollutants would be removed from staging areas following completion of Project activities. For these reasons, the Project would have a less-than-significant impact related to the risk of pollutant release due to site inundation by flooding.

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The Proposed Project is located in the Carmel Valley Groundwater Basin. Neither the MPWMD nor the DWR have adopted a water quality control plan or sustainable groundwater management plan that applies to the Carmel Valley Groundwater Basin. The Proposed Project consists of the removal of existing Eucalyptus trees and the replacement of fencing at the CAWD WWTP and does not include any new development that could potentially conflict or obstruct with implementation of a water quality control plan. No impact would occur.

4.10 Noise

Environmental Setting

Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound is mechanical energy transmitted in the form of a wave because of a disturbance or vibration. Sound levels are described in terms of both amplitude and frequency. Noise is commonly defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (“dB”) with 0 decibels corresponding to the threshold of hearing. Most sounds consist of a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound.

The County General Plan provides land use compatibility guidelines for community noise levels. Normally acceptable noise levels range between 50 and 60 dBA for single-family residential land uses and between 50 and 70 dBA for neighborhood parks, schools, and commercial uses. Additionally, normally acceptable noise levels for agricultural land use range between 50 and 75 dBA (Monterey County, 2010). Based on the County guidelines, sensitive noise receptors within the vicinity of the

Community Treatment Areas of the Proposed Project would include private residences, commercial uses, and schools. Sensitive receptors within the Community Treatment Areas consist mainly of residential receptors, with some commercial receptors. The majority of the Strategic Fuelbreak treatment areas are not located near sensitive receptors, with the exception of several residential receptors. Additional guidance for noise is provided by the California Department of Transportation ("Caltrans") 2018 *Standard Specifications* document (Section 14-8.02A), which suggests that construction equipment should not exceed 86 dBA L_{max} at a distance of 50 feet from job site activities between 9:00 PM to 6:00 AM.

Project components would be located primarily with open space areas, with some of the Community Treatment Areas being near or abutting existing residential and commercial uses. The Proposed Project would involve the limited use of mechanized equipment, including chainsaws, a stump grinder, man lift, small backhoe/skid steer, and small front-end loader, which may result in increased noise levels at sensitive receptors during implementation of the Project. There are no active airports within two (2) miles of any of the Project components.

Regulatory Environment

State

The State of California regulates vehicular and freeway noise affecting classrooms, sets standards for sound transmission and occupational noise control, and identifies noise insulation standards and airport noise/land-use compatibility criteria.

California General Plan Guidelines**:** The State of California General Plan Guidelines, published by the Governor's Land Use and Climate Innovation ("LCI", formerly the Office of Planning and Research ("OPR")), also provides guidance for the acceptability of projects in specific CNEL/Ldn contours. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution. For multi-family land uses, the State of California General Plan Guidelines identify a "normally acceptable" exterior noise level of up to 65 dBA CNEL/Ldn. Multi-family land uses are considered "conditionally acceptable" in noise environments of 60 to 70 dBA CNEL/Ldn, "normally unacceptable" in exterior noise environments of 70 to 75 dBA CNEL/Ldn, and "clearly unacceptable" in exterior noise environments exceeding 75 dBA CNEL/Ldn. Assuming a minimum exterior-to-interior noise reduction of 25 dB, an exterior noise environment of 70 dBA CNEL/Ldn would allow for a normally acceptable interior noise level of 45 dBA CNEL/Ldn.

California Code of Regulations**:** The California Commission of Housing and Community Development officially adopted noise insulation standards in 1974. In November 1988, the Building Standards Commission approved revisions to these standards (Title 24, Part 2, California Code of Regulations). Title 24 requires interior noise levels attributable to exterior sources must not exceed 45 dB in any habitable room. Additionally, the code specifies that multi-family residential buildings or structures that will be located in exterior CNEL (or Ldn) contours of 60 dBA, or greater, of sources such as a freeway, expressway, parkway, major street, thoroughfare, airport, rail line, rapid transit line or industrial noise source shall require an acoustical analysis showing that the building has been designed to limit intruding noise to an interior CNEL (or Ldn) of 45 dBA. Predictions must also be made for future noise levels for a period of at least 10 years from the time of building permit application.

Local

***1982 Monterey County General Plan*:** None of the policies provided by the 1982 Monterey County General Plan related to noise are applicable to portions of the Proposed Project.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the regulation of noise. None of the noise-related goals from the Carmel Area Land Use Plan may apply to the Proposed Project.

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 in the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, in 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?	☐	☐	☐	■

Impact Discussion

a. Would the project result in 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?

The Proposed Project involves the removal of Eucalyptus trees and fence replacement at the existing CAWD WWTP and would result in temporary noise during demolition and construction activities. Mechanized implementation equipment would consist of chainsaws, a stump grinder, man lift, small backhoe/skid steer, and small front-end loader, as well as vehicles (work trucks, dump trucks, personal vehicles) travelling to and from the Project site. Noise would be intermittent and temporary, lasting between the hours of 8:00 AM and 5:00 PM, Monday through Friday. Therefore, the Proposed Project would have a less-than-significant impact with regards to ambient noise levels.

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

The Proposed Project involves the removal of Eucalyptus trees and fence replacement at the existing CAWD WWTP. The nearest sensitive receptors are approximately 185 feet northeast of the Project site. While the Project would generate some groundborne vibration due to the removal of trees and fencing, these vibrations would be short-term and would not adversely impact sensitive receptors. In addition,

Project activities would occur throughout the Project site and would not be concentrated in single areas for long periods of time. Therefore, the Proposed Project would have a less-than-significant impact with regards to groundborne vibration.

c. For a project located in 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?

The Proposed Project is not located in the vicinity of an operational private airstrip or an airport land use plan, or within two (2) miles of a public or public use airport (Monterey County, 2025). The Proposed Project consists of tree removal and fence replacement at the existing CAWD WWTP and would not expose people residing or working in the Project area to excessive noise levels from airport operation. Therefore, no impact would occur.

4.11 Public Services

Environmental Setting

Key public services to the Proposed Project area (police protection, fire protection, etc.) are provided by the following agencies.

Police

The Monterey County Sheriff's Department provides police protection services for unincorporated areas of Monterey County, including the Project site. The Department's headquarters are located at 1414 Natividad Road in Salinas, which is approximately 19 miles northeast of the Project area (Monterey County Sheriff's Office, 2024).

Fire

The Proposed Project area is located entirely within a Local Responsibility Area ("LRA"). Responding agencies for fire emergencies include Cypress Fire Protection District. Cypress Fire Protection District serves the Project site and surrounding area via Station 25 located at 2775 Rio Road (Cypress Fire Protection District, 2025).

Schools

The Carmel Unified School District ("CUSD") serves the schools within the Project area. CUSD operates three (3) elementary schools, one (1) middle school, two (2) high schools, one (1) child development center, and one (1) adult school. The closest school to the Project site is Carmel River School, located approximately 0.2 mile to the northwest.

Parks

There are several parks in the region, including Garland Ranch Regional Park and Cachagua Community Park operated by Monterey Peninsula Regional Parks District ("MPRPD"). Additionally, the Mission Trail Nature Preserve, located in and operated by the City of Carmel, is located approximately 0.2 mile north of the Project site.

Regulatory Setting

Local

1982 Monterey County General Plan: None of the policies provided in the 1982 County General Plan related to public services are applicable to the Proposed Project.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to public services. None of the public service-related goals from the Carmel Area Land Use Plan may apply to the Proposed Project.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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:				
a) Fire protection?	☐	☐	■	☐
b) Police protection?	☐	☐	■	☐
c) Schools?	☐	☐	☐	■
d) Parks	☐	☐	☐	■
e) Other public facilities	☐	☐	☐	■

Impact Discussion

a. 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 fire protection?

The Proposed Project consists of tree removal and fence replacement at the existing CAWD WWTP and would have no physical impacts on existing or proposed fire protection facilities. Although unlikely, Cypress Fire Protection District and Monterey County Regional Fire Protection District may be required to respond to emergencies during Project activities. Project activities would occur over 90 workdays and would not significantly impact fire protection services or require construction of new or remodeled fire protection facilities. In addition, all Project activities would comply with applicable safety requirements. Therefore, this impact is less-than-significant.

b. 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 police protection?

The Proposed Project consists of tree removal and fence replacement at the existing CAWD WWTP and would have no physical impacts on existing or proposed police facilities. Although unlikely, the Monterey County Sheriff's Office may be required to respond to emergencies during Project activities. Project activities would occur over 90 workdays and would not significantly impact police protection services or require construction of new or remodeled police facilities. In addition, all Project activities would comply with applicable safety requirements. Therefore, this impact is less-than-significant.

c. *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 schools?*

The Proposed Project consists of tree removal and fence replacement at the existing CAWD WWTP and would have no physical impacts on schools. The Project would not require the construction of new or remodeled educational facilities. Therefore, no impact would occur.

d. *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 parks?*

The Proposed Project consists of tree removal and fence replacement at the existing CAWD WWTP and would have no physical impacts on parks. The Project would not require the construction of new or remodeled park facilities. Therefore, no impact would occur.

e. *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 other public facilities?*

The Proposed Project consists of tree removal and fence replacement at the existing CAWD WWTP and would have no physical impacts on public facilities. Additionally, the Project would not require the construction of new or remodeled public facilities. Therefore, no impact would occur.

4.12 Transportation

Environmental Setting

Regional access to the Proposed Project area is provided via a private access road accessed from SR 1.

Regulatory Environment

State

Senate Bill 743: SB 743 required that starting July 2020 transportation impact for projects per CEQA be based on a project's VMT. CEQA Guidelines Section 15064.3, subdivision (b)(1) calls for the evaluation of transportation impacts of projects based on VMT. CEQA uses the VMT metric to evaluate a project's transportation impacts. The publication *Technical Advisory on Evaluating Transportation Impacts in CEQA, State of California Governor's Office of Planning and Research*, December 2018, suggests that a significant environmental impact would occur if a project would generate more than 110 trips per day.

Local

***1982 Monterey County General Plan*:** None of the policies provided in the 1982 County General Plan related to transportation are applicable to the Proposed Project.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the regulation of transportation. None of the transportation-related goals from the Carmel Area Land Use Plan may apply to the Proposed Project.

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?	☐	☐	☐	■

Impact Discussion

a. Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

The Proposed Project consists of tree removal and fence replacement at the existing CAWD WWTP outside of existing roadways, transit facilities, bicycle facilities, and pedestrian facilities. Therefore, implementation of the Proposed Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. No impact would occur.

b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

The Project would result in a nominal increase in traffic associated with tree removal and fence replacement at the existing CAWD WWTP. CEQA Guidelines Section 15064.2 subdivision (b)(1) calls for the evaluation of transportation impacts of projects based on VMT. CEQA uses the VMT metric to evaluate a project's transportation impacts. The County has not yet adopted VMT thresholds. In the absence of County VMT standard metrics, this IS/MND relies on the LCI's recommended small project screening threshold to determine whether the Proposed Projects VMT effects would be significant. The Proposed Project would result in a significant traffic-related effect if the Proposed Project would generate more than 110 daily trips.

The Proposed Project would result in temporary increases in traffic during initial implementation. Implementation would require a maximum of ten (10) workers onsite at any given time. Most equipment for the Project would be brought to the Project site and stored in temporary staging areas.

Vehicles would bring materials and equipment such as chainsaws, a stump grinder, a small backhoe/skid steer, small front end-loader, and man-lift to the Project site. Equipment may be delivered all at once or deliveries could take place on an as-needed basis over the course of Project construction. The Project is anticipated to be completed over the course of occur over the course of 90 workdays. Based on the construction schedule, and the temporary nature of Project construction, it is unlikely that implementation traffic would exceed the threshold of 110 daily trips. In addition, construction period trips would not be considered a permanent increase in VMT. Due to the temporary nature of Project construction, this impact would be less-than-significant.

Following completion of the Project, maintenance of the new fence would be consistent with CAWD's existing maintenance schedule for the WWTP, and no new trips would be required. Therefore, anticipated operational traffic trips would be well below the threshold of 110 daily trips. This represents a less-than-significant impact.

c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The Proposed Project consists of tree removal and fence replacement at the existing CAWD WWTP and does not include any work within existing roadways or new roadway features that would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersection) or incompatible uses. No impact would occur.

d. Would the project result in inadequate emergency access?

The Proposed Project consists of tree removal and fence replacement at the existing CAWD WWTP and would not result in inadequate emergency access. The Proposed Project would not involve the main entrance gate to the WWTP, and emergency access would not be affected during Project construction. No work would occur within any public roadways. No impact would occur.

4.13 Tribal Cultural Resources

Pacific Legacy prepared a Cultural Resources Assessment for the Proposed Project site in September 2020. The Cultural Resources Assessment includes the results of background research and field

reconnaissance of the Proposed Project's APE. Background research consisted of a records search from the Northwest Information Center at Sonoma State University and a SLF search with the NAHC. The field reconnaissance consisted of a pedestrian survey of the APE on September 10, 2020, which investigated the APE for cultural and Tribal cultural resources. See **Section 4.4 Cultural Resources** for additional discussion.

CAWD sent out tribal consultation letters pursuant to AB 52 based on their internal consultation list on May 16, 2025. A sample outreach letter is provided in **Appendix D**. In addition, CAWD conducted additional outreach via email on May 22, 2025. CAWD received a request to consult on the Proposed Project from the Costanoan Rumsen Carmel Tribe on May 22, 2025. CAWD met with representatives of the Costanoan Rumsen Carmel Tribe on July 17, 2025 to consult on the Proposed Project. The representatives of the Costanoan Rumsen Carmel Tribe expressed their concerns related to potential inadvertent discovery of tribal resources during the Proposed Project.

Environmental Setting

Regional History

Prior to Euro-American contact, the area now known as Monterey County was inhabited by native speakers of the Costanoan, Esselen, and Salinan languages. The traditional way of life for the native inhabitants was largely destroyed in the 1760s with the arrival of Euro-Americans.

The Ohlone inhabited a large range along the coast of California that extended from the San Francisco Peninsula south to the Monterey Peninsula and included inland areas from the Santa Clara Valley through San Juan Batista. While first contact between Indigenous communities and Europeans took place in 1542, European settlement began in the 1760's when the Spanish established colonies. The establishment of Misión San Carlos de Borromeo de Carmelo marked the beginning of a period of intense Native American conversion to Catholicism. After Mexico gained its independence from Spain in 1820, the government granted most land around Monterey to wealthy Mexican families as large tracts of lands known as ranchos. Following the 1846 capture of California by the United States, industry in the Salinas Valley shifted away from grazing lands and towards agriculture. As the competition for land increased with the arrival of Anglo settlers, Native American communities continued to disappear.

Regulatory Environment

State

California Public Resources Code: Several sections of the California PRC protect cultural resources located on public land. Under PRC Section 5097.5, no person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site (including fossilized footprints), inscriptions made by human agency, rock art, or any other archaeological, paleontological, or historical feature situated on public lands, except with the express permission of the public agency that has jurisdiction over the lands. Violation of this section is a misdemeanor.

PRC Section 5097.98 states that if Native American human remains are identified within a project area, the landowner must work with the Native American Most Likely Descendant as identified by the NAHC to develop a plan for the treatment or disposition of the human remains and any items associated with

Native American burials with appropriate dignity. Section 15064.5 of the State CEQA Guidelines also addresses these procedures. California Health and Safety Code Section 7050.5 prohibits disinterring, disturbing, or removing human remains from a location other than a dedicated cemetery. Section 30244 of the PRC requires reasonable mitigation for impacts on paleontological and archaeological resources that occur because of development on public lands.

California Health and Safety Code: California Health and Safety Code Section 7050.5 regulates the treatment of human remains. In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site, or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined that the remains are not subject to his or her authority. If the coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact the NAHC by telephone within 24 hours.

Native American Heritage Commission**:** The NAHC was created by statute in 1976, is a nine-member body appointed by the Governor to identify and catalog cultural resources (i.e., places of special religious or social significance to Native Americans and known graves and cemeteries of Native Americans on private lands) in California. The Commission is responsible for preserving and ensuring accessibility of sacred sites and burials, the disposition of Native American human remains and burial items, maintaining an inventory of Native American sacred sites located on public lands, and reviewing current administrative and statutory protections related to these sacred sites.

State Assembly Bill 52: Prior to the enactment of Assembly Bill 52, the State of California found current laws provided limited protection for sites, features, places, objects, and landscapes with cultural value to California Native American Tribes. These items and locations included the protection of Native American sacred places such as places of worship, religious or ceremonial sites, and sacred shrines. California Native Americans have used, and continue to use, natural settings in the conduct of religious observances, ceremonies, and cultural practices and beliefs. These resources reflect the Tribes' continuing cultural ties to the land and their traditional heritage. Many of these archaeological, historical, cultural, and sacred sites are not located in the current boundaries of California Native American reservations and rancherias and therefore are not covered by the protectionist policies of Tribal governments. To recognize California Native American Tribal sovereignty and the unique relationship of California local governments and public agencies with California Native American Tribal governments, and respecting the interests and roles of project proponents, the Legislature enacted AB 52 Native Americans: California Environmental Quality Act.

AB 52 formally recognizes that California Native American prehistoric, historic, archaeological, cultural, and sacred places are essential elements in Tribal cultural traditions, heritages, and identities. California Native American Tribes are experts regarding their Tribal history and practices for which they are traditionally and culturally affiliated. Due to this unique history, and to uphold existing rights of all California Native American Tribes to participate in, and contribute their knowledge to, environmental analysis, projects should include Tribal knowledge about the land and Tribal cultural resources at issue. Projects should also consider a potential significant impact on those resources. Therefore, a meaningful consultation between California Native American Tribal governments and lead agencies, respecting the interests and roles of all California Native American Tribes and project proponents, and the level of required confidentiality concerning Tribal cultural resources shall occur. Doing so will allow identification of potential Tribal cultural resources onsite and incorporation of culturally appropriate mitigation

measures considered by the decision-making body of the lead agency. Doing so also enables California Native American Tribes to manage and accept conveyances of, and act as caretakers of, Tribal cultural resources and ultimately establishes that a substantial adverse change to a Tribal cultural resource has a significant effect on the environment.

Local

***1982 Monterey County General Plan*:** The 1982 Monterey County General Plan includes policies related to the preservation of cultural resources, please see **Section 4.4, Cultural Resources**.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the preservation of tribal cultural resources. Applicable goals from the Carmel Area Land Use Plan are summarized in **Section 4.4 Cultural Resources**.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 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:				
i) 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), or	☐	■	☐	☐
ii) 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.	☐	■	☐	☐

Impact Discussion

a.i. and a.ii, Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 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: 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), or 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.

The Proposed Project is located within the existing CAWD WWTP and does not include on any sites 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). CAWD sent out tribal consultation letters pursuant to AB 52 based on their internal consultation list on May 16, 2025. In addition, CAWD conducted additional outreach via email on May 22, 2025. CAWD received a request to consult on the Proposed Project from the Costanoan Rumsen Carmel Tribe on May 22, 2025 and conducted a consultation meeting with tribal representatives on July 17, 2025. The representatives of the Costanoan Rumsen Carmel Tribe expressed their concerns related to potential inadvertent discovery of tribal resources during the course of the Proposed Project. The inadvertent discovery of and/or damage to tribal resources during implementation of the Proposed Project could result in a potentially significant impact. Therefore, CAWD proposes implementation of the following mitigation measures, drafted based on consultation with representatives of the Costanoan Rumsen Carmel Tribe, to ensure that potential impacts to tribal resources are reduced to a less-than-significant level.

Mitigation Measure TCR-1: Prior to ground disturbing activities, CAWD shall retain a tribal cultural resource monitor affiliated with the Costanoan Rumsen Carmel Tribe to prepare an *Accidental Discovery Plan*. The *Accidental Discovery Plan* shall include policies and procedures for implementation in the event of the inadvertent discovery of tribal resources, including, but not limited to, human remains, during ground disturbing activities. Copies of the *Accidental Discovery Plan* shall be provided to all construction contractors prior to the initiation of ground disturbing activities. A copy of the *Accidental Discovery Plan* shall also be provided to CAWD to ensure compliance with this mitigation measure.

Mitigation Measure TCR-2: Prior to ground disturbing activities, CAWD shall retain a tribal cultural resource monitor affiliated with the Costanoan Rumsen Carmel Tribe to perform a pre-construction tribal cultural resource sensitivity training for all construction personnel involved in ground disturbing activities. The training shall include the regulatory contexts guiding the Proposed Project and governing the protection of tribal resources, guidance for identifying tribal resources, protocols to follow in case of inadvertent discoveries, and contact information for all key Project personnel, the lead agency, and the Monterey County Sheriff-Coroner. Copies of the training materials and a sign-in sheet from the training shall be provided to CAWD to ensure compliance with this mitigation measure.

Mitigation Measure TCR-3: At least 30 days prior to the initiation of construction, CAWD shall notify the Costanoan Rumsen Carmel Tribe of the planned start of Project implementation. CAWD shall retain a tribal monitor affiliated with the Costanoan Rumsen Carmel Tribe to provide monitoring for tribal cultural resources. Tribal monitoring shall be required during all ground disturbing activities associated with the Proposed Project and shall be supplemental to monitoring by a qualified archaeologist. Tribal monitors, at their discretion, may choose to open and close each construction work day with traditional songs and prayers. Tribal monitors would have the authority to halt work within 50 feet of a potential find until they have evaluated the potential find to be a tribal cultural resource under CEQA.

If the tribal monitor determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource or tribal cultural resource

under CEQA, he/she shall notify CAWD and other appropriate parties of the evaluation. Tribal monitors shall either review and provide edits to mitigation measures proposed by the project archaeologist or suggest alternate mitigation measures to reduce impacts to tribal cultural resources to a less-than-significant level.

The tribal monitor shall contribute to and review the *Monitoring Closure Report* prepared by the project archaeologist and submitted to CAWD at the conclusion of ground disturbing construction activities.

4.14 Utilities and Service Systems

Environmental Setting

Water Supply and Wastewater

California American Water ("CalAm") provides water service to portions of the Project site. The Project site consists of CAWD's WWTP. Other areas lack a centralized wastewater collection agency and are reliant on individual septic systems.

Solid Waste

Waste Management, Inc. provides solid waste and recycling collection services for the unincorporated portions of Monterey County.

Regulatory Environment

State

***Assembly Bill 939*:** California AB 939 established the California Integrated Waste Management Board ("CalRecycle"), which required all California counties to prepare Integrated Waste Management Plans. Additionally, AB 939 required all municipalities to divert 50 percent of their waste stream by the year 2000.

Local

***1982 Monterey County General Plan*:** None of the policies provided in the 1982 County General Plan related to utilities and service systems are applicable to the Proposed Project.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the regulation of utilities and service systems. The following policy from the Carmel Area Land Use Plan may apply to the Proposed Project:

3.3.3.1: The County should support the wastewater reclamation project proposed by the Carmel Sanitary District. The development of new facilities shall avoid damage of riparian habitat and conversion of prime agricultural land.

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 would 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 statuses and regulations related to solid waste?	☐	☐	■	☐

Impact Discussion

a. Would the project 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 would cause significant environmental effects?

The Proposed Project involves the removal of Eucalyptus trees and fence replacement at the existing CAWD WWTP and would not 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. CAWD would coordinate any work around existing utilities with the providers as needed. No impact would occur.

b. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

The Proposed Project involves the removal of Eucalyptus trees and fence replacement at the existing CAWD WWTP and would not introduce new potable water connections from reasonably foreseeable future development that would increase demand on existing or proposed water systems. The Project would not impact water supplies during normal, dry, and multiple dry years. No impact would occur.

c. Would the project 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?

The Proposed Project involves the removal of Eucalyptus trees and fence replacement at the existing CAWD WWTP and would not introduce new wastewater connections that would increase demand on existing or proposed wastewater systems. No impact would occur.

d. and e. Would the project 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? Would the project comply with federal, state, and local management and reduction statuses and regulations related to solid waste?

The Proposed Project involves the removal of Eucalyptus trees and fence replacement at the existing CAWD WWTP. The Proposed Project would generate organic waste from the removal of Eucalyptus and non-organic waste from the removed fencing. Organic and non-organic waste would be disposed of at local waste processing facilities. Non-organic solid waste generated during implementation would be minimal and would be disposed of in compliance all applicable federal, State, and local regulations related to solid waste reduction. This impact represents a less-than-significant impact.

4.15 Wildfire

Environmental Setting

The State Fire Marshal is mandated to classify lands within State Responsibility Areas ("SRAs") into Fire Hazard Severity Zones ("FHSZs"). FHSZs are defined by the California Department of Forestry and Fire Protection ("CALFIRE") based on the presence of fire-prone vegetation, climate, topography, assets at risk (e.g., high population centers), and a fire protection agency's ability to provide service to the area (CALFIRE, 2025). FHSZs are designated as "Very High," "High," or "Moderate." Areas outside of designated SRAs are considered Local Responsibility Areas ("LRAs"), where fire response is the primary responsibility of local fire agencies. Cypress Fire Protection District provides fire responses to LRAs in the Project area, including the Project site since the Project is located entirely within an LRA. The County designates the site as being of high sensitivity for wildfire.

Regulatory Setting

Local

***1982 Monterey County General Plan*:** None of the policies provided by the 1982 Monterey County General Plan related to wildfire are applicable to the Proposed Project.

***Carmel Area Land Use Plan*:** The Carmel Area Land Use Plan includes goals and policies related to the prevention of wildfire. None of the wildfire-related goals from the Carmel Area Land Use Plan may apply to the Proposed Project.

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?	☐	☐	☐	■

a. Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

The Proposed Project involves the removal of Eucalyptus trees and fence replacement at the existing CAWD WWTP outside of public roadways. Therefore, Project activities would not substantially impair an adopted emergency response plan. However, the Proposed Project would result in temporary additional vehicle traffic during construction, with a maximum of ten (10) workers on site. The *County of Monterey Multi-Jurisdictional Hazard Mitigation Plan* (Monterey County, 2022) does not identify specific designated evacuation routes because evacuation routes are considered dynamic and would change based on the nature and location of an emergency. As a result, all local roadways within the Proposed Project area could potentially be utilized as evacuation routes during an emergency. While the Project could result in additional traffic during an emergency, any increase in vehicle traffic would be accommodated by existing roadways and would not substantially impair an adopted emergency response plan or emergency evacuation plan. Once operational, the Proposed Project would not generate any additional vehicle trips that could impair an adopted emergency response plan or emergency evacuation plan. This represents a less-than-significant impact.

b. Would the project, 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?

The Proposed Project involves the removal of Eucalyptus trees and fence replacement at the existing CAWD WWTP and does not include any new habitable structures. The Proposed Project would utilize mechanical equipment that could potentially result in a wildland fire. However, all equipment would be fitted with spark arrestors. In addition, the Proposed Project would remove highly flammable Eucalyptus trees and would reduce the risk of wildfire at the Project site. The Proposed Project would not exacerbate wildfire risks and expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. This represents a less-than-significant impact.

c. Would the project 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?

The Proposed Project involves the removal of Eucalyptus trees and fence replacement at the existing CAWD WWTP and does not include any installation or maintenance of associated infrastructure that that may exacerbate fire risk. No impact would occur.

d. Would the project 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?

The Proposed Project is located in a relatively flat site at the existing CAWD WWTP. The Project parcels are designated as having low risk for landslide hazard (Monterey County, 2025). The Proposed Project involves the removal of Eucalyptus trees and fence replacement at the existing CAWD WWTP and would not expose people or structure to significant risks as a result of runoff, post-fire slope instability, or drainage changes. Therefore, no impact would occur.

4.16 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?	☐	☐	■	☐

Impact Discussion

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?

The Proposed Project consists of tree removal and fence replacement at the existing WWTP. As described below, the Proposed Project would not 1) degrade the quality of environment, 2) substantially reduce the habitat of a fish or wildlife species, 3) cause a fish or wildlife population to drop below self-sustaining levels, 4) threaten or 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 major periods of California history or prehistory.

The Proposed Project would result in temporary construction-period impacts to biological resources, undiscovered cultural or tribal cultural resources, and undiscovered human remains interred outside of a formal cemetery. These impacts would be mitigated to less-than-significant through the incorporation of mitigation measures identified in this IS/MND. No operational impacts associated with the Proposed Project have been identified as a result of the Proposed Project. No additional mitigation is necessary beyond the mitigation identified in each of the respective topical CEQA sections contained in this IS/MND.

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.)

The Proposed Project would not result in a cumulatively considerable adverse environmental effect. To determine whether a cumulative effect requires an Environmental Impact Report ("EIR"), the lead agency shall consider whether the impact is significant and whether the effects of the project are cumulatively considerable (CEQA Guidelines Section 15064(h)(1)). This IS/MND contains mitigation to ensure that all potential impacts are minimized to a less-than-significant level. CEQA allows a lead agency to determine that a project's contribution to a potential cumulative impact is not considerable and thus not significant when mitigation measures identified in the Initial Study will render those potential impacts less than considerable (CEQA Guidelines 15064(h)(2)).

The Proposed Project consists of tree removal and fence replacement at the existing WWTP. Where construction and operational effects are identified, mitigation measures are presented in this IS/MND to reduce these impacts to less-than-significant. The Proposed Project is contained entirely to a 10-foot wide area surrounding the WWTP. No other projects are proposed at the WWTP that could result in a cumulatively considerable impact. No changes to the operation of the WWTP that would result in increased wastewater treatment capacity that could indirectly result in cumulative impacts.

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The Proposed Project would not have a substantial adverse effect on human beings, either directly or indirectly. The Proposed Project consists of tree removal and fence replacement at the existing WWTP. This IS/MND contains mitigation measures to ensure that all potential direct and indirect impacts to human beings would be reduced to less-than-significant.

Chapter 5. List of Preparers and References

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Appendix A
Tree Perimeter Line of Sight Analysis

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4 February 2025

Technical Memorandum

To: Jeff Bandy, P.E., Ph.D., Carmel Area Wastewater District

From: Jack Stobaugh, P.E. C95203, Kennedy Jenks

Review: Nick Lazarakis, P.E., C86579, Kennedy Jenks

Subject: **Tree Perimeter Line of Sight Analysis**
KJ 2468015.00

Introduction

Carmel Area Wastewater District (CAWD, District) is considering removing up to 90 tall eucalyptus trees that currently surround and border the District's wastewater treatment plant (WWTP). The trees were initially planted in the 1980s to serve as a visual screen between the WWTP and local residential areas. The removal of these non-native trees has become a priority to decrease the risk of large falling branches that threaten WWTP infrastructure. In the vegetated area surrounding the plant, there are existing cottonwoods, sycamores, and willow trees that may be able to provide adequate screening without the eucalyptus. See Figure 1 below for a view showing the eucalyptus trees being considered for removal (CAWD 2021).

Figure 1. Location of Eucalyptus Trees Surrounding WWTP (CAWD 2021)

This technical memo (TM) analyzes and presents the data from an updated Light Detection and Ranging (LiDAR) survey of the area around the WWTP that was performed by Sandis and its subconsultants on 31 August 2024. The survey provided updated ground surface elevations and tree heights in the study area. This TM evaluates the feasibility of removing the eucalyptus trees while still maintaining a visual screen around the WWTP from the other existing trees and vegetation surrounding the site. Six representative vantage points were selected by CAWD to analyze the predicted line of sight from surrounding residential areas towards WWTP.

LiDAR Data Collection

Sandis and its subconsultants collected aerial imagery of the survey area shown on Figure 2 on 31 August 2024, at a resolution of 5 cm, with LiDAR point cloud data with an average of 12 points per square meter (ppsm). The imagery was collected using an Ultracam (or equivalent)

digital sensor equipped with forward motion compensation. After gathering the imagery, Sandis and its subconsultants performed analytical aerotriangulation using Hexagon Geospatial's Image Station Analytical Triangulation (ISAT) software. From the LiDAR point cloud data, Sandis completed point cloud registration to the ground control. The data was classified to produce a bare earth digital elevation model (DEM) of the surface with 1-foot contours. All mapping met Federal Geographic Data Committee (FGDC) accuracy requirements for geospatial data. The datum's used are the North American Datum of 1983 (NAD 83) for horizontal coordinates and the North American Vertical Datum of 1988 (NAVD 88) for vertical coordinates.

Sandis and its subconsultants also provided digital orthorectification services for this project. These services consisted of using control from the aerotriangulation and ground survey to tie the digital images to existing ground coordinates. Sandis also used the LiDAR bare earth DEM to adjust each image pixel into its correct position. The project data was delivered to Kennedy Jenks via .LAS, .TIF, and Civil 3D files, including a ground class point cloud and first-return point clouds for all trees and objects. The first-return tree points were contained in rasters of the tree elevation data, color coded by elevation, seen in Figure 3.

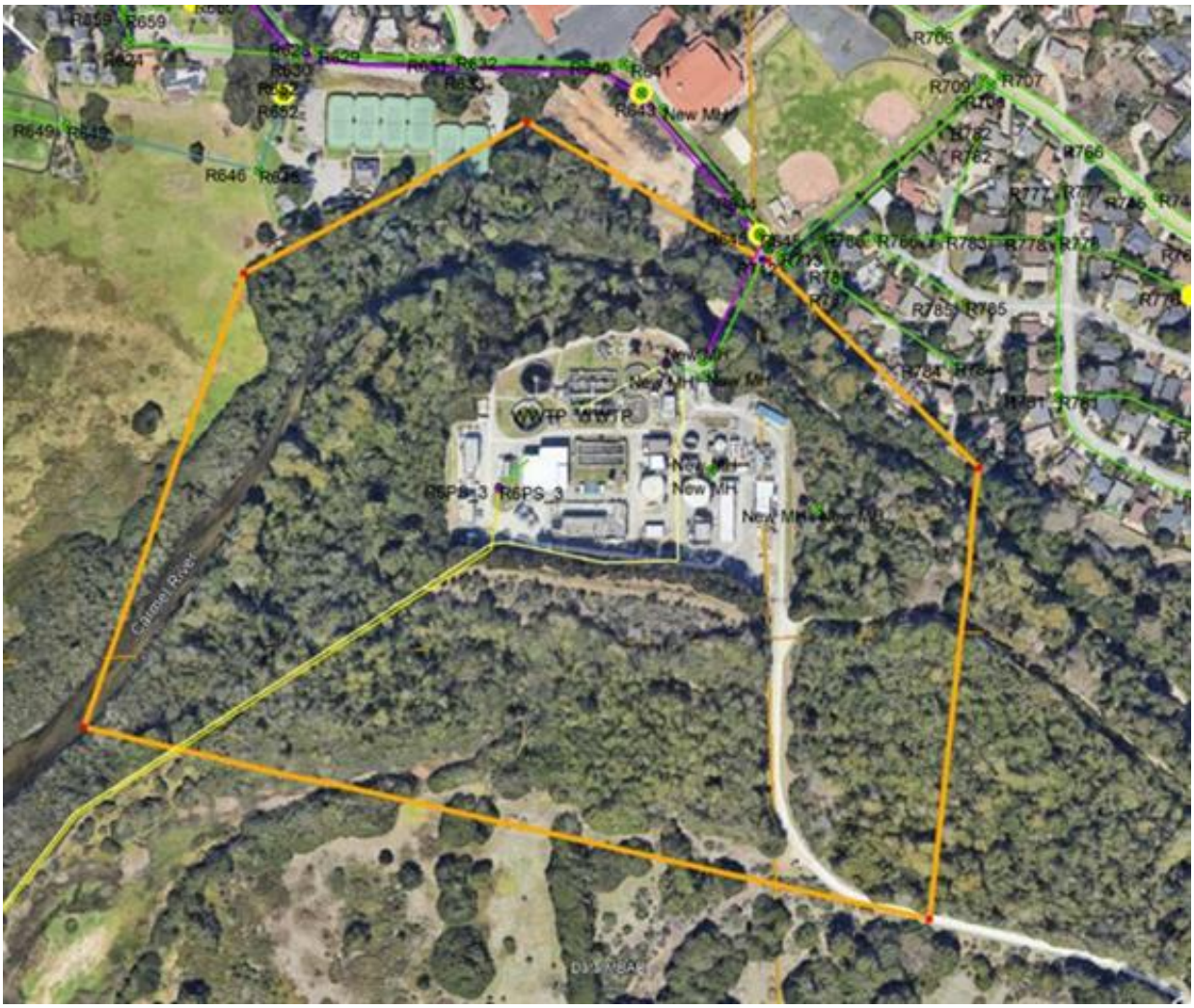


Figure 2. Approximate LiDAR Survey Perimeter

Data Analysis and Assumptions

The LiDAR data provided by Sandis included elevation data for both the ground surface and for tree heights within an approximately 55-acre area surrounding the WWTP site shown in Figure 2. A heat map showing the detected tree elevations within the survey area is shown on Figure 3.

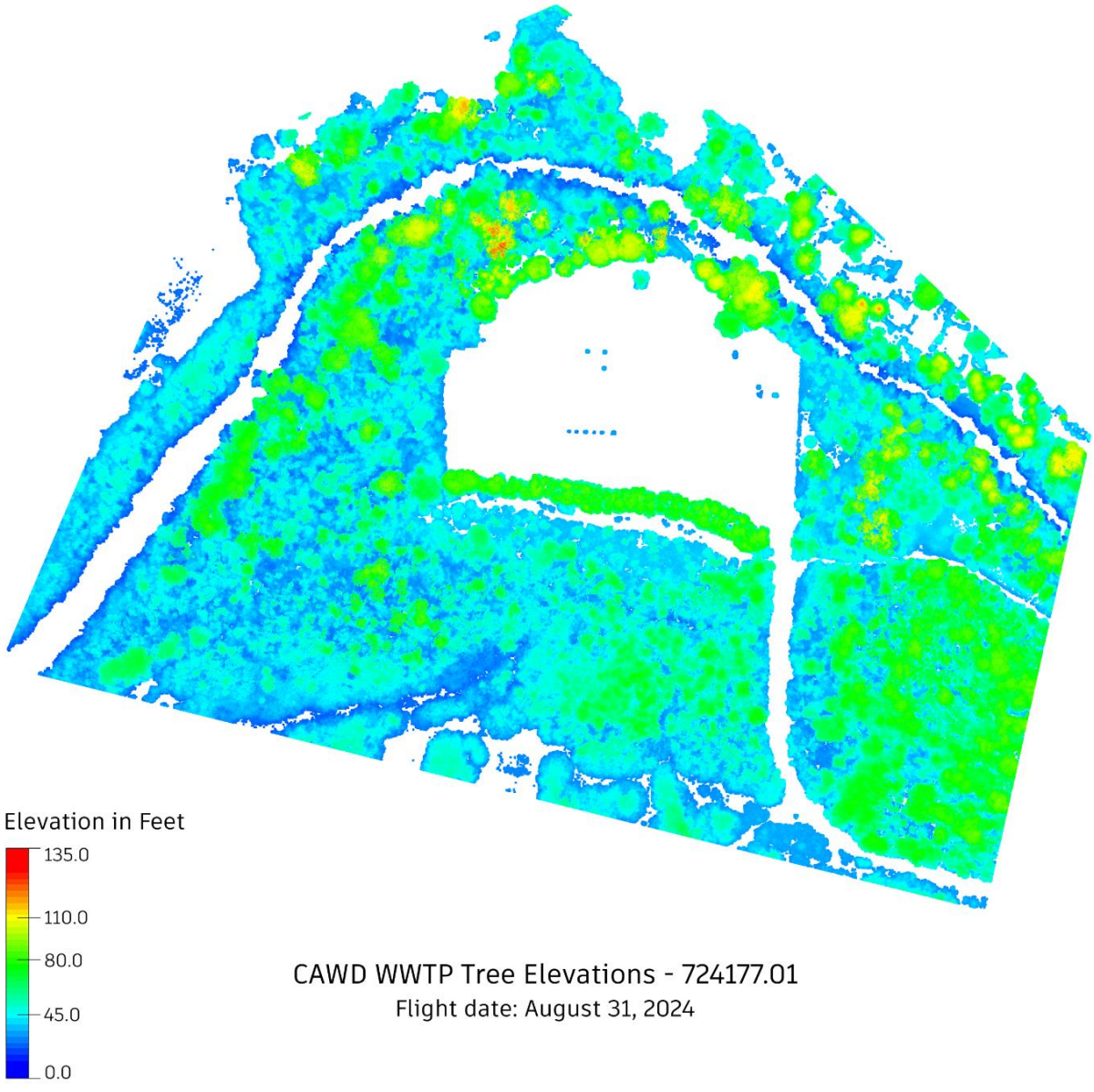


Figure 3. LiDAR Survey Heat Map of Tree Elevations

To process this data for the purpose of analyzing the line of sights from various vantage points, Kennedy Jenks used the topography provided by Sandis to generate an existing ground profile. The point cloud for the tree elevations was processed in Recap and imported to Civil 3D to generate the tree line profile and show the height of the microfiltration and reverse osmosis (MF/RO) facility.

CAWD selected a series of nine vantage points from nearby residential areas surrounding the WWTP. The vantage points were selected to provide a varied representation of nearby residential areas on multiple sides of the WWTP that might be able to see into the plant without the existing eucalyptus tree barrier. Factors that were considered were distance from the WWTP, height relative to the treatment plant, and the overall residential nature of the vantage point. A plan view of the nine vantage points is included in Attachment 1.

The approximate range of street addresses corresponding to the vantage points are as follows:

- View #1: 2800-2900 Ribera Road
- View #2 and View #7: 2900-3000 Cuesta Way
- View #3: 26000-26100 Ladera Drove
- View #4 and View #8: 26200-26300 Atherton Place
- View #5: 26450-26430 Riverside Way
- View #6: 2900-3000 Franciscan Way
- View #9: Highway 1 near intersection with Ribera Road

The ground elevations for vantage points views 1 through 4, 7, and 8 were provided by Sandis, but views 5, 6, and 9 are outside of their data set. In order to provide an approximate ground surface elevation for views 5, 6, and 9, publicly available Google Earth elevations were used, with an adjustment factor of +4.1 feet. This adjustment factor was determined by selecting a set of known Sandis LiDAR elevation points within the August 2024 flyover zone and comparing them to a set of Google Earth elevations from those same points. On average, the Google Earth elevations were 4.1 feet lower than the known LiDAR elevation points. Slightly adjusting the vantage point elevations upwards conservatively accounts for any potential discrepancy stemming from the precise elevations.

Another key assumption for this high-level analysis was the selection of the top of either the MF/RO Facility, which is around 28 feet, or the top of the Influent Pump Station (IPS), which is

about 25 feet, as the point of reference within the WWTP. The MF/RO Facility was chosen as the end point for many section cuts due to its central location within the WWTP, and its height relative to other structures within the WWTP. The IPS building was evaluated from select vantage points where it might be more visible because of proximity or gaps in foliage.

To provide a conservative representation of the line of sight at the residential vantage points 1 through 8, the section cuts assume a vantage point of either a 6-foot tall pedestrian standing on the ground or the height of the second level of a typical two-story house. View 9 was added from Highway 1 near Ribera Road to evaluate possible scenic highway impacts while driving northbound past the crest of the hill. This line of sight assumes vantage points of both a standard and sport utility vehicle car driver of 4 feet and 7 feet, respectively.

Findings and Conclusions

As shown in the section cuts in Attachment 2, all vantage points that were analyzed show that existing trees will likely provide a line-of-sight barrier after removal of the eucalyptus trees. For all section views shown in Attachment 2, the existing tree lines are shown in green, the assumed visual screen barrier is shown as a dashed green line, the ground surface is shown as a dashed black line, and the residential vantage points, MF/RO Facility, and IPS are shown as rectangles. The estimated line of sight is shown as a solid black line. Stationing is shown in feet on the X-Axis and elevations are shown in feet on the Y-Axis.

A limitation of this LiDAR-based analysis is that the flyover only captured the tops of the trees and does not provide any information about the level of screening provided beneath the top of the tree line. This screening analysis assumes that there is a continuous barrier from the top of the tree line down, even though there may be gaps in the foliage. However, there are many trees present outside the study area that might provide additional screening not captured in this study. All views have a gap between the vantage point and the edge of study area where the LiDAR flyover did not capture tree elevation data. This analysis conservatively assumes that no additional line-of-sight barrier is provided in these areas and focuses only on the trees in the vicinity of the WWTP.

In order to provide additional certainty regarding the removal of all of the trees within the eucalyptus tree perimeter, CAWD could pursue the following:

- Line-of-sight analysis at additional vantage points
- Performing additional fly-overs or ground observations during a different time of year or season, to determine the presence of an existing tree barrier when foliage may be reduced due to seasonally-based growth

- Collecting ground survey data at all vantage points where elevations were estimated
- Setting a different line-of-sight target within the WWTP site (other buildings, structures, clarifiers, tanks, etc.)

CEQA is beyond the scope of this evaluation, However, the discussion below provides input to common aesthetic impacts evaluated during CEQA review:

- Impacts to Scenic Vistas (Potential Impact AES-1): There are likely no substantial adverse effects on a scenic vista since no new structures are being constructed.
- Damage to Scenic Resources (Potential Impact AES-2): There is likely less than significant damage on scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within the state scenic highway. Highway 1 elevations near the plant range from 26 feet to 36 feet, equal to or lower than the elevation of the facilities within the treatment plant. This line of sight analysis indicates that there is significant tree cover between the WWTP and Highway 1.
- Degradation of Existing Visual Character (Potential Impact AES-3): The impact on non-urbanized areas and/or urbanized areas is likely less than significant; this analysis indicates that removing eucalyptus trees will not substantially degrade the existing visual character or quality of public views of the site and its surroundings or conflict with applicable zoning and other regulations governing scenic quality.
- Create Light or Glare (Potential Impact AES-4): Since no new lighting is being installed, there is no creation of a new source of substantial light or glare that would adversely affect day or nighttime views in the area. The remaining trees will likely screen any existing light sources at the WWTP.

This initial survey and representative sightline analysis indicates that there may be sufficient vegetation surrounding the WWTP to provide adequate visual screening after the removal of the perimeter eucalyptus trees. The scope of this effort did not include any biological surveys or other environmental evaluations.

Attachments

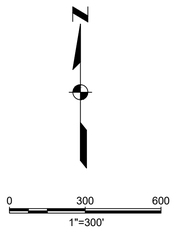
Attachment 1: Plan View
Attachment 2: Section Views 1-9

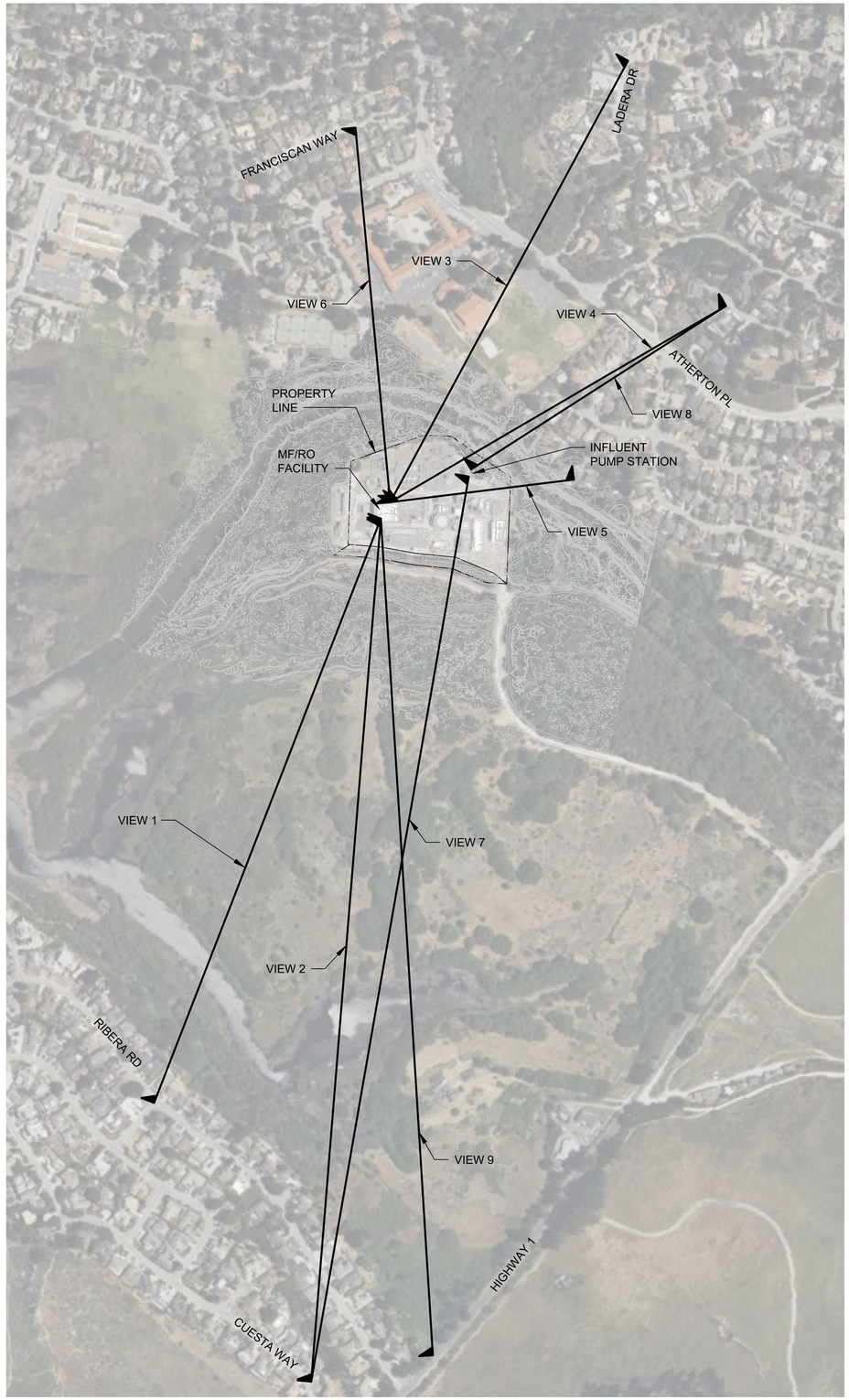
References

Carmel Area Wastewater District, 2021. Eucalyptus Tree Pruning – CEQA Mitigated Negative Declaration.

Attachment 1

Plan View





PLAN
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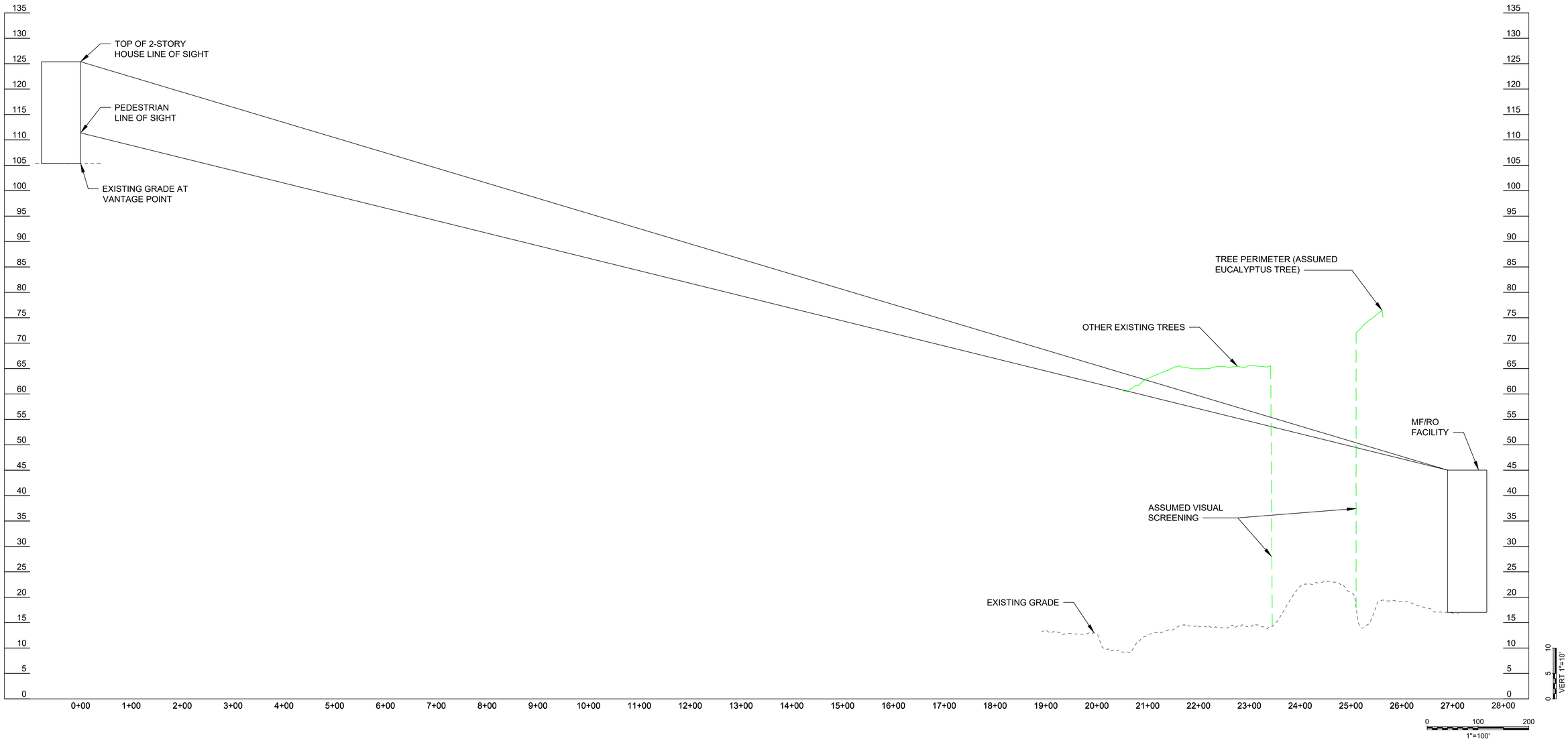
Attachment 2

Section Views 1-9



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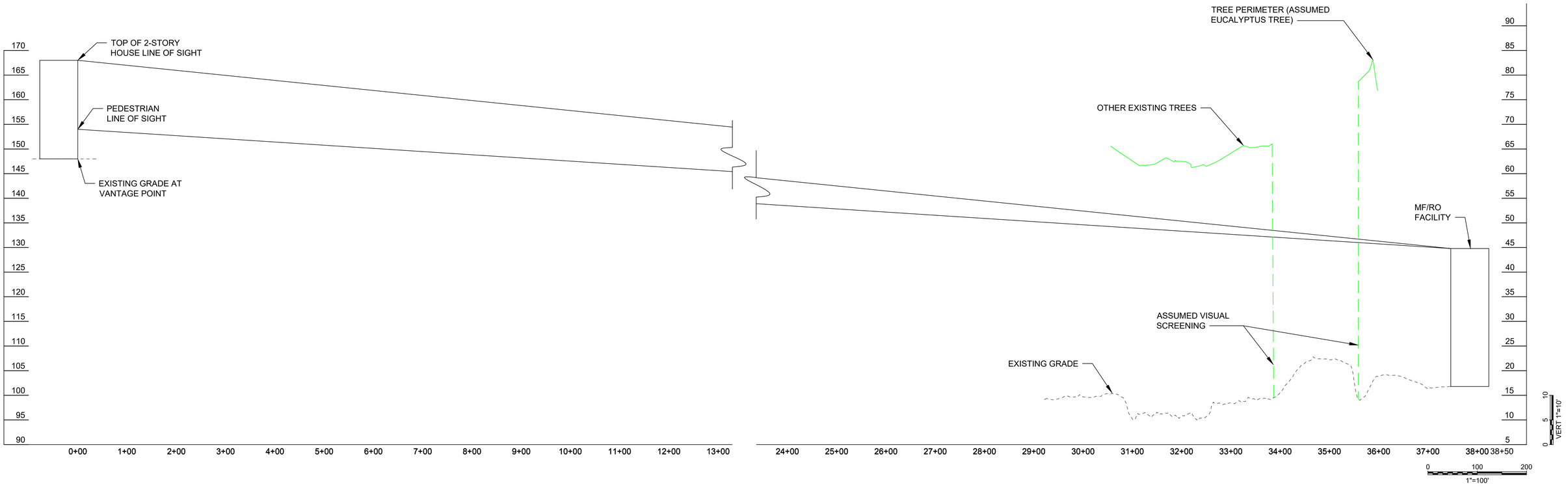

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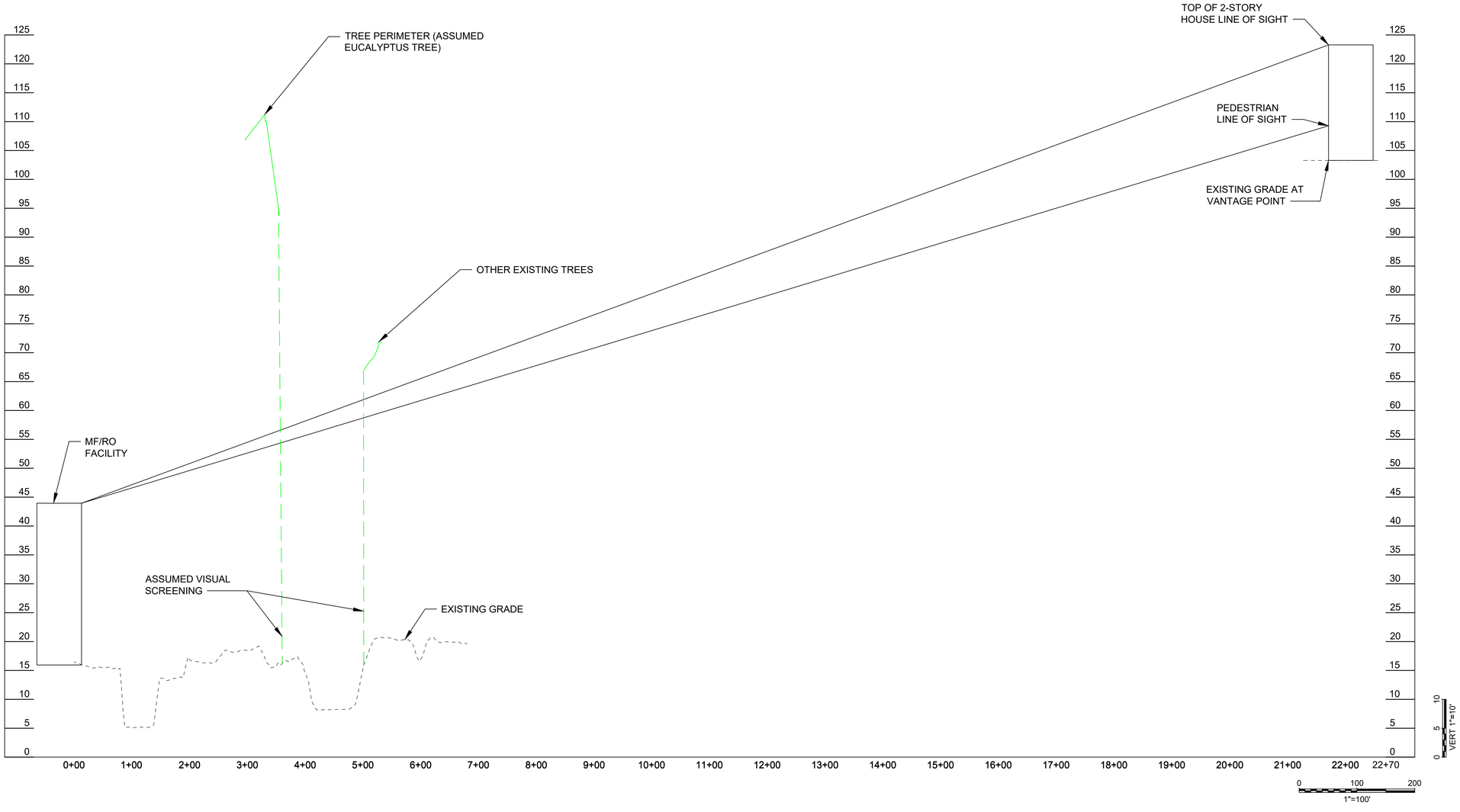

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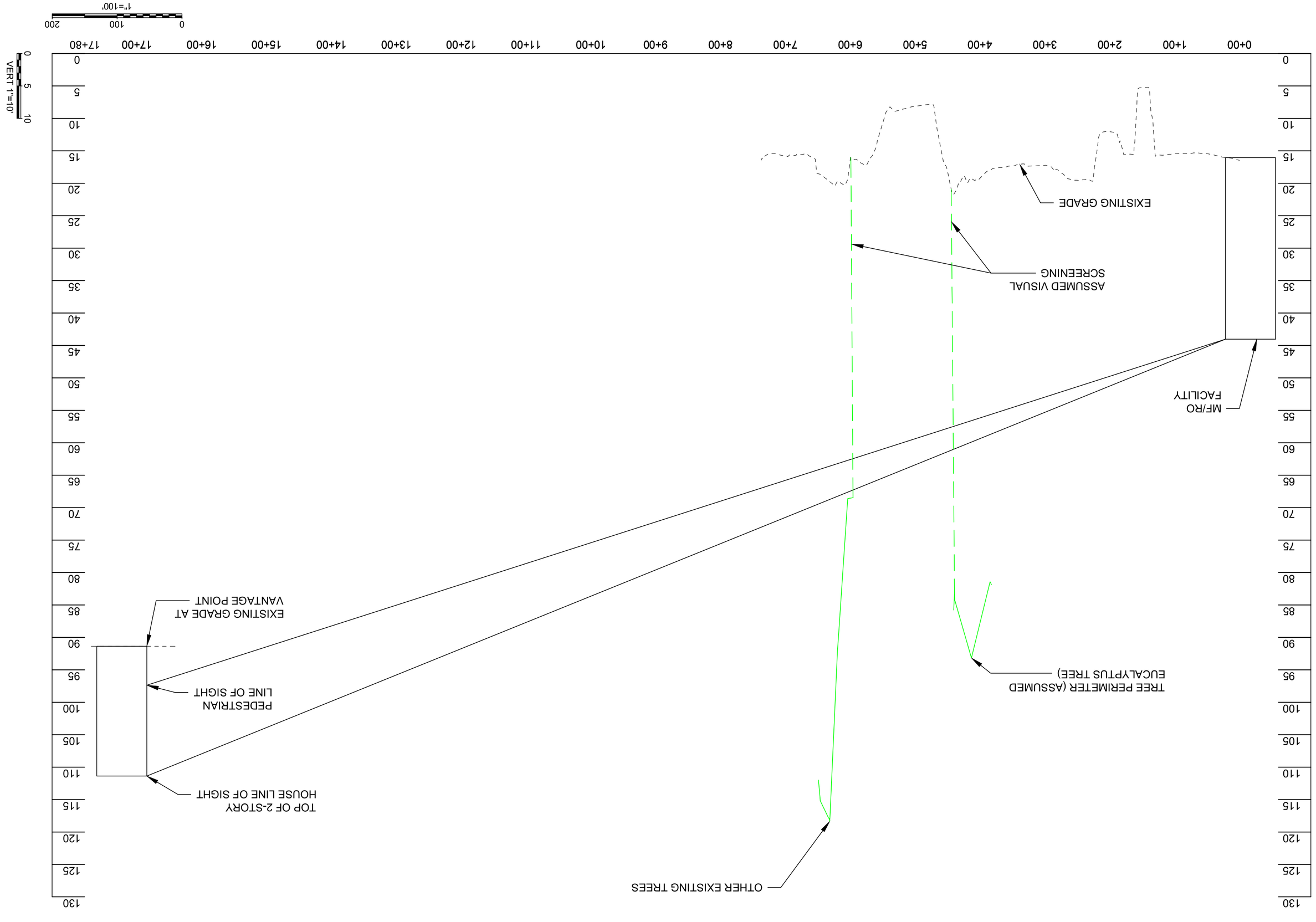
SECTION - VIEW - 4



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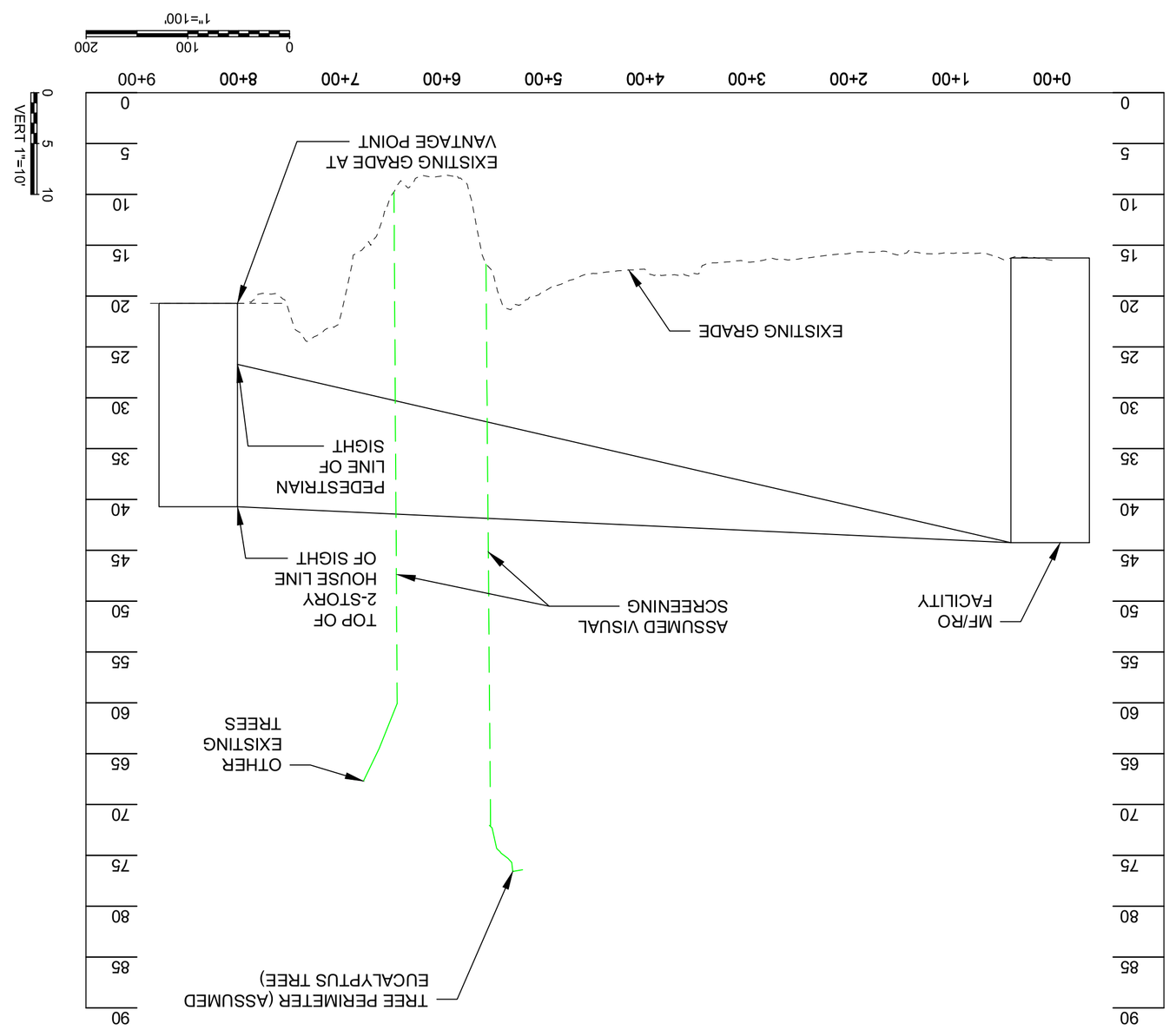

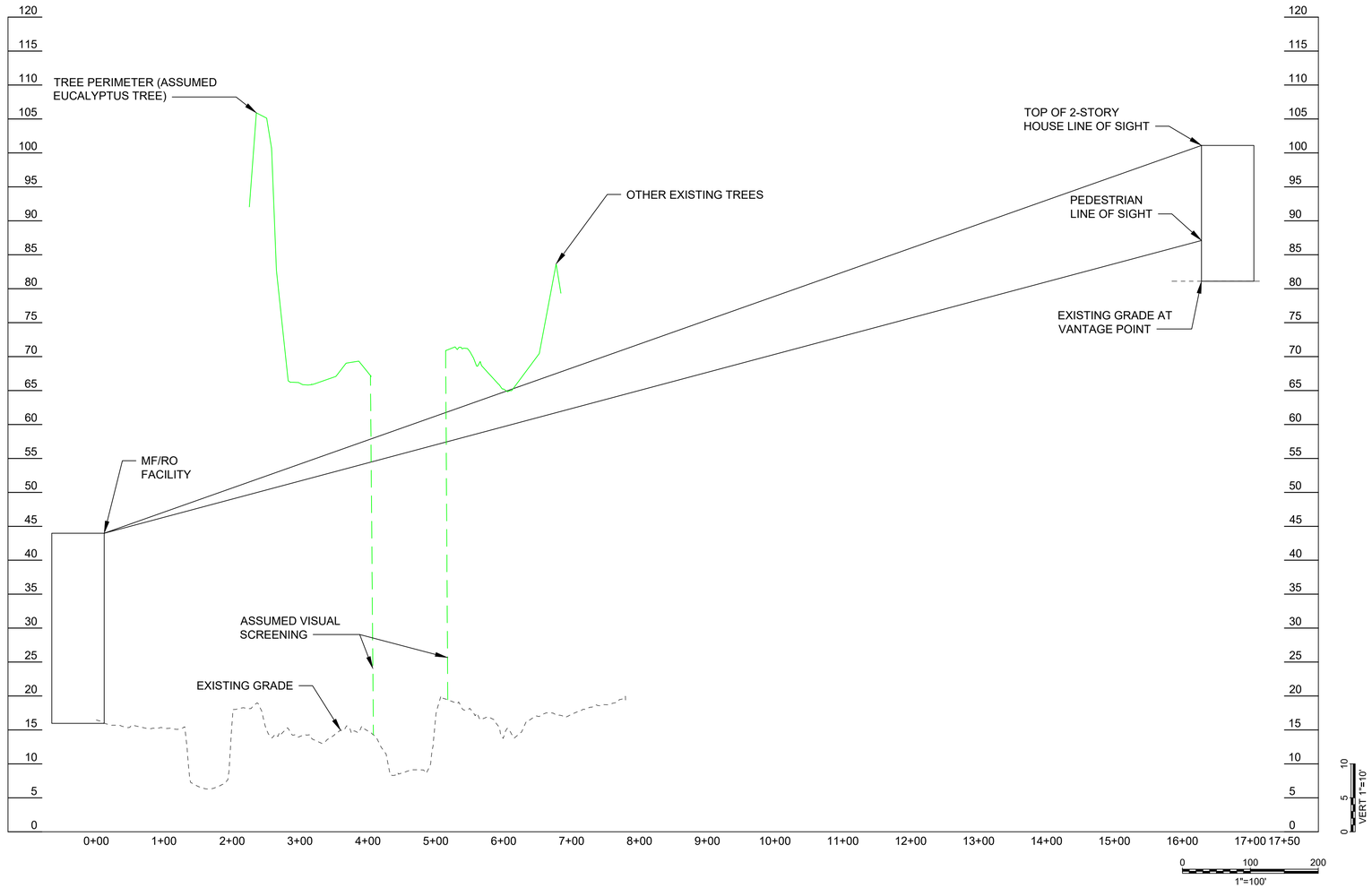

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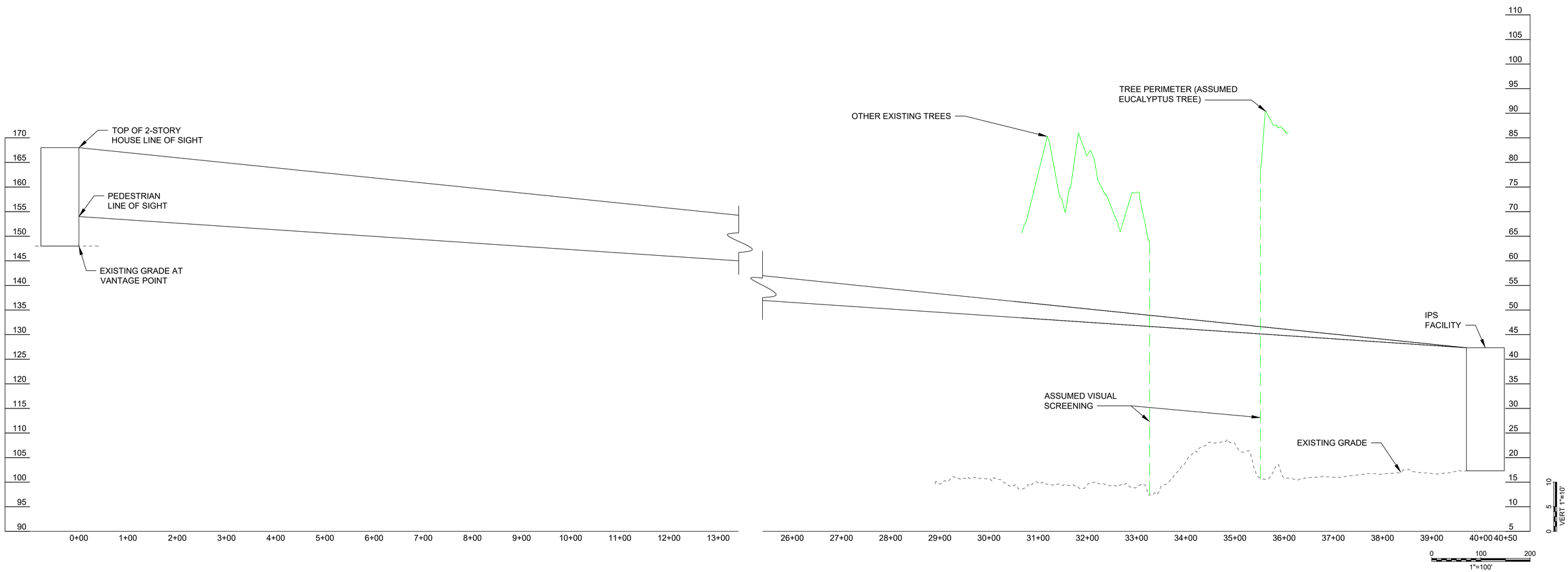

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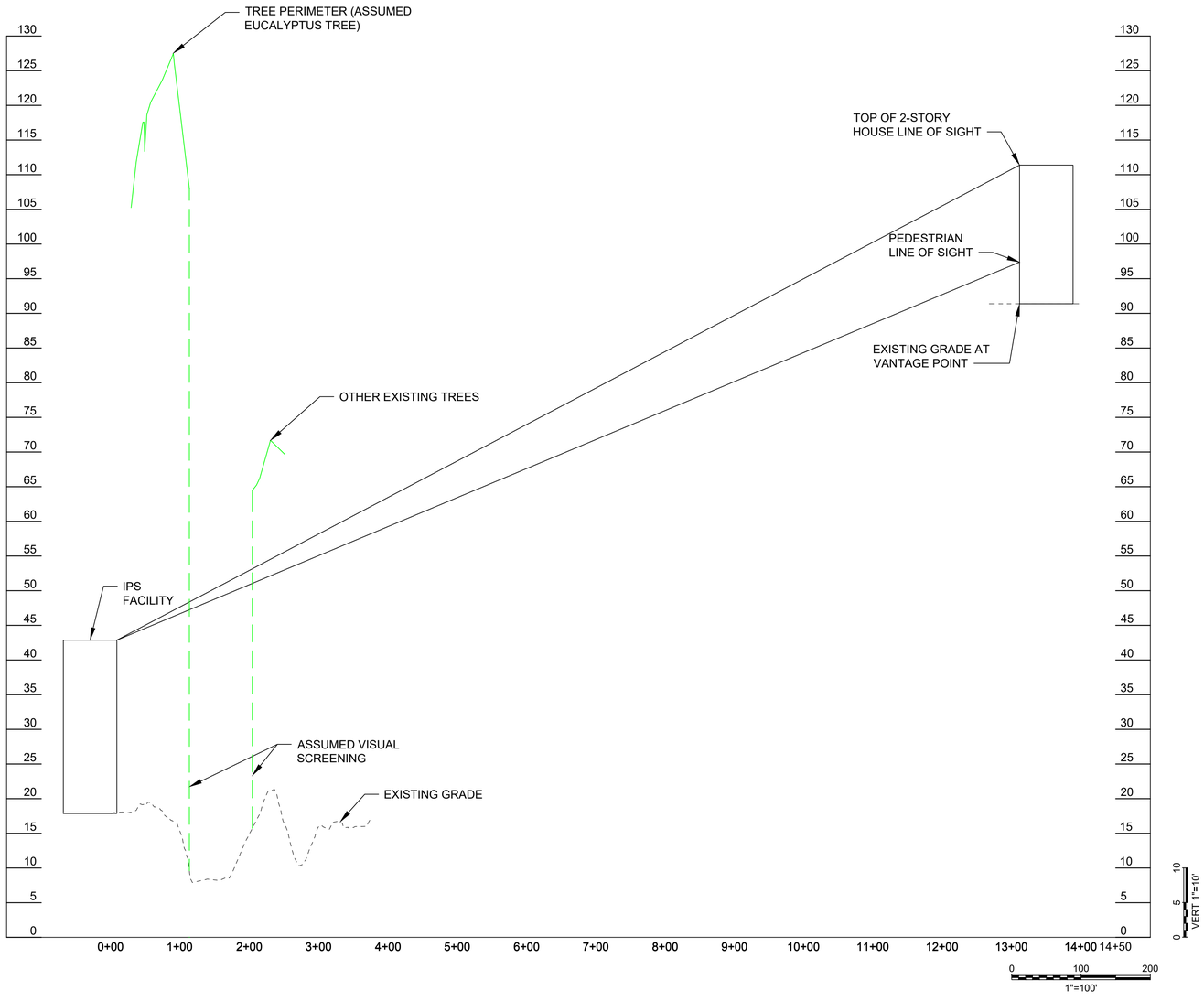

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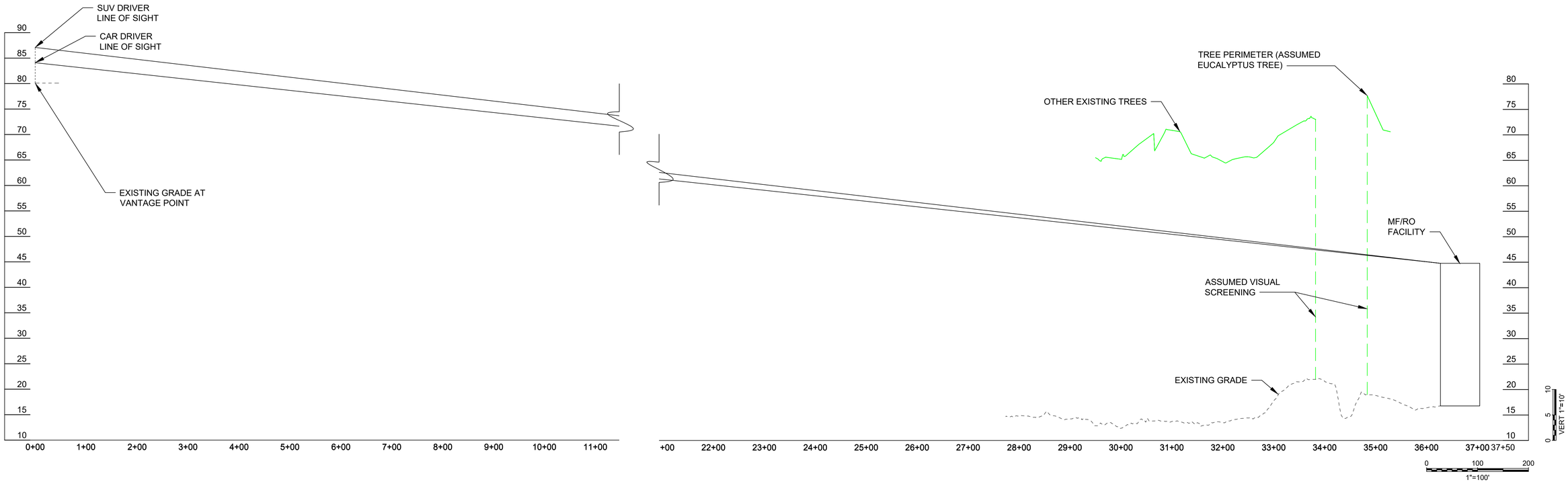

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Appendix B
Supplemental Biological Analysis

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Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Marina (3612167) OR Salinas (3612166) OR Monterey (3612158) OR Seaside (3612157) OR Spreckels (3612156) OR Soberanes Point (3612148) OR Carmel Valley (3612146) OR Mt. Carmel (3612147))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Actinemys pallida southwestern pond turtle	ARAAD02032	Proposed Threatened	None	G2G3	SNR	SSC
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Agrostis lacuna-vernalis vernal pool bent grass	PMPOA041N0	None	None	G1	S1	1B.1
Allium hickmanii Hickman's onion	PMLIL02140	None	None	G2	S2	1B.2
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Anniella pulchra Northern California legless lizard	ARACC01020	None	None	G3	S2S3	SSC
Aphyllon robbinsii Robbins' broomrape	PDORO040Q0	None	None	G1	S1	1B.1
Arctostaphylos edmundsii Little Sur manzanita	PDERI04260	None	None	G2	S2	1B.2
Arctostaphylos hookeri ssp. hookeri Hooker's manzanita	PDERI040J1	None	None	G3T2	S2	1B.2
Arctostaphylos montereyensis Toro manzanita	PDERI040R0	None	None	G2?	S2?	1B.2
Arctostaphylos pajaroensis Pajaro manzanita	PDERI04100	None	None	G1	S1	1B.1
Arctostaphylos pumila sandmat manzanita	PDERI04180	None	None	G1	S1	1B.2
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Astragalus tener var. titi coastal dunes milk-vetch	PDFAB0F8R2	Endangered	Endangered	G2T1	S1	1B.1
Athene cunicularia burrowing owl	ABNSB10010	None	Candidate Endangered	G4	S2	SSC
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G2G3	S1S2	
Bombus occidentalis western bumble bee	IIHYM24252	None	Candidate Endangered	G3	S1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Castilleja ambigua var. insalutata pink Johnny-nip	PDSCR0D403	None	None	G5T2	S2	1B.1
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T2	S2	1B.1
Charadrius nivosus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S3	SSC
Chorizanthe minutiflora Fort Ord spineflower	PDPGN04100	None	None	G1	S1	1B.2
Chorizanthe pungens var. pungens Monterey spineflower	PDPGN040M2	Threatened	None	G2T2	S2	1B.2
Clarkia jolonensis Jolon clarkia	PDONA050L0	None	None	G2	S2	1B.2
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
Collinsia multicolor San Francisco collinsia	PDSCR0H0B0	None	None	G2	S2	1B.2
Cordylanthus rigidus ssp. littoralis seaside bird's-beak	PDSCR0J0P2	None	Endangered	G5T2	S2	1B.1
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S2	SSC
Cypseloides niger black swift	ABNUA01010	None	None	G4	S3	SSC
Danaus plexippus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Proposed Threatened	None	G4T1T2Q	S2	
Delphinium californicum ssp. interius Hospital Canyon larkspur	PDRAN0B0A2	None	None	G3T3	S3	1B.2
Delphinium hutchinsoniae Hutchinson's larkspur	PDRAN0B0V0	None	None	G2	S2	1B.2
Delphinium umbraculorum umbrella larkspur	PDRAN0B1W0	None	None	G3	S3	1B.3
Dipodomys heermanni goldmani Salinas kangaroo rat	AMAFD03065	None	None	G4T2T3	S2S3	
Dipodomys venustus sanctiluciae Santa Lucia Mountain kangaroo rat	AMAFD03043	None	None	G4T3	S3	
Eremophila alpestris actia California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Ericameria fasciculata Eastwood's goldenbush	PDAST3L080	None	None	G2	S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Eriogonum nortonii Pinnacles buckwheat	PDPGN08470	None	None	G2	S2	1B.3
Eryngium montereyense Fort Ord button-celery	PDAPI0Z150	None	None	G1	S1	1B.1
Erysimum ammophilum sand-loving wallflower	PDBRA16010	None	None	G2	S2	1B.2
Erysimum menziesii Menzies' wallflower	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Eumetopias jubatus Steller sea lion	AMAJC03010	Delisted	None	G3	S2	
Euphilotes enoptes smithi Smith's blue butterfly	IILEPG2026	Endangered	None	G5T2	S2	
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Gilia tenuiflora ssp. arenaria Monterey gilia	PDPLM041P2	Endangered	Threatened	G3G4T2	S2	1B.2
Hesperocyparis goveniana Gowen cypress	PGCUP04031	Threatened	None	G1	S1	1B.2
Hesperocyparis macrocarpa Monterey cypress	PGCUP04060	None	None	G1	S1	1B.2
Horkelia cuneata var. sericea Kellogg's horkelia	PDROS0W043	None	None	G4T1?	S1?	1B.1
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Hydrobates homochroa ashy storm-petrel	ABNDC04030	None	None	G2	S2	SSC
Lasiurus cinereus hoary bat	AMACC05032	None	None	G3G4	S4	
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3T1	S2	FP
Lavinia exilicauda harengus Monterey hitch	AFCJB19013	None	None	G4T3	S3	SSC
Layia carnosa beach layia	PDAST5N010	Threatened	Endangered	G2	S2	1B.1
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Lupinus tidestromii Tidestrom's lupine	PDFAB2B3Y0	Endangered	Endangered	G1	S1	1B.1
Malacothamnus involucratus Carmel Valley bushmallow	PDMAL0Q0B1	None	None	G3T2Q	S2	1B.2
Malacothrix saxatilis var. arachnoidea Carmel Valley malacothrix	PDAST660C2	None	None	G5T2	S2	1B.2
Meconella oregana Oregon meconella	PDPAP0G030	None	None	G2	S2	1B.1
Microseris paludosa marsh microseris	PDAST6E0D0	None	None	G2	S2	1B.2
Microtus californicus halophilus Monterey vole	AMAFF11036	None	None	G5T1	S2	
Monardella sinuata ssp. nigrescens northern curly-leaved monardella	PDLAM18162	None	None	G3T2	S2	1B.2
Monolopia gracilens woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
Neotoma macrotis luciana Monterey dusky-footed woodrat	AMAFF08083	None	None	G5T3	S3	SSC
Oncorhynchus mykiss irideus pop. 9 steelhead - south-central California coast DPS	AFCHA0209H	Threatened	None	G5T2Q	S2	SSC
Pelecanus occidentalis californicus California brown pelican	ABNFC01021	Delisted	Delisted	G4T3T4	S3	
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G4	S4	SSC
Pinus radiata Monterey pine	PGPIN040V0	None	None	G1	S1	1B.1
Piperia yadonii Yadon's rein orchid	PMORC1X070	Endangered	None	G1	S1	1B.1
Plagiobothrys chorisianus var. chorisianus Choris' popcornflower	PDBOR0V061	None	None	G3T1Q	S1	1B.2
Plagiobothrys uncinatus hooked popcornflower	PDBOR0V170	None	None	G2	S2	1B.2
Potentilla hickmanii Hickman's cinquefoil	PDROS1B370	Endangered	Endangered	G1	S1	1B.1
Ramalina thrausta angel's hair lichen	NLLEC3S340	None	None	G5?	S2S3	2B.1
Rana boylii pop. 6 foothill yellow-legged frog - south coast DPS	AAABH01056	Endangered	Endangered	G3T1	S1	
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Reithrodontomys megalotis distichlis Salinas harvest mouse	AMAFF02032	None	None	G5T1	S2	
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S3	
Rosa pinetorum pine rose	PDROS1J0W0	None	None	G1Q	S1	1B.2
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sorex ornatus salarius Monterey shrew	AMABA01105	None	None	G5T1T2	S1S2	SSC
Sorex vagrans paludivagus Monterey vagrant shrew	AMABA01072	None	None	G5T1	S2	
Spea hammondii western spadefoot	AAABF02020	Proposed Threatened	None	G2G3	S3S4	SSC
Stebbinsoseris decipiens Santa Cruz microseris	PDAST6E050	None	None	G2	S2	1B.2
Sulcaria spiralifera twisted horsehair lichen	NLT0042560	None	None	G3G4	S2	1B.2
Taricha torosa Coast Range newt	AAAAF02032	None	None	G4	S4	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis hammondii two-striped gartersnake	ARADB36160	None	None	G4	S3S4	SSC
Tortula californica California screw moss	NBMUS7L090	None	None	G2G3	S2?	1B.2
Trifolium buckwestiorum Santa Cruz clover	PDFAB402W0	None	None	G2	S2	1B.1
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Trifolium polyodon Pacific Grove clover	PDFAB402H0	None	Rare	G1	S1	1B.1
Trifolium trichocalyx Monterey clover	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1

Record Count: 97

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Appendix C
Geotechnical Report

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GEOTECHNICAL CONSULTANTS, INC.
Geotechnical Engineering • Geology • Hydrogeology

GEOTECHNICAL REPORT
CARMEL AREA WASTEWATER TREATMENT PLANT
REHABILITATION PROJECT – PHASE 1
CARMEL, CALIFORNIA

October 2014

Prepared for:

Kennedy/Jenks Consultants, Inc.
2191 East Bayshore Road, Suite 200
Palo Alto, CA 94303

Owner:

Carmel Area Wastewater District

Project No. SF13035

500 Sansome Street, Suite 402 • San Francisco, CA 94111 • (415) 981-9950

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1. INTRODUCTION

1.1 PROJECT DESCRIPTION

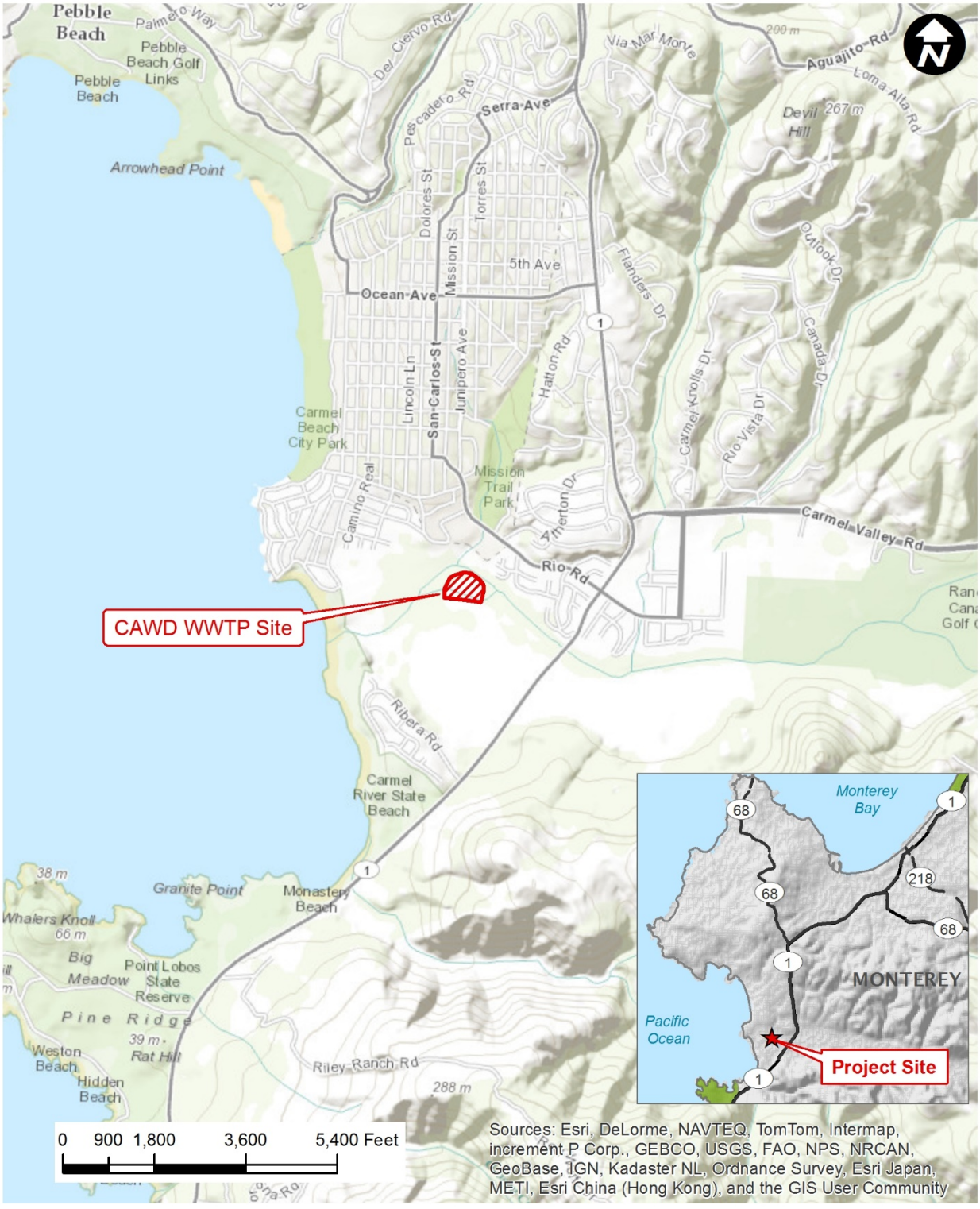
This geotechnical report presents our geologic and geotechnical discussions, interpretations, and recommendations for the Carmel Area Wastewater District's (CAWD) Wastewater Treatment Plant (WWTP) Rehabilitation Project – Phase 1. The WWTP is located at 26900 State Route 1, approximately ½ mile west of State Route 1 and immediately south of the Carmel River in Carmel, California. The project location is shown on ***Figure 1 – Project Location***. Wastewater treatment for the Carmel area has been conducted at the present location since construction of primary treatment facilities starting in 1939. The treatment facilities have been expanded and upgraded, most notably in 1971/1972, 1982 and 1994. Also, microfiltration and reverse osmosis facilities (MF/RO) were added in 2008 to provide recycled water capabilities for irrigation purposes.

This geotechnical report addresses proposed new and future structures at the WWTP consisting of:

- Digester No. 2: 55-foot diameter concrete tank with a sidewall height of approximately 29.5 feet and a volume of 450,000 gallons. Structure floor will be 5 to 10 feet below grade.
- Digester No. 2 Control Building: A two-story reinforced concrete building adjacent to the digester. This building will also be founded about 5 to 10 feet below grade.
- Ferric chloride storage tank: A small enclosed concrete containment facility connected at the southwest corner of Digester No. 2 Control Building.
- Chemical storage tanks: Adjacent reinforced concrete tanks to be installed for sodium hypochlorite and sodium bisulfite storage.
- Transformer pad: A 24-foot by 12.5-foot concrete equipment pad will be installed to the west of the existing Operations Building.
- Future Septage and Vactor rectangular concrete storage tanks: 20,000 and 10,000 gallons, respectively, will be installed in a future construction phase. Floor will be below grade, probably less than 5 feet deep. The two tanks will have a common wall.

The proposed layout of the Rehabilitation Project – Phase 1 improvements is shown on ***Plate 1 – Geotechnical Exploration Map***. Other structures and facilities related to the project may include new underground pipelines and utilities and other minor structures such as equipment pads.

FIGURE 1
PROJECT LOCATION



1.2 WORK PERFORMED

In accordance with our proposal dated November 8, 2013, we completed the scope of work described below:

- ***Background Review.*** We reviewed existing geotechnical reports and boring logs, and published geologic maps. A list of the background materials reviewed is included in the References section.
- ***Field Exploration Program.*** We explored subsurface conditions by means of drilling three rotary wash borings (GTC-B-1 through GTC-B-3) to supplement existing boring information. The boring locations of our borings and relevant historic borings are shown on ***Plate 1 – Geotechnical Exploration Map***. Exploration number, date of exploration, surface elevation and depth are summarized on ***Table 1 – Summary of Geotechnical Explorations***. Elevations were estimated based on a topographic map of the site provided by Kennedy/Jenks Consultants. All elevations on ***Table 1***, and referred to throughout this report, are with respect to North American Vertical Datum of 1988 (NAVD 88).

TABLE 1 – SUMMARY OF GEOTECHNICAL EXPLORATIONS

Boring	Date Drilled	Approximate Surface Elevation (feet, NAVD 88)	Depth (feet)
GTC-B-1	12/5/13	+18.5	51.5
GTC-B-2	12/5/13	+16.0	81.5
GTC-B-3	12/6/13	+16.0	51.5

We visually classified the soil during drilling. We recovered split-spoon (Standard Penetration Test) samples, and relatively undisturbed 2 ½ inch diameter sleeve samples using a split-barrel sampler. Selected samples were transferred to a geotechnical laboratory for testing. Boring logs from this study are presented in ***Appendix A – Supporting Geotechnical Data***. Relevant boring logs and laboratory test results from previous geotechnical studies that were in close proximity to the proposed new structures are presented in ***Appendix B – Logs and Lab Results from Historic Reports***.

- ***Laboratory Testing.*** We performed tests to evaluate moisture, density, grain size distribution, Atterberg limits, unconsolidated undrained (UU) triaxial shear strength, corrosivity and R-value on selected soil samples to measure pertinent index and engineering properties. The laboratory test results are presented in ***Appendix A – Supporting Geotechnical Data*** and on the boring logs on Plates A-1.1 through A-1.3 in ***Appendix A***.

- ***Engineering Analysis.*** We analyzed subsurface conditions and field and laboratory test results, and reviewed regional and local geology and seismicity. Additionally, we analyzed the following geotechnical design issues:
    - Seismic hazards evaluation;
    - Evaluation of the liquefaction potential, seismically-induced settlement and residual shear strengths of liquefied material;
    - Preliminary evaluation of liquefaction mitigation options including pile support and ground improvement.
    - Site specific seismic response spectra for seismic design in accordance with the IBC2012/CBC2013 and ACI350.3-06. Spectra were developed in accordance with ACI350.3 for tank structural evaluation at 5% damping as well as tank sloshing evaluation at 0.5% damping for longer period phenomenon;
    - Design parameters for deep foundations including axial compressive and tensile capacities and lateral load capacities;
    - Anticipated displacement of the piles for the design loading;
    - Bearing capacities and settlement estimates for shallow slabs-on-grade;
    - Lateral earth pressures (active, passive, at rest, and seismic increment) against retaining walls and/or foundation elements;
    - Earthwork recommendations for excavations and backfill, subgrade preparation, trench backfill and compaction requirements; and
    - Structural pavement sections and subgrade recommendations for flexible pavements.
- ***Report.*** We prepared this report presenting our geotechnical/geological findings, interpretations, conclusions, and recommendations for the design of the proposed project.

2. FINDINGS

2.1 SITE SETTING

The CAWD WWTP site is located on a relatively level, slightly elevated pad on the southern, inside bank of a bend along the Carmel River. It lies approximately ½ mile from the outlet of the Carmel River into the Pacific Ocean. Elevations range from approximately 15 feet to 19 feet above NAVD 88 datum. The site lies within the flood plain of the Carmel River, and floods periodically during large storm events.

The WWTP is bounded by the Carmel River to the north, and by a shallow drainage channel and adjacent wetlands to the south. Gentle slopes descend away from the site to the Carmel River to both the east and the west. A residential neighborhood is located on the opposite bank of the Carmel River to the northeast.

2.2 GEOLOGIC SETTING

The CAWD WWTP is located in the City of Carmel within the Carmel River Valley in Monterey County. The Carmel River Valley is located within the Coast Ranges Geomorphic Province of California, a geologically young and seismically active region with many elongate ranges and narrow valleys that approximately parallel the coast. The project area is located in the Santa Lucia Range within a structural block known as the Salinian block. The Salinian block in the project area is a sliver of Cretaceous granitic rock, bounded on the east by the San Andreas fault zone and on the west by the Palo Colorado - San Gregorio fault zone. The granitic bedrock is overlain primarily by Miocene to Holocene sedimentary marine and non-marine sedimentary rocks that are typically folded and faulted into a series of generally northwest-southeast trending folds and faulted blocks, largely as a result of predominantly right-lateral strike-slip stresses related to movement along the San Andreas fault system.

The Carmel River Valley in the project area is bounded by hills and terraces underlain by Cretaceous granitic rock, Quaternary terrace and dune deposits, and Miocene marine sandstones and siltstones. The Carmel River Valley is primarily underlain by Quaternary alluvium, floodplain deposits, and channel deposits. Near the coast, the valley has widened in to an estuarine type environment and is partially underlain by estuarine silts and clays. Regional surficial deposits within the project vicinity are shown on ***Figure 2 – Local Geology***.

2.3 LOCAL GEOLOGY

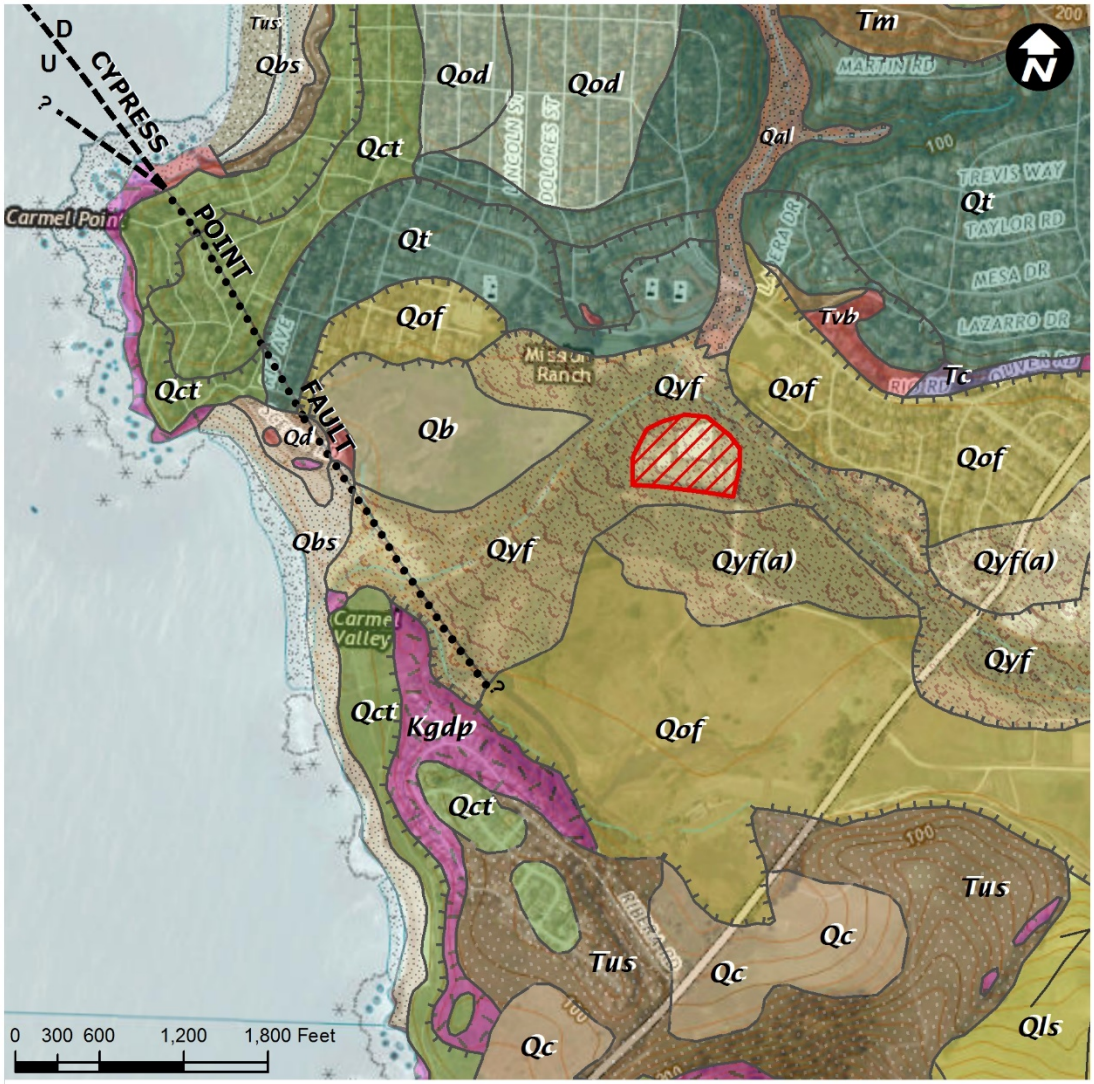
We performed three geotechnical borings for the current study and reviewed available geotechnical data from previous studies. We reviewed geotechnical reports and boring logs from the project vicinity that were obtained from the Carmel Area Water District (HLA, 1981; HLA, 1992). Locations of borings for the current and previous studies at the CAWD WWTP are shown on ***Plate 1***.

The proposed facilities are underlain by artificial fill, which overlies floodplain deposits of the Carmel River. Descriptions of the units that may be encountered during construction activities are summarized below.

Artificial Fill (af). Artificial fill depths across the WWTP site range from approximately 3 to 9 feet below ground surface (bgs). The artificial fill consists of loose to dense silty sand, clayey sand, and sandy silt, and medium stiff to stiff silt and elastic silt with local pockets of debris. For the current study, our borings encountered 5 to 7 feet of light brown, loose to medium dense silty sand with varying amounts of gravel.

Floodplain Deposits (Qfp). Holocene aged floodplain deposits underlie the artificial fill and was encountered to the full depth of the borings conducted at the WWTP. The floodplain deposits include interfingered river channel gravel, alluvial sand and gravel, floodplain sand, silt, and clay, and estuarine silt and clay. Floodplain deposits encountered in the historic borings consist primarily of loose to medium dense sand and silty sand and medium stiff to very stiff sandy to clayey silt. Our borings encountered loose to dense sand with varying amounts of gravel and silt and silty sand. In GTC-B-2, approximately 30 feet of interbedded medium stiff to stiff silt and medium dense silty sand was encountered at a depth of approximately 42.5 feet bgs.

FIGURE 2
LOCAL GEOLOGY



Geology Source: USGS, 1997. Geologic Map Of The Monterey and Seaside 7.5-Minute Quadrangles, Monterey County, California: A Digital Database, USGS Open-File Report 97-30.

LEGEND

Project Site

Geologic Contact Lines

- Geologic Contact, dashed where approximately located, dotted where concealed
- Inner edge of terrace deposits, barbs of terrace side of scarp
- Fault, dashed where approximately located, dotted where concealed

Geologic Units

- Qbs - Beach Sand Deposits
- Qd - Dune Sand Desposits
- Qb - Basin Deposits
- Qal - Alluvial Deposits
- Qyf - Younger Flood Plain Deposits; thin deposits over Qof denoted with an (a)
- Qof - Older Flood Plain Deposits
- Qc - Colluvium
- Qls - Landslide Deposits
- Qod - Older Coastal Dunes
- Qct - Coastal Terrace Deposits
- Qt - Terrace Deposits
- Tus - Unnamed Sandstone
- Tm - Monterey Formation
- Tvb - Volcanic Rocks
- Tc - Carmelo Formation
- Kgdp - Porphryritic Granodiorite of Monterey

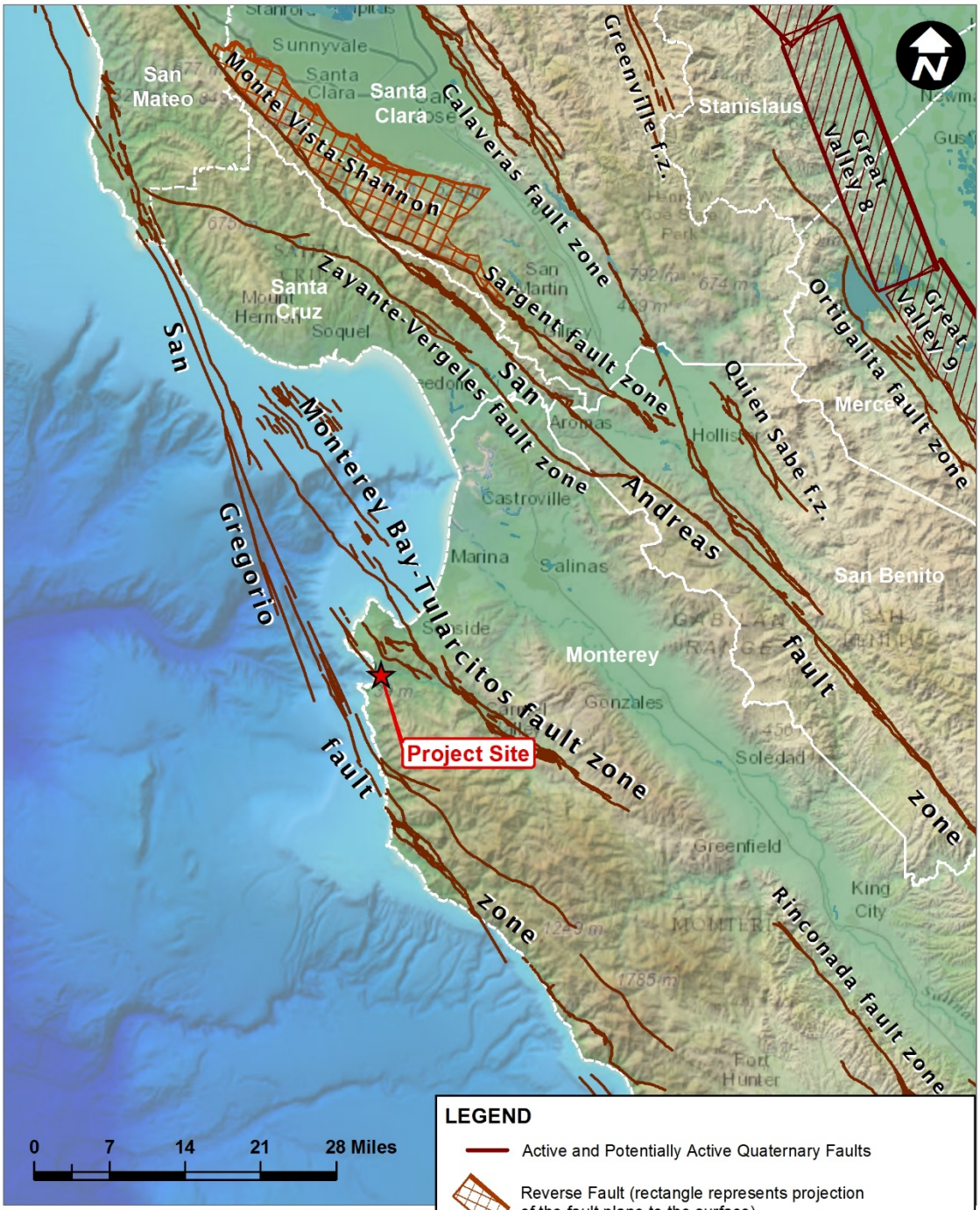
2.4 SEISMIC SETTING

The site is in a seismically active region near the boundary between two major tectonic plates, the Pacific Plate to the southwest and the North American Plate to the northeast. The relative movement between the Pacific Plate and the North American Plate generally occurs across a 50-mile zone extending from the San Gregorio fault in the southwest to the Great Valley Thrust Belt to the northeast. Strain produced by the relative motions of these plates is relieved by right lateral strike slip (dextral) faulting on the San Andreas Fault Zone and related faults (San Gregorio, Calaveras, Hayward), and by vertical reverse slip displacement on the Great Valley and other thrust faults in the central California area.

Strong ground shaking at the project site could occur as a result of an earthquake on any one of the active regional faults shown in ***Figure 3– Regional Fault Map***. In the Monterey area, the right lateral motion between the North American and Pacific tectonic plates is primarily accommodated by three main fault structures within the broad transform boundary: the San Andreas fault zone, the Monterey Bay - Tularcitos fault zone, and the San Gregorio fault zone (***Figure 3***). Movement of the North American and Pacific plates is primarily translated in the Monterey area as right lateral slip along the San Andreas fault zone, and right lateral and reverse slip movement along the Monterey Bay - Tularcitos and San Gregorio fault zones.

Active faults in California have been divided into activity categories by the California Geological Survey based on their predicted activity and ability to generate strong earthquakes; "Type A" faults which generally have higher and more well-defined slip rates and well-defined recurrence intervals, and "Type B" faults with well-defined slip rates but poorly constrained recurrence intervals. "Type A" faults are commonly considered more active (generally with higher slip rates) and/or capable of generating larger earthquakes than "Type B" faults. The USGS has divided the major active faults into segments based on work by the USGS Working Group on California Earthquake Probabilities (WGCEP). Based on this segmentation, various fault rupture scenarios were developed that include earthquakes and rupture of segments of the individual faults in varying segment combinations, i.e. rupture of one segment by itself or rupture of two or more segments concurrently. These scenarios result in differing earthquake and fault parameters for each of the potential segment combinations.

FIGURE 3
REGIONAL FAULT MAP



Fault Data Sources: U.S.G.S. and C.G.S., 2010, Quaternary fault and fold database for the United States; and Cao, et. al., 2003, The Revised 2002 California Probabilistic Seismic Hazard Maps, Appendix A - 2002 California Fault Parameters (blind thrust fault data).

Both "Type A" and "Type B" faults that are mapped in the vicinity of the project site are summarized in ***Table 2 –Active and Potentially Active Faults***. The distance to significant active faults and fault segments, California Geological Survey (CGS) assigned fault type ("A" or "B"), and estimated maximum magnitude earthquake are summarized in ***Table 2***.

TABLE 2 - ACTIVE AND POTENTIALLY ACTIVE FAULTS

Fault Name	Type[1]	Distance (Miles)[2]	Estimated Max. Earthquake Magnitude[1, 3]
Monterey Bay- Tularcitos fault zone	B	1.5	7.3
San Gregorio fault zone - Connected	B[4]	3.9	7.5
Zayante-Vergeles fault zone	B	25.9	7.0
N. San Andreas fault zone (Varying rupture combinations of segments of the N. San Andreas with the Santa Cruz Mountain segment alone and with the Offshore, North Coast, and Peninsula segments)	A	30.1	7.1-7.9
San Andreas fault zone – Creeping segment	B	30.3	6.7
Calaveras fault zone (Varying rupture combinations of the Calaveras Southern segment alone and with the Northern and Central segments)	A	35.1	5.8-7.0
Calaveras fault zone (Varying rupture combinations of the Calaveras Central segment alone and with Northern segment)	A	39.6	6.4-7.0
Quien Sabe fault zone	B	40.2	6.6
Monte Vista – Shannon fault zone	B	46.1	6.7
N. San Andreas fault zone (Varying rupture combinations of segments of the N. San Andreas with the Peninsula segment alone and with the Offshore, and North Coast)	A	50.6	7.2-7.9

Notes:
1. Fault parameters from The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2) by the USGS (2008).
2. Fault-to-site distances based on the 2008 National Seismic Hazard Maps - Fault Parameters website at http://geohazards.usgs.gov/cfusion/hazfaults_search/hf_search_main.cfm ; and the U.S.G.S. and C.G.S., 2010, Quaternary fault and fold database for the United States.
3. Maximum Earthquake Magnitude – the maximum earthquake that appears capable of occurring under the presently known tectonic framework, using moment magnitude.
4. San Gregorio fault analyzed as a Type A fault by the 2007 Working Group on California Earthquake Probabilities.

The WGCEP concluded that there is a 62 percent probability of a strong earthquake (M≥6.7) occurring in the San Francisco Bay Region in a thirty year period between 2003 and 2032 (WGCEP, 2003). Additionally the 2007 WGCEP (WGCEP, 2008) has concluded that within the next 30 years the probability of a strong earthquake (M≥6.7) occurring on regional faults is as follows: 21% for the N. San Andreas Fault Zone, 31% for the Hayward-Rodgers Creek Fault Zone, 7% for the Calaveras Fault Zone, and 6% for the San Gregorio Fault.

2.5 LOCAL FAULTING

The closest active faults to the project site are the Hatton Canyon fault of the Monterey Bay - Tularcitos fault zone, located 1.5 miles northeast of the site, and the San Gregorio fault zone, located approximately 4 miles west of the site. The Cypress Point fault is the closest mapped fault to the site but is not considered to be a significant seismic source. These faults are further described below:

Hatton Canyon Fault. The Hatton Canyon fault is part of the larger Monterey Bay - Tularcitos fault zone. The Monterey Bay - Tularcitos fault zone is a complex, generally northwest-striking zone up to 15 km wide of dextral, dextral-reverse, and thrust faults. Although there is documented evidence of Holocene displacement along the Hatton Canyon, Sylvan Thrust, and Tularcitos faults, the Monterey Bay - Tularcitos fault zone, in general, lacks detailed studies. Late Pleistocene and Holocene slip rates of the Monterey Bay - Tularcitos fault zone are poorly constrained with vertical slip rates ranging from 0.02 to 0.4 mm/yr and dextral strike-slip rates are not known (USGS, 2014). The Hatton Canyon fault, 1.5 miles northeast of the project site, consists of northwest-striking, near-vertical reverse faults that extend from Carmel Valley Road northwest to Point Joe. The Hatton Canyon fault has rotated terrace deposits, offset Monterey shale against fluvial terrace and landslide deposits, and in at least one locality offset Holocene colluvium (USGS, 1997).

San Gregorio Fault Zone. The San Gregorio fault zone is a structurally complex transpressional fault zone as much as 5 km wide that extends for about 230 km from the Big Sur region south of Monterey Bay to the north where it merges with the San Andreas Fault System near Bolinas Bay north of San Francisco. The San Gregorio fault zone exhibits both right lateral (dextral) strike-slip and reverse slip motion with the cumulative strike-slip displacement since middle Miocene time reported to be between 115 km and 156 km and an unknown amount of west-vergent reverse displacement. The closest strand of the San Gregorio fault zone is located offshore, approximately 4 miles to the west of the project site.

Cypress Point Fault. The Cypress Point fault is the closest mapped fault to the project site (***Figure 2***). It is a small fault, approximately 3 to 6 km long, extending from Carmel River Valley to the southern edge of Monterey Canyon (USGS, 1997; USGS, 2014). The motion and activity of the Cypress Point fault is poorly constrained, however mapping indicates that it is primarily dextral with a minor vertical displacement. Mapping has indicated that the fault may have resulted in an approximate 1 meter offset of a 102,000 year old terrace platform; however, the elevation

difference across the fault of the terrace platform could also be the result of deposition on an irregular surface. The field studies to the south of the mapped trace of this fault failed to find any evidence of this fault extending southward of the Carmel River Valley (USGS, 1997). Due to the lack of evidence of recent faulting and the short length of this fault, it is not considered a significant seismic source by the 2007 WGCEP.

2.6 GROUNDWATER

Groundwater levels are expected to be shallow due to the close proximity of the Carmel River and the granular nature of the artificial fill and underlying flood plain deposits. Groundwater levels measured in the 1982 HLA borings indicated approximate depths to groundwater of 3 to 7 feet bgs corresponding to elevations as high as approximately +10.3 feet (NAVD 88). The 1992 HLA borings indicated groundwater levels of approximately 7 to 8.5 feet bgs. For the current subsurface investigation, we drilled to depths of 10 feet with augering techniques to attempt to record groundwater levels. Groundwater was not present, however, in the upper 10 feet. The rotary wash drilling methods used for the remainder of the boring did not allow for observation of groundwater depth. Moisture conditions of soil samples indicated that the water levels were likely between 10 and 15 feet bgs at the time of drilling. The shallow, unconfined groundwater levels in the area can be expected to vary seasonally.

3. CONCLUSIONS AND RECOMMENDATIONS

Based on the findings from our geotechnical exploration and engineering analysis, it is our opinion that the construction of the proposed structures for the CAWD WWTP Rehabilitation Project – Phase 1 is geotechnically feasible. Key geotechnical/geologic conclusions and recommendations to be considered during project design include:

- The site is underlain by extensive deposits of potentially liquefiable, saturated sandy soils in the upper 30 to 45 feet that are prone to significant liquefaction-induced seismic settlement (on the order of about 7 to 9 inches) in the event of a large earthquake.
- Structures that cannot tolerate these large settlements should be supported on pile foundations.
- Improvements that are not pile-supported including equipment pads and utilities should be expected to settle along with the surrounding ground, and therefore measures such as flexible utility connections need to be taken to withstand the anticipated differential settlements between pile-supported and non-pile-supported structures.
- Ground modification may be considered if the consequences of liquefaction cannot be tolerated.
- The site is in the flood plain of the Carmel River, and structures should be designed for sustained uplift loads.
- Site soils and groundwater are corrosive to buried concrete structures and ferrous metals.

The conclusions and recommendations for geologic hazards and seismic design considerations, earthwork, groundwater, lateral earth pressures, uplift resistance, pile foundations, slabs-on-grade, and flexible pavement design are provided in the following sections of this report.

3.1 GEOLOGIC HAZARDS AND SEISMIC DESIGN CONSIDERATIONS

The primary geologic hazards at the CAWD WWTP site are strong ground shaking related to moderate to large earthquakes occurring on one of the regional active faults in the vicinity, liquefaction, seismic settlement, flooding inundation and corrosive soils. Hazards related to fault rupture, lateral spread, inundation by tsunami, landsliding, and expansive soils are considered low to very low. These potential geologic hazards are discussed in the following sections.

3.1.1 Fault Rupture

While many potentially active faults exist within the Monterey Bay area, no active or potentially active faults are known to traverse the project site; consequently, the risk of hazards related to fault rupture/offset at the site is considered very low.

3.1.2 Strong Ground Shaking

The CAWD WWTP is in seismically active coastal California where multiple faults are located in relatively close proximity to the site as shown on ***Figure 3*** and presented in ***Table 2***. The closest faults to the site are the Hatton Canyon fault of the Monterey Bay - Tularcitos fault zone and the San Gregorio fault zone located approximately 1.5 miles northeast and 4 miles west of the site, respectively. Strong ground shaking at the site will result from a large earthquake on this or any of the regional faults presented in ***Table 2***.

We anticipate that the project will be designed in accordance with the 2010 American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) "Minimum Design Loads for Buildings and Other Structures" (referred to hereafter as ASCE 7-10). ASCE 7-10 was adopted by the 2013 California Building Code effective as of January 1, 2014.

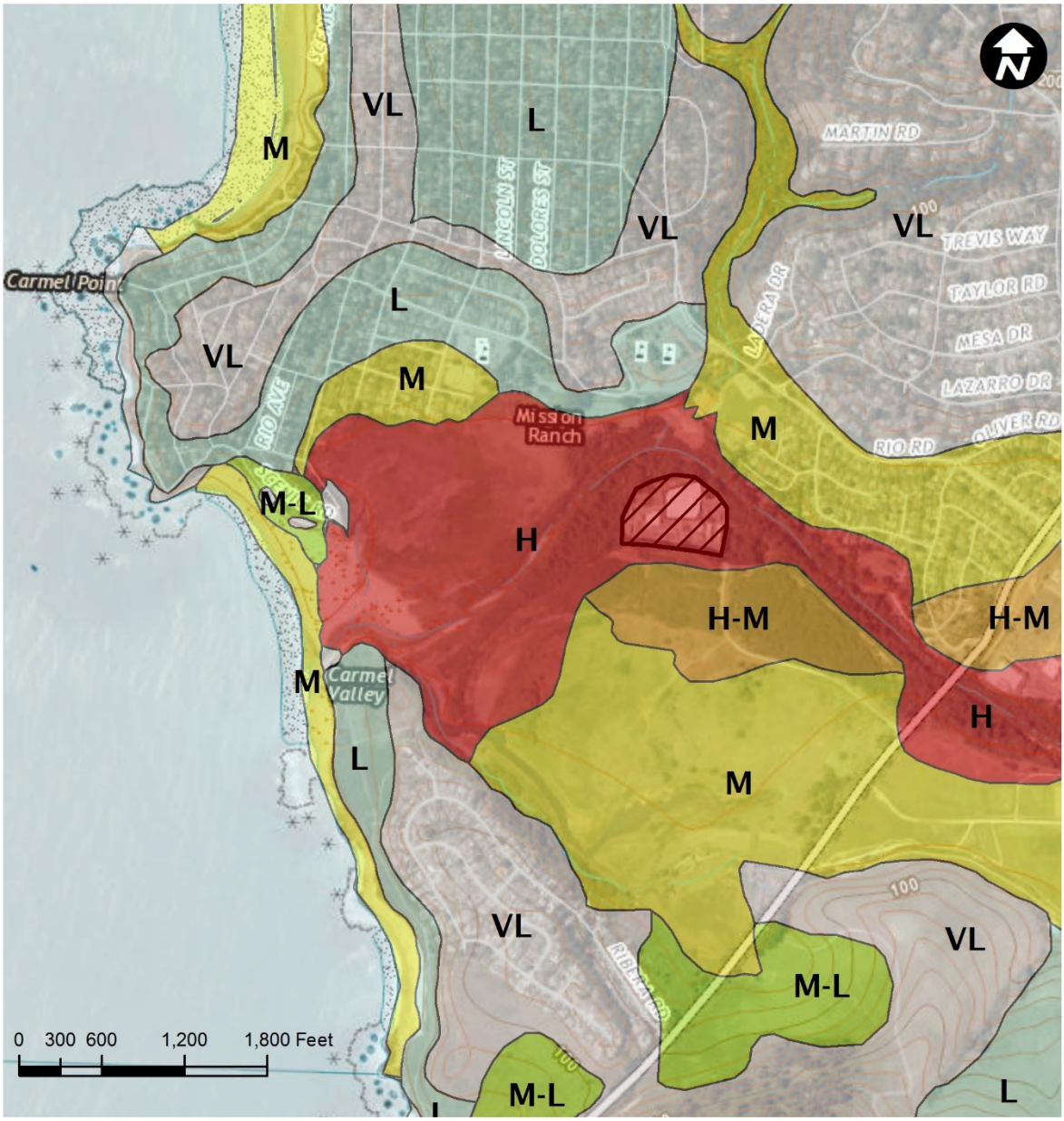
Because the site was determined to be underlain by extensive deposits of potentially liquefiable soils and is classified as Site Class F, we performed a site-specific seismic hazard analysis and site response analysis in accordance with Section 21.1 of ASCE 7-10. A design response spectrum that is applicable to the ground surface, as well as up to approximately 10 feet below ground surface, is presented in ***Appendix C***.

3.1.3 Liquefaction

Liquefaction is a phenomenon wherein a temporary, partial loss of shear strength occurs in a soil due to increases in pore pressure that result from the cyclic loading accompanying an earthquake. Saturated, loose to medium dense sands and silty sands are most susceptible to liquefaction, although documented field cases have shown that gravelly soils and certain fine grained soils are also capable of liquefying.

The U.S. Geological Survey performed geologic field mapping and assigned liquefaction susceptibility for the Monterey, Seaside, Spreckles and Carmel Valley Quadrangles (Dupré, 1990). A portion of this map is reproduced on ***Figure 4 – Liquefaction Susceptibility Map***. As

FIGURE 4
LIQUEFACTION SUSCEPTIBILITY MAP



Source: USGS, 1990. Maps Showing Geology and Liquefaction Susceptibility of Quaternary Deposits in the Monterey, Seaside, Spreckles, and Carmel Valley Quadrangles, Monterey County, California, by William R. Dupre, USGS MF 2096 Sheet 2.

LEGEND

Project Site

Liquefaction Susceptibility

- High
- High-Moderate
- Moderate
- Moderate-Low
- Low
- Very Low to None

indicated in the figure, the CAWD WWTP site lies within an area mapped with high liquefaction susceptibility. This designation indicates sediments that are likely to liquefy in the event of a nearby major earthquake due to the presence of a shallow groundwater table and past engineering tests indicating liquefaction-susceptible deposits.

The liquefaction potential of the soils encountered in Boring Nos. GTC-B-1 through GTC-B-3 were evaluated using the "simplified procedure" originally proposed by H.B. Seed and I.M. Idriss and subsequently updated and augmented by a panel of experts (Youd et al., 2001). Based on our assessment, a large proportion of the soils in the upper 30 to 45 feet are liquefiable. The liquefaction-prone soils are typically loose to medium dense, poorly graded, fine to coarse grained sand with trace to minor silt. Below this depth, the soils are less susceptible to liquefaction either due to the higher density of the sandy soils and/or the high silt content of the soils.

The consequences of liquefaction can include:

- Significant reduction or loss of support for foundations underlain by liquefied soils.
- Sudden and dramatic seismic settlement with a large differential subsidence and tilting of structures supported above the liquefied layer.
- Downdrag forces applied to the sides of below-grade structures supported below the liquefied zone.
- "Floating" of below-grade structures or utility boxes or pipes embedded within the liquefied zone.
- Lateral spreading of the ground surface where liquefaction occurs on or near slopes or free faces which can cause significant lateral forces on below-grade structures or utilities.

3.1.4 Lateral Spread

Lateral spreading is a seismically-induced ground deformation failure in which near surface soil layers typically break into blocks that progressively move downslope or toward a free face such as a stream channel, river embankment, or a shoreline. Underground facilities and structural elements (e.g., pipelines, spread footings, pile foundations, etc.) that extend through or across a zone of lateral spreading may be pulled apart or sheared.

According to Bartlett and Youd (1995), for significant lateral spreading displacement to occur, the soils should consist of saturated cohesionless sandy sediments with corrected SPT blow counts ($(N1)_{60}$) less than 15, where liquefaction of the soils are likely based on standard liquefaction analysis.

Based on our assessment of the subsurface soils encountered in Boring Nos. GTC-B-1 through GTC-B-3, some isolated layers have relatively low blow counts with $(N1)_{60}$ ranging from 7 to 15. If these susceptible soils are laterally continuous and are close to a free face, they may be prone to liquefaction-induced lateral spread. It is our opinion, however, that the likelihood of lateral spread affecting the proposed improvements for the present rehabilitation project are low due to the isolated nature of the soil layers exhibiting low blow count and the distance of over 150 feet to the Carmel River toward the north. A drainage ditch located to the south of the WWTP is within about 50 feet of the proposed improvements. This feature is only about 5 feet deep, however, and we do not expect that the liquefied soil at depth would tend to spread laterally toward the drainage ditch.

3.1.5 Seismic Settlement

Seismically-induced settlement of on-site materials can occur in two manners: 1) post-liquefaction volumetric reconsolidation of saturated soils, and 2) volumetric contraction ("densification") of partially saturated soils (above the water table) during strong ground shaking. Due to the relatively shallow groundwater table, the first mode of settlement is considered primary for the CAWD WWTP site.

We evaluated seismic settlement using the approach recommended by Tokimatsu and Seed (1987) for saturated soils. The seismic ground settlement due to liquefaction is estimated to range up to approximately 7 to 9 inches. This ground settlement is expected to vary across the site.

3.1.6 Landsliding

Due to the flat topography in the area, slope instability at the site or adjacent areas is not a concern.

3.1.7 Flooding Inundation

The CAWD WWTP site is located in the flood plain of the Carmel River. According to the current Flood Insurance Rate Maps (FEMA, 2009), the base flood elevation across the WWTP site ranges from about 16 feet along the west property line to 20 feet along the east property line. This corresponds to a flood depth of up to approximately 4 feet above the existing ground surface. The surficial soils are typically granular and may be prone to scour from swiftly flowing water.

3.1.8 Inundation by Tsunami

Tsunamis are long period waves caused by underwater seismic disturbances, volcanic eruptions, or submerged landslides. The disturbance can occur thousands of miles from the Monterey area,

and generate tsunami waves that affect the site. As tsunami waves approach the coast, they may increase in height to tens of feet.

Tsunami inundation maps have been prepared for screening of hazards in the Monterey area (CGS 2009). The CAWD WWTP site lies just east and just south of the mapped tsunami inundation area.

3.1.9 Expansive Soils

Expansion and contraction of expansive soils in response to changes in moisture content can cause differential and cyclical movements that can cause damage and/or distress to structures and equipment. The on-site soils are granular and non-expansive. Provided import materials are not of high plasticity, the hazards associated with expansive soil movement are not significant for this project.

3.1.10 Corrosive Soils

Corrosive soils and corrosive saline groundwater can cause damage to structures, foundations and buried utilities and can also increase required maintenance. Depending on the degree of corrosivity of subsurface soils, concrete and reinforcing steel in concrete structures and bare metal structures exposed to these soils can deteriorate, eventually leading to structural failure.

In general, ground environments may be classified as corrosive to buried concrete structural elements if any of the following conditions is present in the ground or may be present during the service life of a facility (Caltrans, 2012):

- The pH of the soil or groundwater is less than 5.5;
- The sulfate concentration is 2,000 ppm or greater, or;
- The chloride concentration is 500 ppm or greater.

The corrosion potential of soils underlying the site was evaluated for selected soil samples retrieved from the field exploration. Results of the corrosion testing are shown in ***Table 3 – Soil Corrosion Test Summary*** below.

TABLE 3 – SOIL CORROSION TEST SUMMARY

Sample Description	Resistivity (saturated) (Ohm-cm)	pH	Chloride Content (ppm)	Sulfate Content (ppm)
GTC-B-1 @ 10.5 to 11 feet	1,000	5.2	41	953
GTC-B-2 @ 6 to 6.5 feet	8,000	6.2	5.8	36

The pH suggests that the site soils are corrosive towards buried concrete structures, and the pH and resistivity measurements indicate the soils are corrosive to ferrous materials, which could include steel, cast-iron, or ductile iron pipelines. These elevated test results are likely due to a saline environment because of the proximity to the Pacific Ocean. A correlation between electrical resistivity and corrosivity to ferrous metals is provided in ***Table 4 – Soil Resistivity and Corrosivity Correlation***. Electrical resistivities of the tested sample indicate soils in a saturated state are moderately corrosive to corrosive to ferrous metals. Based on these test results, we recommend that buried structural elements or facilities for the CAWD WWTP that expose ferrous materials to the surrounding soils (e.g. pipelines, utilities, steel beams, rebar, etc.) be provided with suitable corrosion protection. A concrete mix with a low water to cementitious materials ratio should be used and concrete cover over reinforcing steel may need to be increased to provide adequate corrosion protection.

TABLE 4 – SOIL RESISTIVITY AND CORROSIVITY CORRELATION

Saturated Soil Resistivity per ASTM G57 (Ω cm)	Soil Corrosivity to Ferrous Metals
> 10,000	Mildly Corrosive
2,000 – 10,000	Moderately Corrosive
1,000 – 2,000	Corrosive
< 1,000	Severely Corrosive

3.2 GROUNDWATER

We understand that structures will be designed to withstand flooding conditions, which would represent a water level at approximately elevation 16 feet to 20 feet (NAVD 88) to account for the base flood elevation, or up to approximately 4 feet above the existing ground surface. For evaluation of the seismic performance of structures, we recommend a design groundwater elevation of 13.5 feet (NAVD 88). It would be very unlikely for the base flood and maximum considered earthquake to occur at the same time, so a high groundwater level for seismic design

purposes that is approximately 3 feet higher than the highest groundwater elevation observed in borings and monitoring wells during past geotechnical studies is considered appropriate.

3.3 EARTHWORK RECOMMENDATIONS

The proposed structure foundations are anticipated to be founded close to the ground surface and up to 10 feet below existing ground surface. Due to the liquefaction potential and the seismic settlement hazard, we anticipate that major structures will be pile supported. Associated improvements may also include utilities, at-grade equipment pads and access roadways.

Our geotechnical considerations for earthwork including excavations, temporary slopes and shoring, ground modification, general fill, engineered fill, engineered fill placement and compaction, structural backfill and utility trench bedding and backfill are presented in the following sections.

3.3.1 Excavation Characteristics

Excavations should likely encounter primarily silty sand and poorly graded sand, although layers of silt, clay and peat may also be encountered to the planned depths of excavation. Some construction debris including asphalt, brick and cobbles were also observed in the borings, and should be anticipated during excavation. The contractor should be able to carry out planned excavations using conventional heavy equipment.

Groundwater depth is variable depending on rainfall amounts, water elevation in the Carmel River, and tides. At the time of drilling in December 2013, the groundwater was in excess of 10 feet below ground surface; however, historically the groundwater has been at or above the ground surface during extreme flood events. Therefore, depending on the season when construction is undertaken, groundwater may need to be accounted for during excavation. Due to the sandy nature of the soils, excavation below the groundwater table will be problematic without a properly designed dewatering system.

Evaluation of the presence, or absence, and treatment of contaminated or hazardous materials was not part of this study. If such materials are encountered during excavation, proper handling and treatment during construction will depend on the contaminant type, concentration, and volatility of the contaminants.

3.3.2 Temporary Slopes, Shoring, and Bracing

Excavations for foundations and below-grade structures may allow for unshored excavations with adequately sloped sidewalls. Deeper excavations may require a series of sloped and benched cut-backs, or require vertical walled shored or braced excavations to account for space constraints. At a minimum, excavations should be constructed in accordance with the current California Occupational Safety and Health Administration (OSHA) regulations (Title 8, California Code of Regulations) pertaining to excavations. Temporary slopes above the groundwater table are expected to be stable for configurations described in Title 8 for Type C soils and should be cut back no steeper than 1 ½:1 (horizontal:vertical). All excavations should be closely monitored during construction to detect any evidence of instability.

Temporary shoring may be necessary to support construction excavations related to the project. The type and design of the shoring will depend on the depth of excavation and excavation bracing sequence. The design and installation of a suitable shoring and bracing system should be made the responsibility of the construction contractor. The shoring and bracing should accommodate surcharge loads that may be imposed by adjacent structures, soil stockpiles, or other construction-related activities.

3.3.3 Ground Modification for Liquefaction Mitigation

We anticipate that the likely mitigation measure for liquefaction and seismic settlement hazards is to support structures on pile-supported structural slabs. There are various ground modification techniques, however, that can lessen the amount of settlement and/or improve the engineering characteristics of susceptible soils. Mitigation measures that may be considered include overexcavation and replacement, stone columns, and grouting or soil mixing techniques. Due to the extent and depth of liquefiable deposits, these alternatives will likely be expensive. Several lower cost alternatives have been developed to improve the performance of the near surface soils, but are not intended to eliminate the seismic settlement potential for deeper layers. This includes Rapid Impact Compaction and Rammed Aggregate Piers. These ground modification alternatives should be evaluated further if the consequences of liquefaction cannot be tolerated.

3.3.4 General Fill

On-site material that is determined non-hazardous and that is free of debris and other unsuitable materials may be used as general fill. Excavation and redistribution of general fill materials will likely require monitoring and screening as necessary. Any zones containing excessive debris should be identified, segregated from the suitable material, and disposed of appropriately. Areas

receiving general fill should be limited to general grading, landscaping, and for areas that are not supporting structures. Typically, soils used as general fill should have a low potential for expansion (i.e., plasticity index less than 15 and liquid limit less than 40), and should be relatively free of organic matter and other unsuitable materials, or rocks, broken concrete, or other solid materials greater than 4 inches in greatest dimension. Some fragments greater than 4 inches may also be incorporated into the fill provided that they are distributed in a manner that prevents nesting and so that the voids between large fragments are filled with finer material.

3.3.5 Engineered Fill

Placement of engineered fill may be needed to replace over-excavated soft or loose soils in preparation for construction of improvements. Material for engineered fill should be inorganic, well graded, free of rocks or clods greater than 3 inches in greatest dimension or any other deleterious materials, and have a low potential for expansion. The material should have a liquid limit less than 35, a plasticity index less than 15 and no more than 25 percent passing the No. 200 sieve. The on-site materials are generally suitable for engineered fill, although some segregation of unsuitable materials may be required.

3.3.6 Engineered Fill Placement and Compaction

Engineered fill, where placed to support structures, should be placed in layers no greater than 8 inches in uncompacted thickness, conditioned with water or allowed to dry to achieve a water content close to optimum, then mechanically compacted to at least 95 percent relative compaction based on ASTM D1557. Backfill soils that are not supporting building improvements may be compacted to at least 90 percent relative compaction. All compaction should be performed using mechanical compaction means; flooding or jetting should not be used as a means to achieve compaction. The ASTM D1557 laboratory compaction tests should be performed at the time of construction to provide a proper basis for compaction control.

3.3.7 Structural Backfill

Structures extending below grade (e.g. formed concrete footings, walls, etc.) should be backfilled with structural backfill to a minimum width of 2 feet beyond the structure footprint. Structural backfill should be inorganic, free of rocks or clods greater than 3 inches in greatest dimension or any other deleterious materials, and have a low potential for expansion.

The material should meet the following gradation:

Sieve Size	Percent Passing
3 inches	100
1½ inches	80 to 100
#4	50 to 100
#16	40 to 90
#50	10 to 60
#200	0 to 15

Some on-site materials will likely meet these gradation requirements, and if so may be used as structural backfill. Alternatively, this material may be imported from off site as long as allowed by project specifications.

Structural backfill should be moisture conditioned to approximately two percent above optimum, placed in layers not exceeding 8 inches in uncompacted thickness, and mechanically compacted to 90 percent relative compaction per ASTM D1557. If the height of the structural backfill is greater than 10 feet, we recommend that the portion of fill below 10 feet be compacted to 95 percent relative compaction.

3.3.8 Pipe Bedding and Pipe Zone Backfill for Small Diameter Pipelines

Pipe bedding and pipe zone backfill for small diameter pipes (18 inches in diameter or less) should consist of well-graded sand or a sand-gravel mixture. Pipe bedding should be placed in trenches that are firm, and free of loose soil and ponded water. Excavations that expose peaty soils or other similarly yielding soils at subgrade elevation may require overexcavation to provide suitable pipe support. Maximum gravel size around the pipe should be 0.5 inch and the bedding and pipe zone backfill material should have less than 12 percent passing the No. 200 sieve. Uniformly graded material such as pea gravel should not be used as pipe bedding material. Pipe bedding should have a minimum thickness of 6 inches beneath the pipe and the pipe zone backfill should extend to 6 inches above the pipe. All pipe bedding and pipe zone backfill should be placed to achieve uniform contact with the pipe and mechanically compacted to achieve a minimum relative compaction of 90 percent per ASTM D1557.

3.3.9 Utility Trench / Small Diameter Pipe Backfill

Utility and pipe trenches should be backfilled above the pipe with general fill or engineered fill as outlined in *Sections 3.3.4 and 3.3.5*, depending on the location with respect to other improvements. The backfill material should be placed in layers no greater than 8 inches in uncompacted thickness,

conditioned with water or allowed to dry to achieve a moisture content slightly above optimum, then mechanically compacted to at least 90 percent relative compaction based on ASTM D1557. Backfill within pipeline trenches below proposed new structures should be compacted to 95 percent relative compaction, taking care not to damage the utility during backfill placement and compaction. The upper 18 inches of soil below structural pavement sections should be compacted to at least 95 percent relative compaction.

3.4 LATERAL EARTH PRESSURES

Structural components that extend below ground surface will experience lateral earth pressure from the soil and hydrostatic pressure from groundwater. Recommendations for the active, at-rest, passive, and seismic earth pressures, and coefficient of base friction to resist active and at-rest loads are summarized on ***Table 5 – Summary of Lateral Earth Pressures***, and discussed in the following sections.

TABLE 5 – SUMMARY OF LATERAL EARTH PRESSURES

	Restrained, Non-Yielding Retaining Walls	**Unrestrained, Yielding Retaining Walls**
Active Earth Pressure (EFP_A)	N/A	40 pcf above GWT 25 pcf below GWT
At-Rest Earth Pressure (EFP_O)	60 pcf above GWT 40 pcf below GWT	N/A
Passive Earth Pressure (EFP_P)	300 pcf above GWT 130 pcf below GWT	
Seismic Earth Pressure (SP)	14 pcf	11 pcf
Base Friction [3]	0.40	0.40

Notes:

1 GWT = groundwater table; EFP = equivalent fluid pressure.

2 Assumes level ground surface.

3 Surcharge loads, such as construction equipment and soil stockpiles should be evaluated by the structural engineer on a case-by-case basis.

4 The base friction value should be multiplied by the dead load of the structure. If a waterproofing membrane is applied below the slab, the Base Friction Coefficient should be reduced to 0.3.

3.4.1 Active Earth Pressure

Active earth pressures are imposed by the soil on walls that are unrestrained so that the top of the wall is free to translate or rotate at least 0.004H, where H is the height of the wall. Active earth pressures may be calculated using a design Equivalent Fluid Pressure (EFP) of 40 pcf and 25 pcf above and below the groundwater table, respectively.

3.4.2 At-Rest Earth Pressure

At-rest pressures should be used for design of walls that are rigid or restrained such that the deflections required to develop active earth pressures cannot occur or are undesirable. Such relatively "rigid" structures may include reinforced concrete walls, tank walls, underground vaults, etc. The at-rest earth pressure may be calculated using a design EFP of 60 pcf and 40 pcf above and below the groundwater table, respectively.

3.4.3 Passive Earth Pressure

Lateral loads on structures can be resisted by passive pressures that develop against the sides of below-grade structures such as walls or footings. The passive earth pressure may be calculated using a design EFP of 300 pcf and 130 pcf above and below the groundwater table, respectively. The passive earth pressure may be increased by one-third when considering additional short-term seismic loading. The passive earth pressure values recommended here include a factor of safety of 1.5 to limit deflections. Passive pressures may be combined with the base friction mobilized at the concrete-soil interface to resist lateral loading. The upper 2 feet of soil should not be included in evaluating the passive earth pressure resistance.

3.4.4 Surcharge Loading

Additional surface applied live and dead surcharge loads may also impose an increase to active and at-rest lateral earth pressures. To accommodate H20-44 or HS20-44 truck loading adjacent to the top of walls, an additional earth pressure of 100 psf should be applied for the upper 10 feet of wall height. Additional loading beyond these limits should be calculated and applied to the wall by the design team on a case-by-case basis.

3.4.5 Seismic Active Earth Pressure

In addition to the active and at-rest pressures, design of permanent walls extending below grade should consider additional earth pressures imposed by earthquake induced lateral pressures. The distribution of earth pressure due to seismic loading is indicated on ***Plates 2 and 3***.

3.4.6 Base Friction

A coefficient of friction of 0.40 may be used for estimating the resistance provided by base friction for mass concrete interfaced with earth materials. If the base of the concrete structure/foundation is provided with a waterproofing membrane, the coefficient of friction should be reduced to 0.3. The passive earth pressure and base friction mobilized at the concrete-soil interface may be combined to resist lateral loading.

3.4.7 Side Wall Friction

Side wall friction may be used to resist lateral loading parallel to the direction it is applied. A coefficient of friction of 0.3 should be applied to the at-rest earth pressure for non-yielding walls and applied to the active earth pressure for yielding walls. To account for the potential development of a gap between the ground surface and the wall, the upper 10 feet of wall height should be ignored in determining side wall friction resistance.

3.5 UPLIFT RESISTANCE

Structures will experience hydrostatic uplift pressures during periods of high groundwater and during flooding events. Structures should be designed for sustained uplift loads caused by these hydrostatic uplift pressures. For pile-supported structures, the allowable uplift capacity of the piles can be used to resist hydrostatic uplift. For non-pile-supported structures, the buoyancy of the structure will need to be resisted by the weight of the structure and either soil/concrete frictional resistance along the side walls of the structure, or by the weight of soil wedges engaged by the structure if it is designed with a footing key. The frictional resistance will likely not be sufficient to resist hydrostatic uplift, and we therefore recommend footing keys for non-pile-supported structures. Recommendations for assessment and design of uplift resistance utilizing footing keys is provided on ***Plate 4 – Uplift Resistance***. In the absence of footing keys, the side wall friction evaluated in accordance with *Section 3.4.7* may be used for uplift resistance.

3.6 PILE FOUNDATIONS

To mitigate the concern with liquefaction potential and resulting seismic settlement of structures supported on shallow foundations, we recommend that important CAWD WWTP structures be supported on piles. Based on preliminary estimates, we understand that the allowable axial capacity of piles should be at least approximately 60 kips.

Suitable alternative pile types include precast concrete piles, steel H-piles, pipe piles, cast-in-steel-shell (CISS) piles, and auger cast piles. With the exception of auger cast piles, the remaining pile types are driven; typically with a diesel impact hammer. The auger cast pile is a drilled pile where the concrete or grout is pumped through the shaft of the continuous flight auger as it is slowly extracted from the drill hole. Conventional drilled piers are not considered to be practical because of the relatively shallow groundwater and the difficulty in excavating a drill hole in caving and running sands.

Due to the corrosivity of the on-site soils and groundwater, concrete piles (i.e. precast concrete, CISS or auger cast piles) are generally a better alternative than steel piles. Steel piles, if used, would need cathodic protection in order to have a sufficient design life.

As the existing structures are supported on precast, prestressed concrete piles, we considered this alternative as the primary choice. Both 12-inch and 14-inch square piles were evaluated for axial and lateral capacity. The results of these analyses are presented in the following sections.

3.6.1 Axial Pile Capacity

We evaluated the axial compressive and axial tensile capacities of 12-inch and 14-inch square precast, prestressed concrete driven piles. The piles will gain their resistance primarily in side resistance along the length of the pile. The allowable axial capacities of the driven piles were evaluated using computer program APILE Plus Version 5.0 (Ensoft, 2007) in accordance with Federal Highway Administration (FHWA) methods. Within potentially liquefiable layers, the side resistance was reduced to a residual undrained shear strength of liquefied sand using the relationship proposed by Seed and Harder (1990).

We recommend that driven piles be installed to a tip elevation of at least -35 feet (NAVD 88), which is approximately 50 feet below the existing ground surface, in order to extend below the expected liquefaction-susceptible soils. For 12-inch square precast, prestressed concrete piles installed to a tip elevation of -35 feet, the allowable axial capacity in compression was evaluated to be 80 kips. A 14-inch square precast pile installed to this same depth would have an allowable compressive capacity of 110 kips. If additional capacity is required, the piles can be driven deeper. The rate of capacity increase with depth for 12-inch square and 14-inch square piles is 1.4 kips per foot and 1.6 kips per foot, respectively. These axial compressive capacities use a factor of safety of 2.0 for skin friction resistance and the contribution from end bearing resistance was ignored.

We estimate that the movement of the pile top due to imposing the allowable capacities in compression will be on the order of ½ inch.

The piles will be subject to sustained uplift loads during flood events and transient uplift loads during seismic events. We recommend an allowable uplift capacity of 75 percent of the allowable axial capacity when subjected to sustained uplift loads. This assumes a factor of safety of 2.0. For transient loading, the ultimate uplift capacity may be used. We estimate that the movement of the pile top due to imposing the allowable capacities in tension will be on the order of ½ inch.

Piles should be spaced at least three pile diameters center to center. Axial group reduction factors for allowable capacities can be provided for piles that are spaced more closely, upon request.

3.6.2 Lateral Pile Capacity

The response of individual piles to lateral loading was calculated using a load-deflection (p-y) analysis and the computer program LPILE Plus Version 5.0 (Ensoft, 2004). The analysis was performed for both 12-inch and 14-inch square precast concrete piles. Response curves for free- and fixed-head conditions for the two pile alternatives are presented as ***Plates 4 through 9***. The computed lateral deflections vs. load and the moment profile induced in a pile vs. load are shown graphically. The analysis uses residual shear strengths within soil layers that are considered to be liquefiable during a major earthquake.

The response of pile groups subjected to lateral loading depends upon the pile spacing and the orientation of the loading with respect to the pile group. Once pile group layouts have been determined, a more thorough analysis can be performed to determine the lateral load capacity of the group. An estimate of the group capacity can be made using the following simplified approach. Where the center-to-center spacing of *side-by-side* piles is three pile diameters or greater, each pile can be assumed to contribute full individual pile lateral load resistance. Where the center-to-center spacing between *in-line* piles is three pile diameters, each "leading" pile in the group may be considered to contribute full individual pile resistance, while each "following" pile in the group should be considered to contribute 70 percent of the individual lateral capacity. Where the spacing between "following" piles is six pile diameters or more, full individual lateral capacity may be used. The contribution of "following" piles having spacing intermediate between three and six pile diameters may be interpolated between these values.

3.6.3 Pile Driving Vibrations

Driving piles creates ground vibrations and noise during installation. Generally, pile driving may be performed in close proximity to existing structures without causing damage since the force pulse imparted into the ground is fairly small in comparison to such events as earthquakes and rock blasting. Nevertheless, the vibrations caused by pile driving often exceed the threshold that is noticeable by humans, and coupled with the noise can be disturbing to the public. For comparison, the peak particle velocity at which a biased observer notices ground vibrations is 0.02 inches per second (in/sec), whereas the peak particle velocity which may result in cosmetic damage to wood-framed structures is about 2 in/sec (Hendron and Oriard, 1972; Bureau of Mines, 1980).

We evaluated the anticipated levels of vibration at the ground surface during driving of precast, prestressed concrete piles and the potential impacts of this vibration. The vibration impacts at the CAWD WWTP site may result from either 1) transient vibrations propagating from the pile toward structures or underground facilities or 2) permanent ground deformation due to vibration-induced compaction of liquefaction-susceptible loose sands.

For both of these evaluations, it is necessary to estimate the peak particle velocities close to the pile tip and the decay of peak particle velocities with distance. Based on our past project experience and vibration monitoring and published case histories (Dowding, 1996), we anticipate that the peak particle velocity at a distance of 15 feet from pile driving may be on the order of 0.5 to 1 in/sec. The vibration is typically highest during the pile driving through the upper fill soils, so pre-drilling pile locations would be an effective means to lessen peak particle velocities for piles located in close proximity (less than 15 feet) to existing structures. The anticipated peak particle velocities are below the 2 in/sec threshold where cosmetic damage has been observed in plaster and drywall in wood-framed structures (Bureau of Mines, 1980). Concrete structures will be even more resistant to damage. At a distance of 50 feet, the peak particle velocity will degrade considerably to approximately 0.1 in/sec, and at a distance of 400 feet (the closest off-site residence) to less than 0.01 in/sec. Therefore, off-site structures should not be affected and we do not anticipate that ground vibrations will be perceptible to residents.

Though we do not anticipate damage to existing WWTP facilities as a result of transient vibrations, we recommend that CAWD evaluate if any structures or equipment are especially sensitive to vibration. Additional limits can be placed on the pile driving activities or alternative foundation systems evaluated if sensitive structures are identified.

The pile driving may also result in limited settlement of soils in close proximity to the pile installation due to vibration-induced compaction of liquefaction-susceptible loose sands. Because of the high decay of vibrations with distance away from the pile and the relatively small proportion of soils with low blow counts, the maximum settlement is expected to be on the order of 2 inches with the cone of depression confined to within about 5 feet of the pile.

In summary, we recommend that CAWD and the design team further evaluate the effect on existing facilities in close proximity to pile driving based on the estimated transient vibrations and permanent ground deformations provided above. We further recommend that ground vibrations be monitored during pile driving at the closest on-site structure and at the property line. This will allow for adjustment of pile driving installation procedures, if warranted, and provide a record in the event of claims from off-site homeowners.

3.6.4 Construction Considerations

Pile driving to the desired tip elevations is expected to be possible provided the appropriate pile hammer is selected for the project. Piles may experience hard driving within some of the gravelly sand layers. A hammer that can deliver enough energy to the tip of the piles to drive them efficiently and without damage should be selected. We recommend that the foundation contractor submit the specifications for the pile driving equipment for review at least one week before the start of pile installation. The submittal should include a Wave Equation Analysis of Pile Driving (WEAP) to support the hammer selection for the anticipated subsurface conditions.

We recommend that an indicator pile program be performed prior to casting of production piles. The indicator pile program would provide estimates of pile lengths to supplement the data obtained from the subsurface borings. Indicator piles can be driven at production pile locations. Further, we recommend that a Pile Driving Analyzer (PDA) and CAPWAP program be used for a subset of the indicator piles to evaluate the design, appropriate size of hammer, and to establish pile driving acceptance criteria for the project. Performing PDA testing during a re-strike after the pile is allowed to set will likely also be required to demonstrate that the allowable axial capacities have been attained. At least six piles should be tested. The locations of the piles for PDA testing should be widely spread across the site to adequately evaluate the variability in subsurface conditions. The production piles should be installed with the same pile driving hammer and fuel setting as the indicator piles.

Vibration and noise monitoring should be performed during the indicator pile program and during installation of production piles to evaluate peak particle velocities at adjacent structures and at the property line. We should review these data as they are obtained.

3.7 SLABS-ON-GRADE

Some equipment pads or other minor appurtenant structures that can tolerate larger total and differential settlement due to liquefaction-induced seismic settlement may be supported on concrete slabs-on-grade that are not supported by piles. For such slabs, we recommend that the subgrade surface be scarified to a depth of 6 inches, moisture conditioned to achieve a water content close to the optimum, and compacted to a relative compaction of at least 95 percent based on ASTM D1557. Slabs-on-grade should be structurally separated from pile-supported structures to reduce the potential for distress due to differential settlement.

Slabs constructed in this manner will have an allowable bearing capacity of at least 1,000 psf provided the bottom of the footing/slab is embedded at least 2 feet below grade and the groundwater table is at least 2.5 feet below the bottom of the footing/slab. This evaluation assumes that the soil below groundwater is in a liquefied state, and the slab is supported on a minimum 2.5-foot thick stratum of non-liquefied ground.

As indicated in *Section 3.1.5*, structures supported on shallow foundations should be expected to experience seismic settlement of up to approximately 7 to 9 inches in the event of a large earthquake. The differential settlement may be as high as approximately 1 inch over a horizontal distance of 5 feet (i.e. angular distortion of 1/60). This is expected to exceed the tolerable limits for total and differential settlement for most structures, in which case they should be supported on piles.

3.8 FLEXIBLE PAVEMENT

We understand that access roadways to the new structures may be constructed utilizing either gravel or asphalt. In the event that asphalt pavement is used, we evaluated the required pavement structural section.

Based on laboratory testing of two soil samples of the near surface soils, the resistance value, or R-value, was evaluated to be between 54 and 59. In our assessment, an R-Value of 50 was used for determining the asphalt concrete (AC) and aggregate base (AB) sections presented on ***Table 6 – Asphalt Pavement Structural Sections***. The structural sections presented in the table are based

on the California Method of flexible pavement design as presented in Chapter 630 of the Caltrans Highway Design Manual (Caltrans, 2008). The computer program Newcon90 was utilized to assist in the analysis. The pavement sections consider traffic indices of 5, 6, and 7 for the possible type and volume of traffic anticipated on the site access/maintenance road.

TABLE 6 – ASPHALT PAVEMENT STRUCTURAL SECTIONS

Traffic Index	5	6	7
Asphalt	0.20 ft.	0.25 ft.	0.30 ft.
Class 2 Aggregate Base (R=78)	0.35 ft.	0.35 ft.	0.45 ft.

Structural section components should comply with the relevant portions of the latest Caltrans Standard Specifications. Aggregate base material should meet the requirements of Class 2 Aggregate Base in Section 26 of the Standard Specifications. The aggregate base should be compacted to at least 95 percent of the maximum dry density as evaluated by ASTM D1557. Prior to placement of base material, the top 6 inches of subgrade soil should be scarified, moisture conditioned, and compacted to at least 95 percent relative compaction.

4. CLOSURE

The conclusions and recommendations presented herein are professional opinions based on geotechnical and geologic data and the project as described. A review by this office of any foundation, excavation, grading plans and specifications, or other work product that relies on the content of this report, together with the opportunity to make supplemental recommendations is considered an integral part of this study. Should unanticipated conditions come to light during project development or should the project change from that described, we should be given the opportunity to review our recommendations.

The findings and professional opinions presented in this report are presented within the limits prescribed by the client, in accordance with generally accepted professional engineering and geologic practices. There is no other warranty, either express or implied.

Sincerely,
GEOTECHNICAL CONSULTANTS, INC.

10/30/14
Deron J. Van Hoff, P.E., G.E.
Vice President

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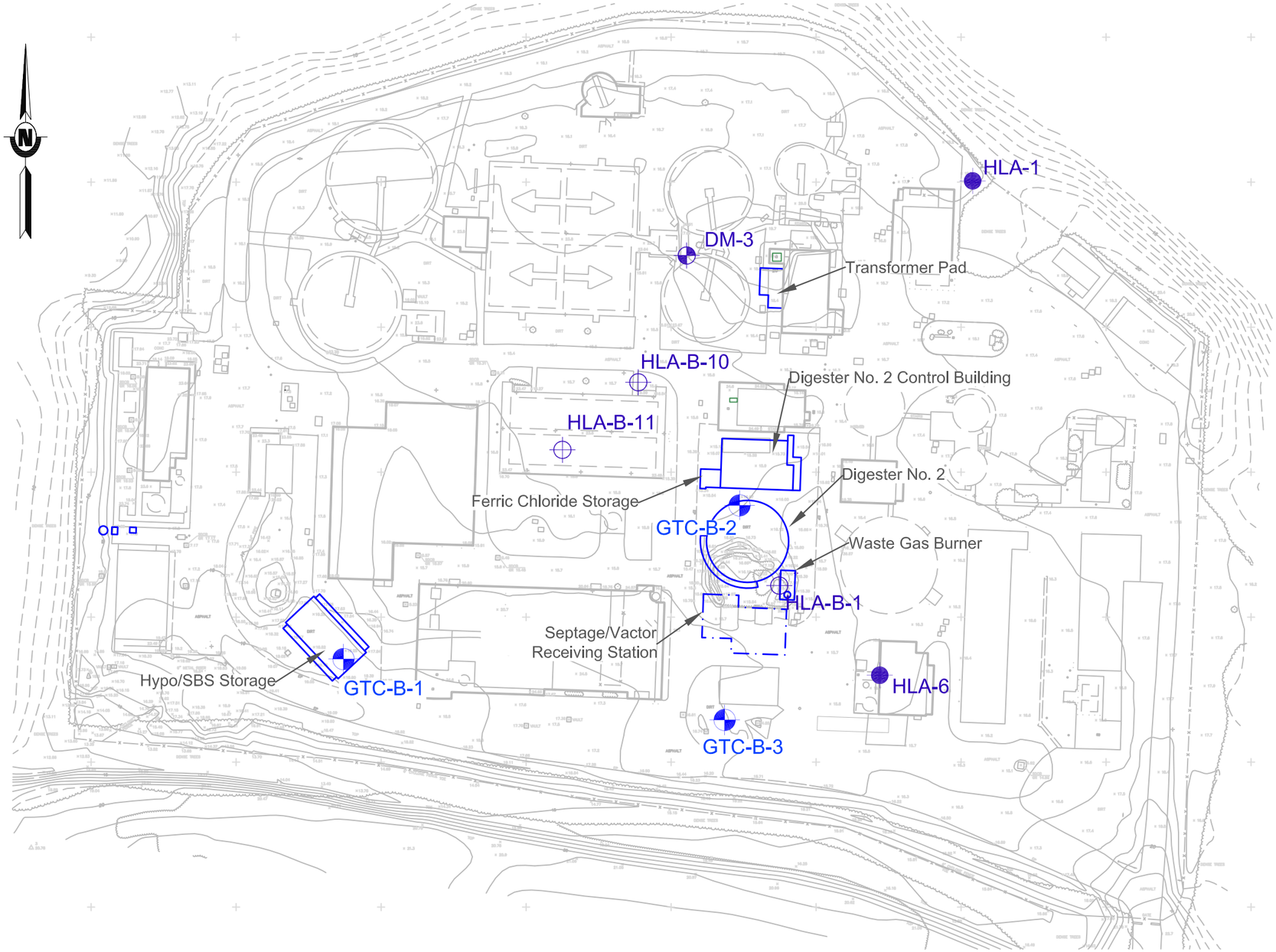

LEGEND

GTC-B-3 — Geotechnical Soil Boring by Geotechnical Consultants, Inc., December 5 and 6, 2013

PREVIOUS BORINGS:

HLA-B-11 — Geotechnical Soil Boring by Harding Lawson Associates, 1991

HLA-6 — Geotechnical Soil Boring by Harding Lawson Associates, 1981

DM-3 — Geotechnical Soil Boring by Dames & Moore, 1970

0 40 80 160 FEET

SCALE

SOURCE: CAWD WWTP Rehabilitation Project - Phase1, General Plant Site Plan, Kennedy/Jenks Consultants, September 2014.

GEOTECHNICAL CONSULTANTS, INC.
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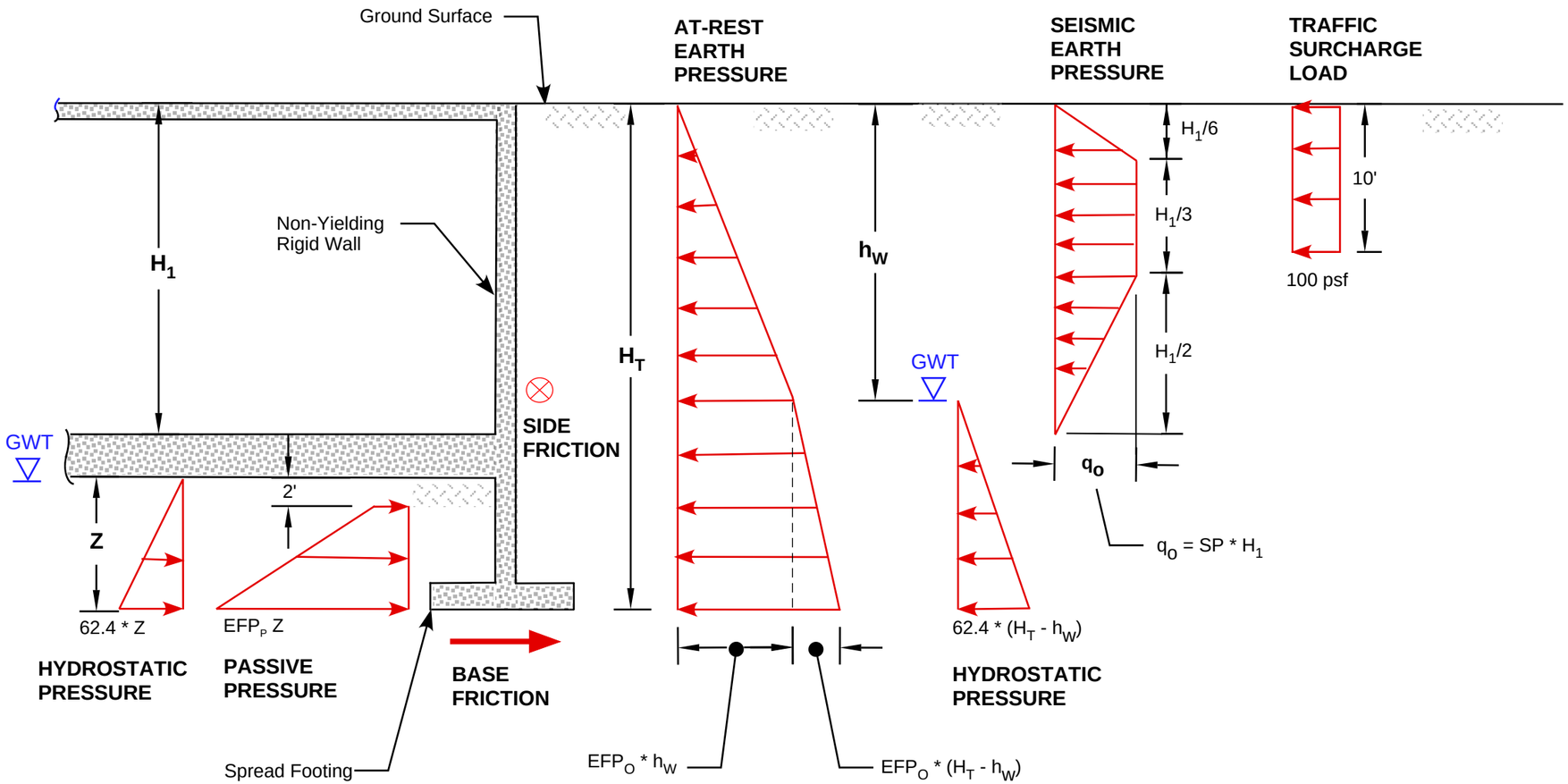
GEOTECHNICAL EXPLORATION MAP	PLATE
CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT	1
OCTOBER 2014	SF13035



NOTES:

1. Lateral earth pressures are in units of pounds per square foot (psf), and H, Z and h_w are measured in feet.
2. Passive pressures shown include a factor of safety of ~1.5. The top 2 feet of passive pressure should be ignored.
3. Base friction coefficient of 0.4 may be used to calculate base resistance to lateral loads. If the footing or mat/slab is cast upon a waterproofing membrane, the friction coefficient should be reduced to 0.3.
4. Side friction should be calculated based on a friction factor of 0.3 times the at-rest earth pressure distribution. The side friction along top 10 feet of the wall should be ignored.
5. Passive pressure and base friction may be combined to resist at-rest, hydrostatic and surcharge loads, provided the wall is designed to accommodate such loading.
6. Surcharge load shown is for normal HS20 loading on adjacent roads and parking areas. Any additional surcharge loads should be evaluated by the structural engineer.

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500 Sansome Street, Suite 402
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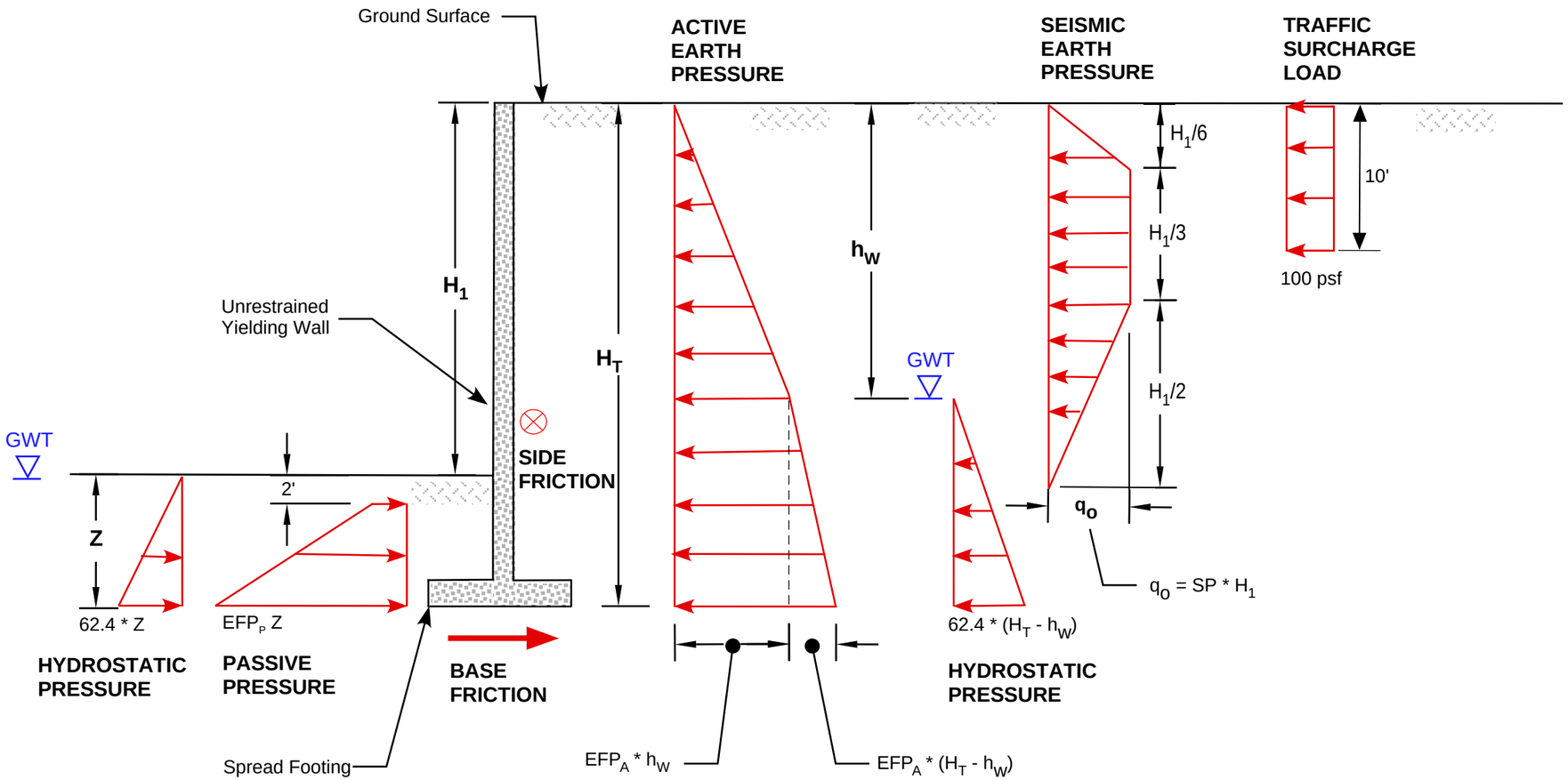
LATERAL EARTH PRESSURE DISTRIBUTIONS FOR RESTRAINED, NON-YIELDING PERMANENT WALLS

CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT

OCTOBER 2014

PLATE 2

SF13035



NOTES:

1. Lateral earth pressures are in units of pounds per square foot (psf), and H, Z and h_w are measured in feet.
2. Passive pressures shown include a factor of safety of ~1.5. The top 2 feet of passive pressure should be ignored.
3. Base friction coefficient of 0.4 may be used to calculate base resistance to lateral loads. If the footing or mat/slab is cast upon a waterproofing membrane, the friction coefficient should be reduced to 0.3.
4. Side friction should be calculated based on a friction factor of 0.3 times the active earth pressure distribution. The side friction along top 10 feet of the wall should be ignored.
5. Passive pressure and base friction may be combined to resist at-rest, hydrostatic and surcharge loads provided the wall is designed to accommodate such loading.
6. Surcharge load shown is for normal HS20 loading on adjacent roads and parking areas. Any additional surcharge loads should be evaluated by the structural engineer.

GEOTECHNICAL CONSULTANTS, INC.
500 Sansome Street, Suite 402
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LATERAL EARTH PRESSURE DISTRIBUTIONS FOR UNRESTRAINED, YIELDING PERMANENT WALLS

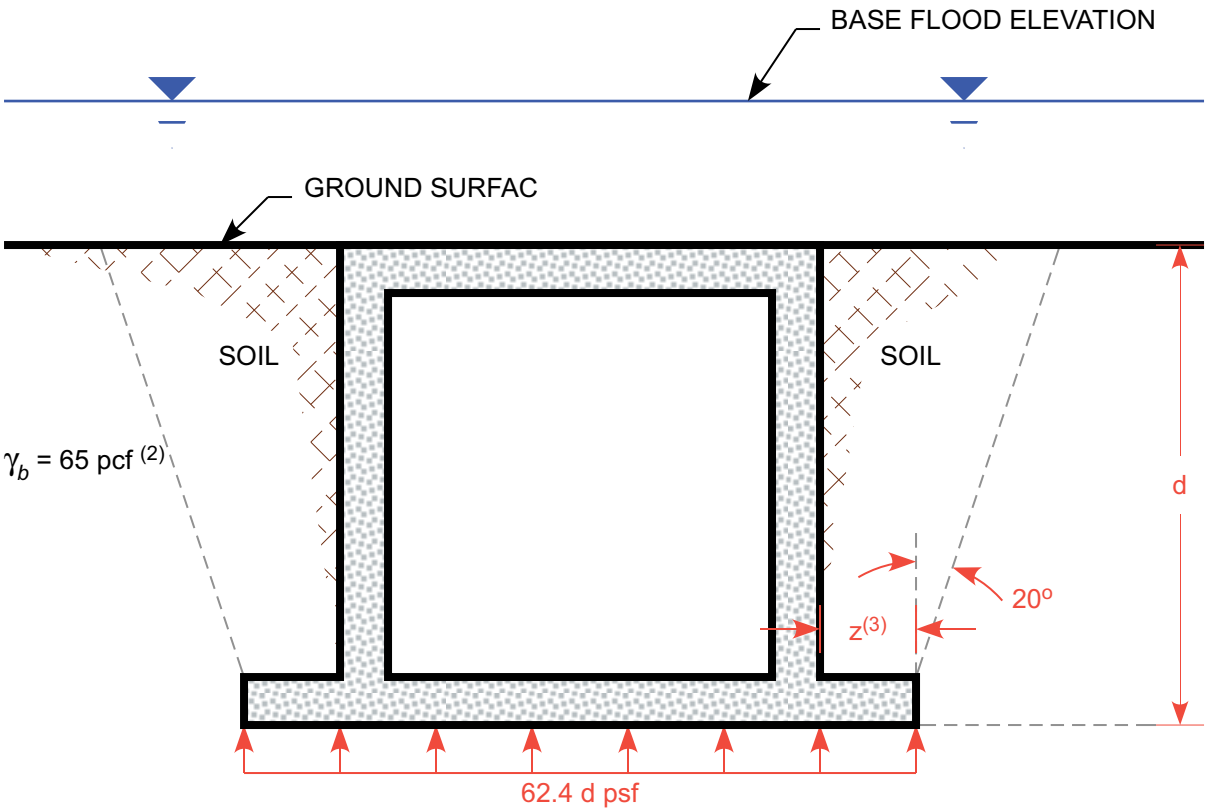
CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT

OCTOBER 2014

PLATE 3

SF13035

UPLIFT RESIST NCE (1)



NET HYDROSTATIC UPLIFT PR SSURE

NOTES:
1. Uplift resistance equals weight of structure plus weight of soil wedges.
2. γ_b is buoyant unit weight of backfill soils.
3. Width of footing key, z, should be at least 12 inches to mobilize soil wedges.

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UPLIFT RESISTANCE	PLATE 4
CAWD WASTEW TER T TMENT PL NT REHABILIT TION PROJECT	
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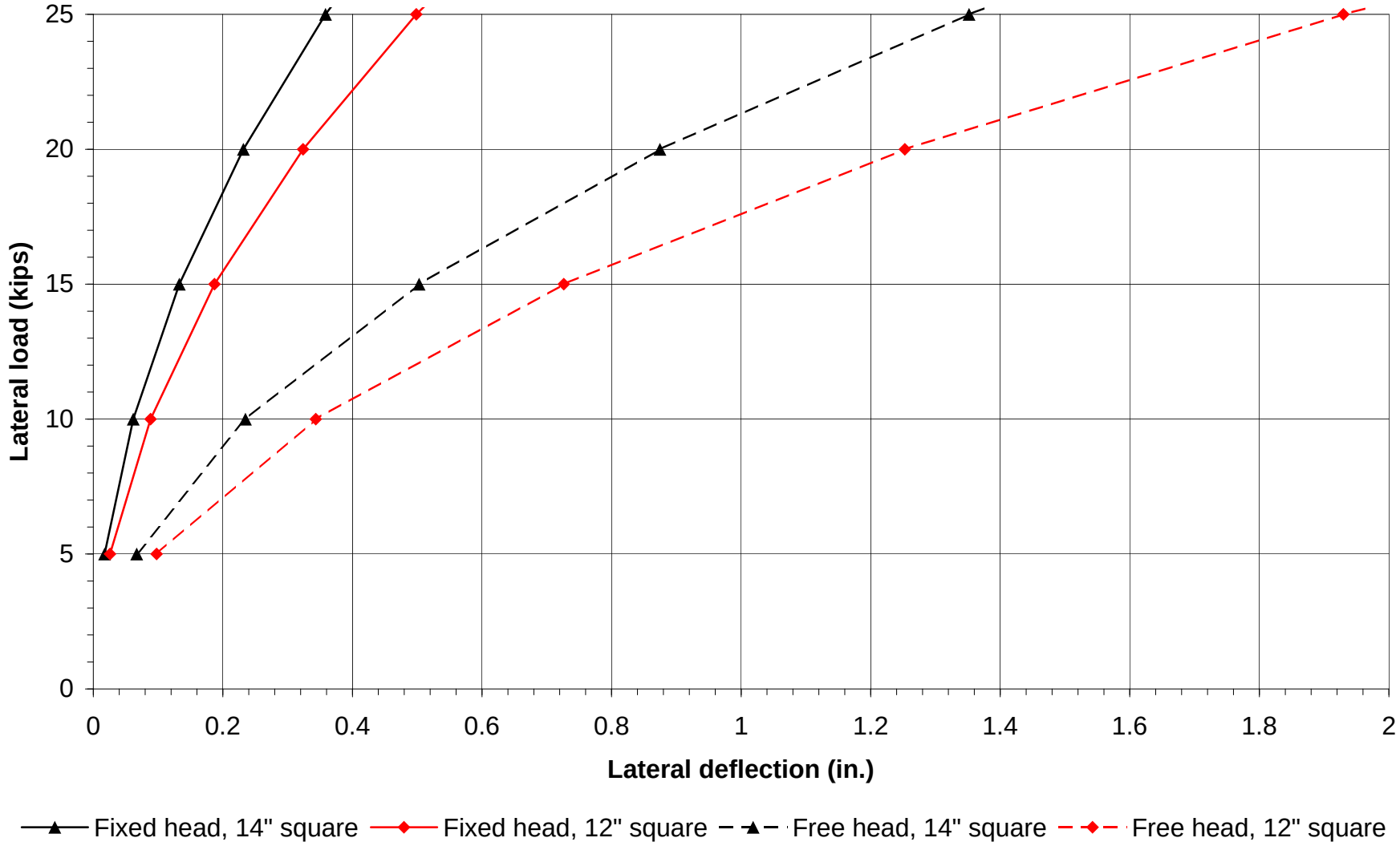
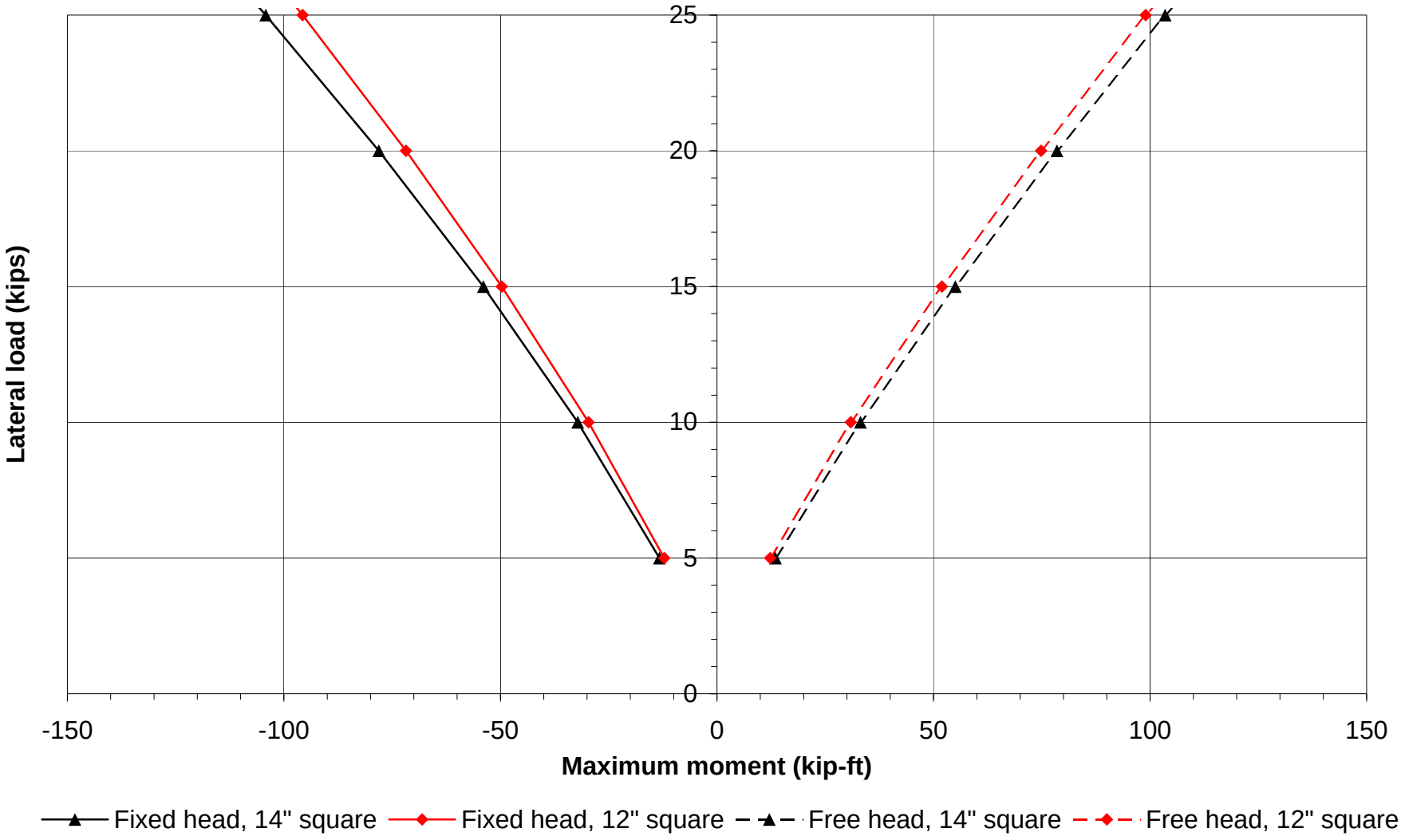
Lateral load vs. pile head deflection

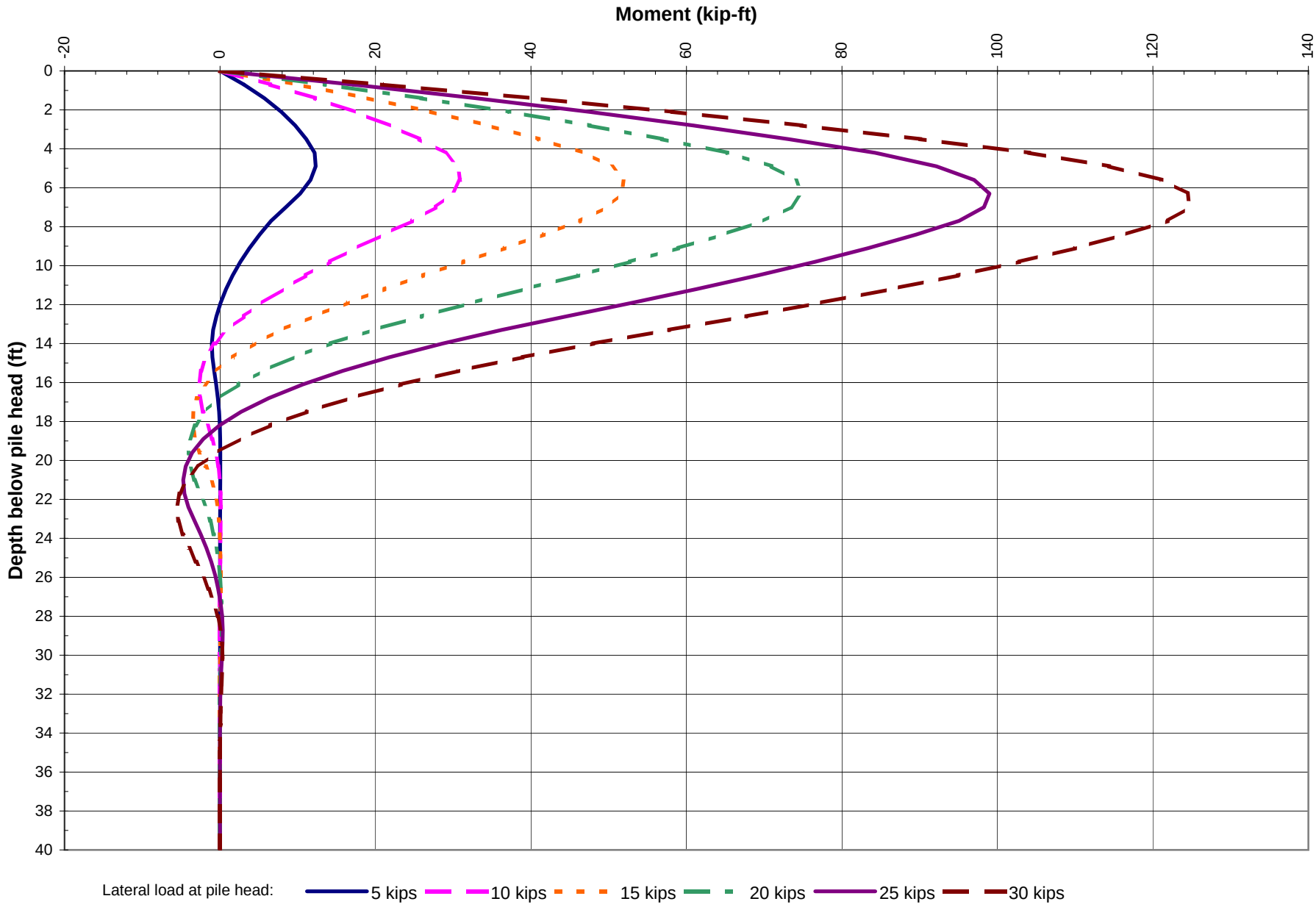


GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	LATERAL LOAD VS PILE HEAD DEFLECTION (PRESTRESSED RC PILE)	PLATE
	CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT	**5**
	OCTOBER 2014	SF13035

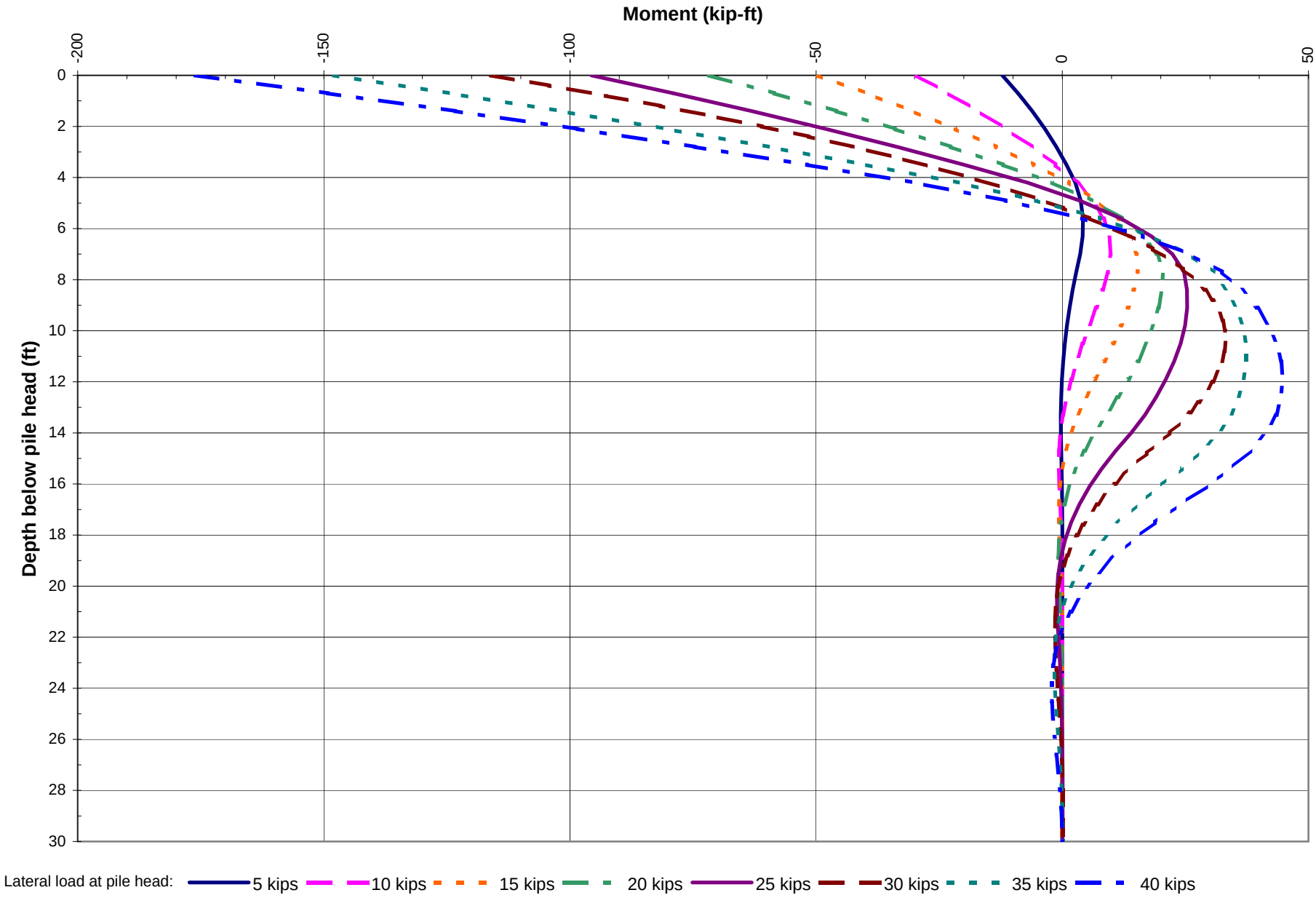
Lateral load vs. maximum moment



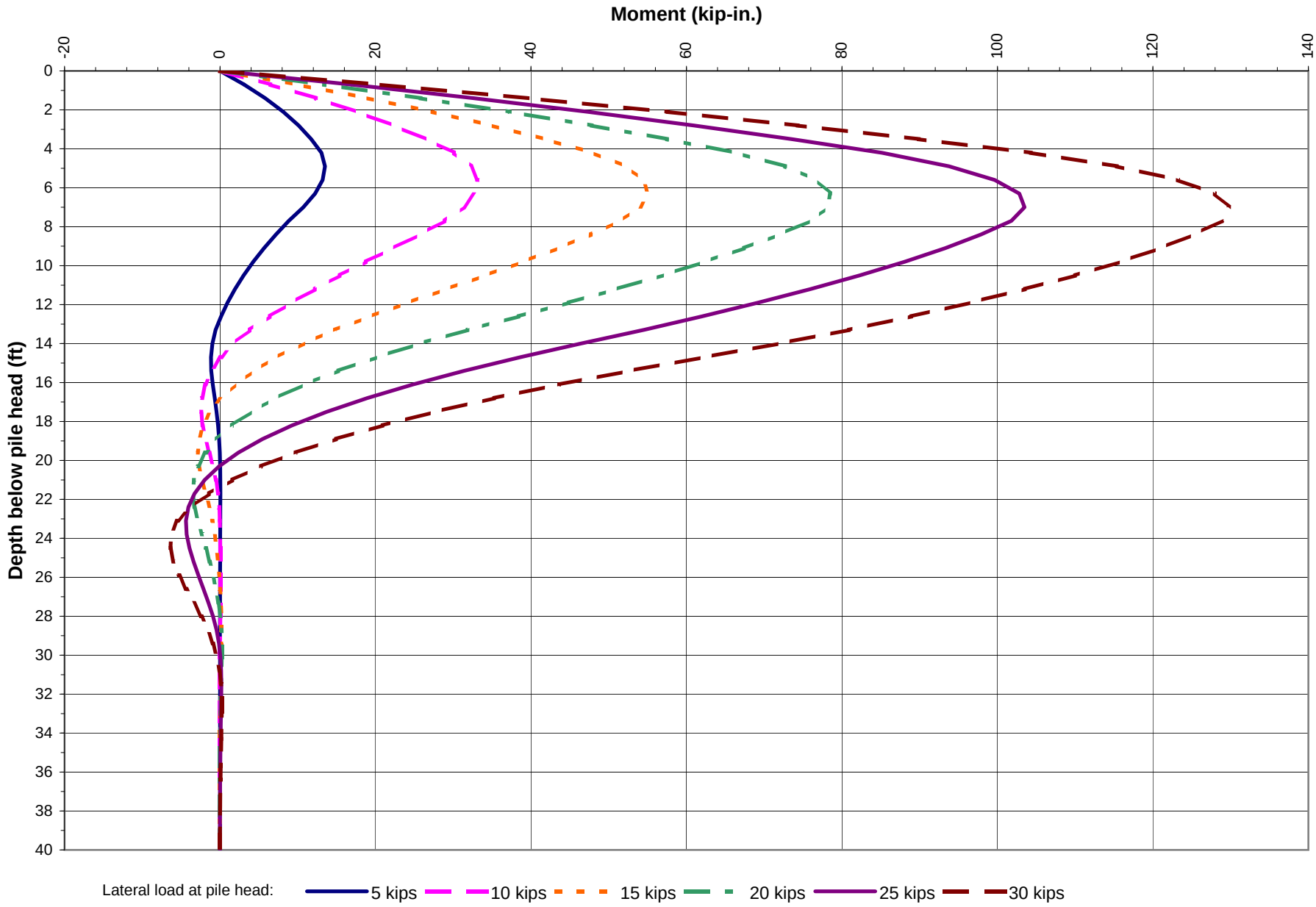
GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	LATERAL LOAD VS MAXIMUM MOMENT (PRESTRESSED RC PILE)	PLATE
	CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT	**6**
	OCTOBER 2014	SF13035



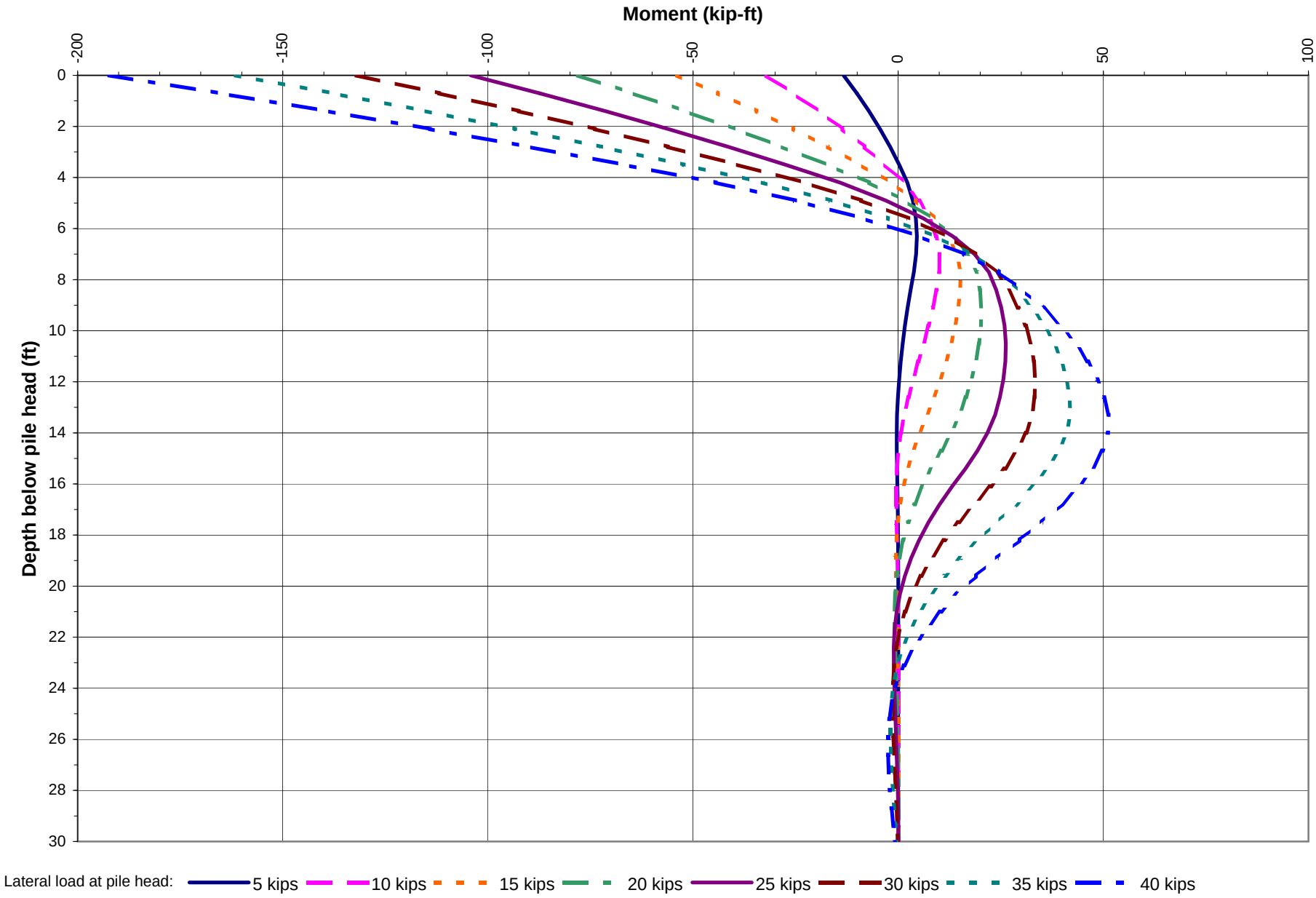
GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	MOMENT DIAGRAM OF 12" SQUARE PRESTRESSED RC PILE (FREE HEAD)	PLATE
	CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT	**7**
	OCTOBER 2014	SF13035



GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	MOMENT DIAGRAM OF 12" SQUARE PRESTRESSED RC PILE (FIXED HEAD)	PLATE
	CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT	**8**
	OCTOBER 2014	SF13035



GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	MOMENT DIAGRAM OF 14" SQUARE PRESTRESSED RC PILE (FREE HEAD)	PLATE
	CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT	9
	OCTOBER 2014	SF13035



GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	MOMENT DIAGRAM OF 14" SQUARE PRESTRESSED RC PILE (FIXED HEAD)	PLATE
	CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT	**10**
	OCTOBER 2014	SF13035

APPENDIX A

SUPPORTING GEOTECHNICAL DATA

APPENDIX A
SUPPORTING GEOTECHNICAL DATA

SUBSURFACE EXPLORATION

Subsurface exploration for our geotechnical study of CAWD WWTP Rehabilitation Project – Phase 1 took place between December 5 and 6, 2013. The subsurface exploration consisted of drilling three borings using mud rotary wash drilling techniques (GTC-B-1 through GTC-B-3). The borings were backfilled with cement grout upon the completion of drilling. The following table shows the depth and approximate elevation of the explorations.

TABLE A-1 – SUMMARY OF GEOTECHNICAL EXPLORATIONS

Boring	Date Drilled	Approximate Surface Elevation (feet, NAVD 88)	Depth (feet)
GTC-B-1	12/5/13	+18.5	51.5
GTC-B-2	12/5/13	+16.0	81.5
GTC-B-3	12/6/13	+16.0	51.5

Locations of the subsurface explorations are shown on ***Plate 1***. Logs of the borings are presented as Plate A-1.1 through Plate A-1.3. A legend to the logs is attached as Plate A-2.

The stratification lines shown on the boring logs represent the approximate boundaries between soil types; the actual transition may be gradual. The boring locations were estimated in the field by measuring from site features. Surface elevations were estimated based on a topographic map of the site provided by Kennedy/Jenks Consultants. The locations and elevations of the borings should be considered accurate only to the degree implied by the method used.

SOIL SAMPLING METHODS

Soil sampling methods used during the exploration program were Standard Penetration Tests (SPTs), and a 2.5-inch diameter split barrel sampler.

SPTs were performed using a 2-inch outside diameter, 1.5-inch inside diameter steel sampler without liners. The sampler was driven by repeatedly dropping a 140-pound safety hammer approximately 30 inches onto the sampling rod to which the sampler was attached. The number

of blows required to drive the sampler the last 12 inches of a total 18-inch drive is referred to as the standard penetration test blow count or N-value, and is recorded on the drill hole logs. Blow counts were recorded for the purpose of estimating relative soil densities.

A split barrel sampler was driven a total of 18 inches per ASTM D1586. The sampler is 3 inches outside diameter and 2.5 inches inside diameter lined with three six-inch long brass tubes with an inside diameter of 2.42 inches. The sampler was driven by repeatedly dropping a 140-pound safety hammer approximately 30 inches on the drill rod to which the sampler was attached. The number of blows required to drive the sampler the last 12 inches of a total of 18-inch interval is referred to as the blow count and is recorded on the boring logs.

LABORATORY TEST RESULTS

LABORATORY TESTING

Laboratory tests were performed on representative soil samples in order to define the engineering properties of the earth materials.

MOISTURE AND DENSITY DETERMINATIONS

Moisture content (per ASTM D2216) and dry density (per ASTM D7263) determinations were performed on representative samples to evaluate the natural water content and dry density of the soils encountered. The results are presented on the boring logs.

GRAIN SIZE DISTRIBUTION DATA (GS)

Grain-size distribution tests were conducted on representative samples. The tests were performed in accordance with ASTM D422 - Particle-Size Analysis of Soils. Results of these tests are included in this Appendix.

ATTERBERG LIMITS

Atterberg limits were performed on selected soil samples. Testing was performed in accordance with ASTM D4218 - Liquid Limit, Plastic Limit, and Plasticity Index of Soils. Results of these tests are presented on the boring logs, and included in this Appendix.

UNCONSOLIDATED UNDRAINED TRIAXIAL TESTS (TxUU)

An unconsolidated undrained triaxial test was performed on a selected soil sample. Testing was performed in accordance with Standard Test Method ASTM D2850 – Unconsolidated Undrained Triaxial Test on Cohesive Soils. The results of this tests are included in this Appendix.

R-VALUE (R)

The resistance value, or R-value, for subgrade soils was evaluated in accordance with Standard Test Method ASTM D2844 – Resistance R-Value and Expansion Pressure of Compacted Soils. Samples were prepared and each was tested for exudation pressure and R-value. The graphically evaluated R-value at an exudation pressure of 300 pounds per square inch is reported. The results of these tests are included in this Appendix.

CORROSION TESTING (CORR)

Corrosion testing was performed to evaluate resistivity, pH, chloride and sulfate concentrations, as well as other chemical constituents of selected soil samples. The results of these tests are included in this Appendix.

LOG OF DRILL HOLE

JOB NO.: SF13035
PROJECT: Carmel Area Wastewater Treatment Plant
LOCATION: 26900 State Route 1, Carmel, California
DRILLING METHOD: 5 inch diameter Rotary Wash, automatic hammer.

LOGGED BY: D. Laduzinsky
CHECKED BY: D. van Hoff

DRILL HOLE NO.: GTC-B-1
DRILLING DATE: December 5, 2013
ELEVATION: 18.5 feet
DATUM: NAVD88

DEPTH (FEET)	SAMPLE	BLOW COUNT	TORVANE SHEAR STRENGTH (TSF)	POCKET PENETROMETER COMP. STRENGTH (TSF)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	UNDRAINED SHEAR STRENGTH (PSF)	ADDITIONAL TESTS
						"ARTIFICIAL FILL (af)" SILTY SAND with GRAVEL (SM), light brown, dry, loose, fine grained sand. Damp.						
5		12				POORLY GRADED SAND with SILT (SP-SM), yellowish brown, dry to damp, medium dense, fine grained sand. At 7 ft: Asphalt fragments.						
						"FLOODPLAIN DEPOSITS (Qfp)" PEAT (OH), black, moist, soft, organic/petroleum odor.						
10		9				POORLY GRADED SAND (SP), gray, wet, loose, fine to medium grained sand, abundant peat. At 11.5 ft: Moist to wet, no peat, fine to coarse grained sand, trace coarse gravel.	72.0	33.8				CORR, GS (-#200=4.2%)
15		16				Light brown, wet, medium dense, minor coarse grained sand up to 1/8 inch diameter.						GS (-#200=4.0%)
20		16										
25		16				Light grayish brown, fine to coarse grained sand, fine to coarse gravel up to 1 inch diameter.						GS (-#200=2.2%)
30		13				No gravel.						
35		68				POORLY GRADED SAND with SILT (SP-SM), light grayish brown, wet, very dense, fine to medium grained sand, trace fine gravel up to 1/4 inch diameter.	117.4	13.8				GS (-#200=5.3%)
40		15				Gray, medium dense, no gravel.						
						POORLY GRADED SAND (SP), gray, wet, very dense, fine to medium grained sand.						
45		73					106.7	20.2				GS (-#200=2.5%)
50		32				Dense, minor coarse grained sand and minor gravel.						
55						NOTES: 1) Bottom of boring at 51.5 feet. 2) Groundwater not measured due to drilling method. 3) Boring backfilled with cement grout on 12/5/13. 4) Hammer efficiency of automatic hammer assumed to be 75 percent (C_E=1.25).						

LOG_DRILL_HOLE SF13035 - CARMEL WTP.GPJ GTC.GDT 1/29/14

LOG OF DRILL HOLE

JOB NO.: SF13035
PROJECT: Carmel Area Wastewater Treatment Plant
LOCATION: 26900 State Route 1, Carmel, California
DRILLING METHOD: 5 inch diameter Rotary Wash, automatic hammer.

LOGGED BY: D. Laduzinsky
CHECKED BY: D. van Hoff

DRILL HOLE NO.: GTC-B-2
DRILLING DATE: December 5, 2013
ELEVATION: 16 feet
DATUM: NAVD88

DEPTH (FEET)	SAMPLE	BLOW COUNT	TORVANE SHEAR STRENGTH (TSF)	POCKET PENETROMETER COMP. STRENGTH (TSF)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	UNDRAINED SHEAR STRENGTH (PSF)	ADDITIONAL TESTS
						"ARTIFICIAL FILL (af)" SILTY SAND with GRAVEL (SM), light brown, dry, loose, fine to coarse grained sand. Rounded 2 to 3 inch diameter cobbles. At 3 ft: Layer of clayey cemented gravel with brick fragments.						R
5		32										CORR
						"FLOODPLAIN DEPOSITS (Qfp)" POORLY GRADED SAND (SP), very light brown, damp, medium dense, fine grained sand.						
10		6				Fine to coarse grained sand, abundant mica. Loose. Layer of silty fine grained sand. Thin layer of silt/clay.						
15		46				Light grayish brown, wet, dense, trace fine to coarse gravel at 1/8 to 1 1/2 inches in diameter.	113.7	16.0				GS (-#200=4.0%)
20		16				Medium dense, no gravel, fine to coarse grained sand.						
25		32				Thin silt layer.						
30		24				Gray, fine to medium grained sand.						
35		26				Trace coarse grained sand.	113.7	19.3				GS (-#200=2.5%)
40		22				Fine to medium grained sand, trace fine gravel up to 1/4 inch diameter.						
45		7				SILT (ML), very dark gray, wet, medium stiff, abundant mica.	76.0	44.7	45	38	260 (TxUU)	GS (-#200=85.2%)
50		7				Stiff, thin sandy silt layer. Trace organics, brown wood fragments.						
55		14				Interbedded SILT and SILTY SAND (ML+SM), very dark gray, wet, medium dense, fine grained sand, trace brown organics.	87.0	41.9	NV	NP		GS (-#200=47.7%)

LOG_DRILL_HOLE SF13035 - CARMEL WTP.GPJ GTC.GDT 1/29/14

LEGEND TO LOGS ON PLATE A-2

LOG OF DRILL HOLE

JOB NO.: SF13035
PROJECT: Carmel Area Wastewater Treatment Plant
LOCATION: 26900 State Route 1, Carmel, California
DRILLING METHOD: 5 inch diameter Rotary Wash, automatic hammer.

LOGGED BY: D. Laduzinsky
CHECKED BY: D. van Hoff

DRILL HOLE NO.: GTC-B-2
DRILLING DATE: December 5, 2013
ELEVATION: 16 feet
DATUM: NAVD88

DEPTH (FEET)	SAMPLE	BLOW COUNT	TORVANE SHEAR STRENGTH (TSF)	POCKET PENETROMETER COMP. STRENGTH (TSF)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	UNDRAINED SHEAR STRENGTH (PSF)	ADDITIONAL TESTS
65		43				Interbedded SILT and SILTY SAND (ML+SM) (cont.)						
		15				SILTY SAND (SM), dark gray, wet, medium dense, fine grained sand, abundant mica.						
70						SILT (ML), dark gray, damp, stiff, abundant mica.						
		9										
75		35				SILTY SAND (SM), dark gray, wet, medium dense, fine grained sand, abundant mica.						
80		35										
						NOTES: 1) Bottom of boring at 81.5 feet. 2) Groundwater not measured due to drilling method. 3) Boring backfilled with cement grout on 12/5/13. 4) Hammer efficiency of automatic hammer assumed to be 75 percent (C_E=1.25).						
85												
90												
95												
100												
105												
110												
115												

LOG_DRILL_HOLE SF13035 - CARMEL WTP.GPJ GTC.GDT 1/29/14

LEGEND TO LOGS ON PLATE A-2

LOG OF DRILL HOLE

JOB NO.: SF13035
PROJECT: Carmel Area Wastewater Treatment Plant
LOCATION: 26900 State Route 1, Carmel, California
DRILLING METHOD: 5 inch diameter Rotary Wash, automatic hammer.

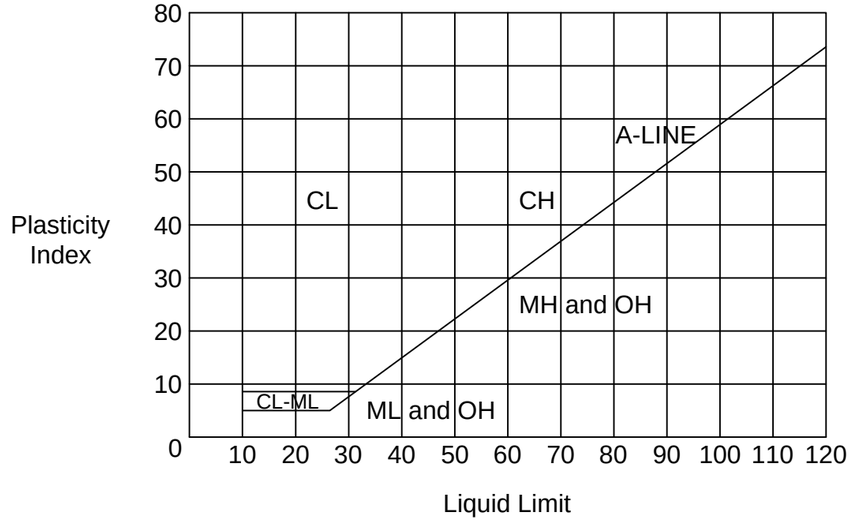
LOGGED BY: D. Laduzinsky
CHECKED BY: D. van Hoff

DRILL HOLE NO.: GTC-B-3
DRILLING DATE: December 6, 2013
ELEVATION: 16 feet
DATUM: NAVD88

DEPTH (FEET)	SAMPLE	BLOW COUNT	TORVANE SHEAR STRENGTH (TSF)	POCKET PENETROMETER COMP. STRENGTH (TSF)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	UNDRAINED SHEAR STRENGTH (PSF)	ADDITIONAL TESTS
						"ARTIFICIAL FILL (af)" SILTY SAND (SM), light brown, dry, loose, minor gravel and organics.						R
5		16				"FLOODPLAIN DEPOSITS (Qfp)" POORLY GRADED SAND (SP), very light brown, dry, medium dense, fine grained sand.						
10		10				POORLY GRADED SAND with GRAVEL (SP), very light brown, moist, medium dense, fine to coarse grained sand, gravel up to 1/4 inch diameter.						
15		17				Gravel with clasts up to 2 inches diameter. Thin silt/clay layer. POORLY GRADED SAND with SILT (SP-SM), gray, wet, medium dense, fine to medium grained sand, minor mica.						
20		15										GS (-#200=7.5%)
						POORLY GRADED SAND (SP), light brown, wet, medium dense, fine to coarse grained sand, minor mica.						
25		22										GS (-#200=3.4%)
						POORLY GRADED SAND with SILT (SP-SM), gray to black, moist, medium dense, fine grained sand, abundant organics and wood debris.	75.5	49.3				
30		21										
35		27				Dense, fine to medium grained sand, no organics.						GS (-#200=7.9%)
40		46										
45		22				Medium dense, fine grained sand.						
50		21										
55						NOTES: 1) Bottom of boring at 51.5 feet. 2) Groundwater not measured due to drilling method. 3) Boring backfilled with cement grout on 12/6/13. 4) Hammer efficiency of automatic hammer assumed to be 75 percent (C_E=1.25).						

LOG_DRILL_HOLE SF13035 - CARMEL WTP.GPJ GTC.GDT 1/29/14

PLASTICITY CHART - Used for Classification of Fine Grained Soils



BLOW COUNT - The number of blows required to drive the sampler the last 12 inches of an 18-inch drive. When the sampler is not advanced the last 12 inches, i.e. 100 blows in 9 inches, the notation is 100/9". WOH (Weight of Hammer) denotes only the weight of the drive hammer was required to drive the sampler or zero blows.

ADDITIONAL TESTS -

C:	Consolidation	GS:	Grain Size Distribution	SU:	Sulfate
CL:	Chloride	OC:	Organic Matter Content	TD:	Triaxial Compression, Drained
CORR:	Corrosion	pH:	Hydrogen Ion Concentration	TDy:	Triaxial Compression, Dynamic
CP:	Compaction	PM:	Permeability	TCU:	Triaxial Compression, Consolidated Undrained
DS:	Direct Shear	R:	R-Value	TxUU:	Triaxial Compression, Unconsolidated Undrained
EL:	Elasticity Index	RS:	Resistivity	UCS:	Unconfined Compressive Strength Test
EX:	Expansion	S:	Swell	VS:	Field Vane Shear Test
FC:	Fines Content (#200 Sieve Wash)	SE:	Sand Equivalent		
		SP:	Specific Gravity		

SAMPLE TYPES:

- MODIFIED CALIFORNIA SAMPLE
- DISTURBED SLEEVE
- UNSUCCESSFUL SLEEVE
- SHELBY TUBE
- STANDARD PENETRATION
- STANDARD PENETRATION NO RECOVERY
- ROCK or SOIL CORE
- BULK SAMPLE

CAVING:

- LIGHT CAVING
- HEAVY CAVING

WATER LEVEL:

- STABILIZED or PARTIALLY STABILIZED GROUNDWATER LEVEL
- UNSTABILIZED GROUNDWATER LEVEL
- SEEPAGE LEVEL

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISION			GROUP SYMBOL	DESCRIPTION	GRAPHIC LOG
COARSE GRAINED SOILS Over 50% By Weight Coarser Than No.200 Sieve Size	GRAVELLY SOILS OVER 50% OF COARSE FRACTION LARGER THAN NO.4 SIEVE SIZE	CLEAN GRAVELLY SOILS LITTLE OR NO FINES	GW	well graded gravels or gravel-sand mixtures	
			GP	poorly graded gravels or gravel-sand mixtures	
		GRAVELLY SOILS WITH FINES OVER 12% FINES	GM	silty gravels or gravel-sand-silt mixtures	
			GC	clayey gravels or gravel-sand-clay mixtures	
	SANDY SOILS OVER 50% OF COARSE FRACTION SMALLER THAN NO.4 SIEVE SIZE	CLEAN SANDY SOILS LITTLE OR NO FINES	SW	well graded sands or gravelly sands	
			SP	poorly graded sands or gravelly sands	
		SANDY SOILS WITH FINES OVER 12% FINES	SM	silty sands or sand-silt mixtures	
			SC	clayey sands or sand-clay mixtures	
FINE GRAINED SOILS Over 50% By Weight Finer Than No.200 Sieve Size	SILTY AND CLAYEY SOILS LIQUID LIMIT LESS THAN 50		ML	inorganic silts, very fine sands, silty fine sands, clayey silts with slight plasticity	
			CL	inorganic clays, gravelly, sandy, silty, or lean clays, of low to medium plasticity	
			OL	organic clays or organic silts of low plasticity	
	SILTY AND CLAYEY SOILS LIQUID LIMIT GREATER THAN 50		MH	inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
			CH	inorganic clays of high plasticity, fat clays	
			OH	organic clays or organic silts of medium to high plasticity	
HIGHLY ORGANIC SOILS			Pt	peat or other highly organic soil, organic content greater than 60%	
				trash fill-landfill refuse (not a part of unified soil classification system)	

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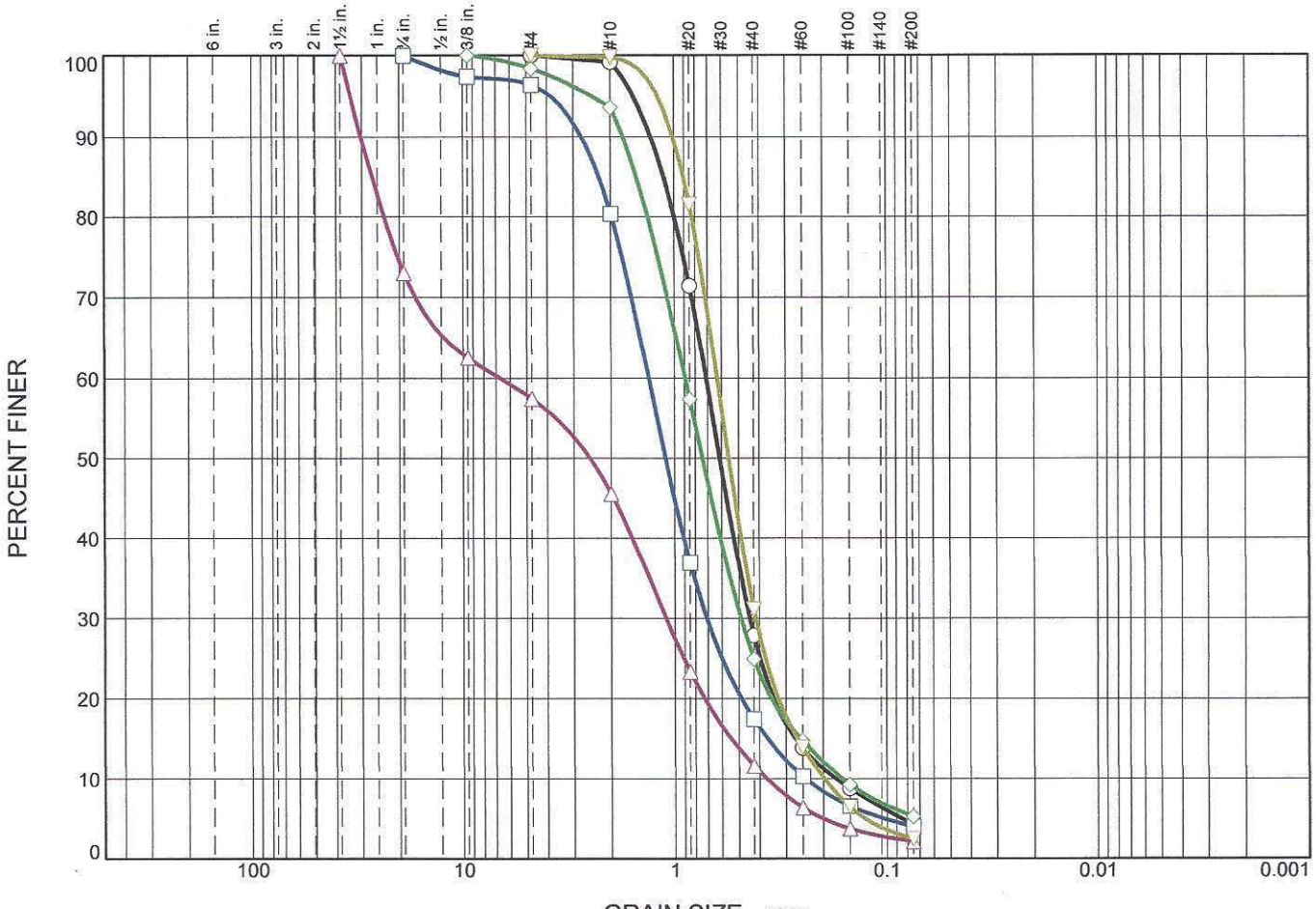
San Francisco, CA 94111

LEGEND TO LOGS	PLATE A - 2

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.8	71.3	23.7	4.2	
□	0.0	0.0	3.6	16.0	62.9	13.5	4.0	
△	0.0	27.0	15.5	11.9	33.9	9.5	2.2	
◇	0.0	0.0	1.6	4.7	68.8	19.6	5.3	
▽	0.0	0.0	0.0	0.2	68.7	28.6	2.5	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B1		11-11.5'	Light gray fine SAND.	SP
□	B1		15-16.5'	Dark brown fine to coarse SAND.	SP
△	B1		25-26.5'	Dark brown fine to coarse SAND w/gravel.	SP
◇	B1		36-36.5'	Dark gray fine to medium SAND.	SP-SM
▽	B1		46-46.5'	Dark gray fine to medium SAND.	SP

Soil Mechanics Lab

Oakland, California

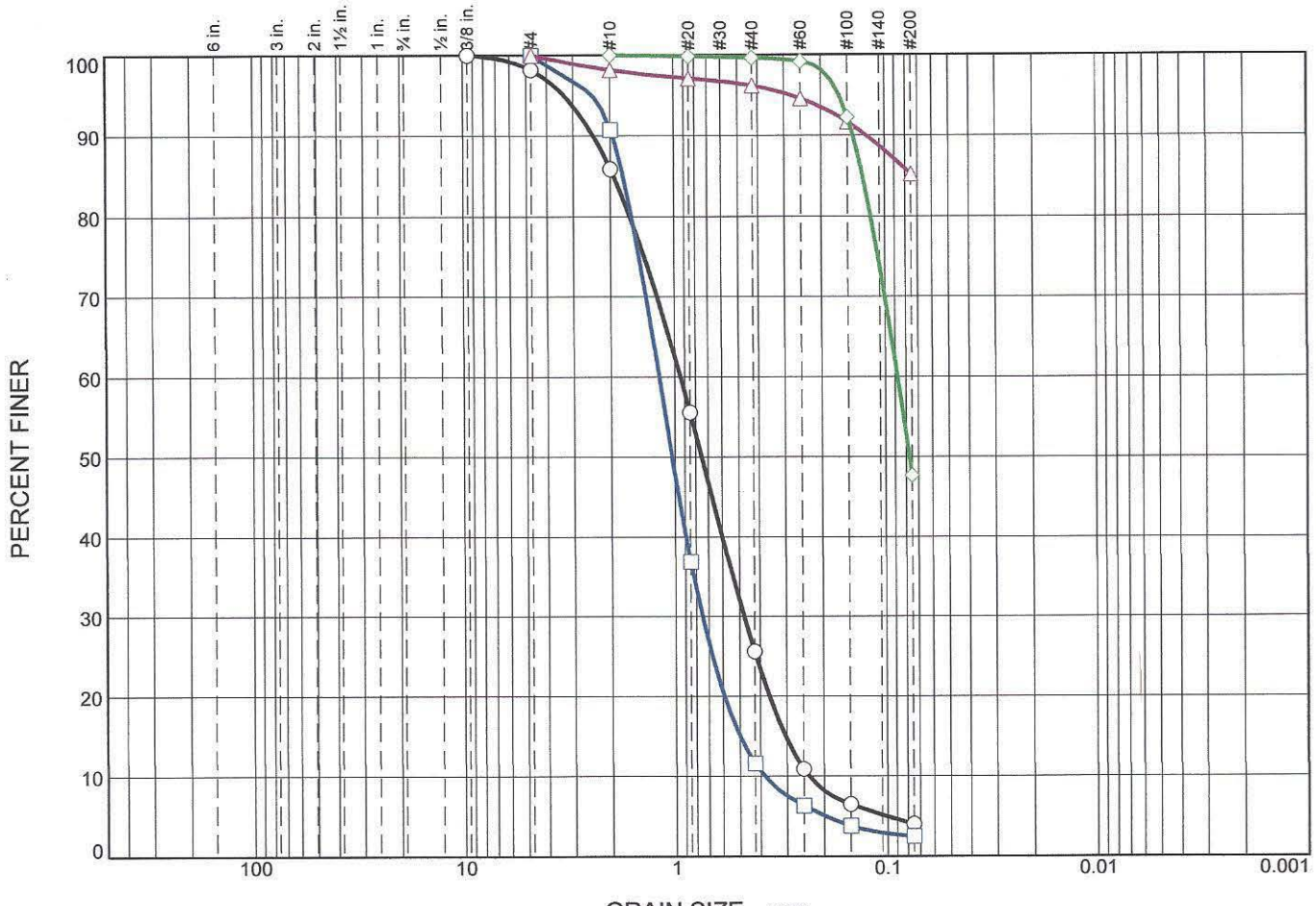
Client: Geotechnical Consultants,Inc.

Project: Carmel WWTP

Project No.: SF13035 **Figure**

Tested By: MA

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.8	12.4	60.2	21.6	4.0	
□	0.0	0.0	0.0	9.2	79.2	9.1	2.5	
△	0.0	0.0	0.0	1.8	2.0	11.0	85.2	
◇	0.0	0.0	0.0	0.0	0.3	52.0	47.7	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B2		16-16.5'	Dark gray fine to medium SAND.	SP
□	B2		36-36.5'	Dark gray fine to medium SAND.	SP
△	B2		46-46.5'	Soft,grayish black clayey SILT w/organics.	ML
◇	B2		56-56.5'	Soft,grayish black silty fine SAND-micaceous.	SM

Soil Mechanics Lab

Oakland, California

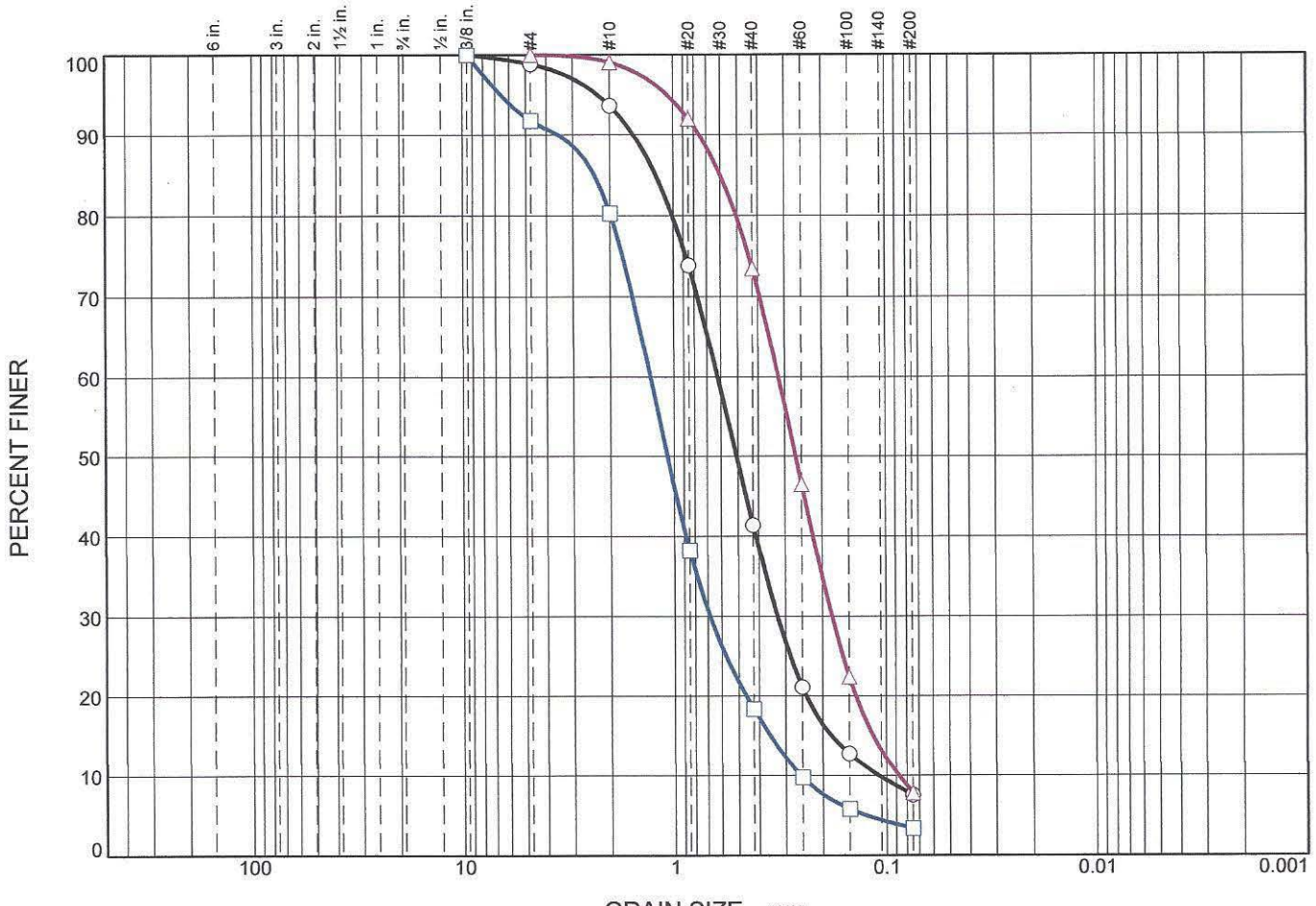
Client: Geotechnical Consultants,Inc.

Project: Carmel WWTP

Project No.: SF13035 **Figure**

Tested By: MA

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.2	5.2	52.2	33.9	7.5	
□	0.0	0.0	8.2	11.5	61.9	15.0	3.4	
△	0.0	0.0	0.0	0.9	25.6	65.6	7.9	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B3		20-21.5'	Very dark gray silty fine SAND-micaceous.	SP-SM
□	B3		25-26.5'	Dark gray/brown fine to coarse SAND.	SP
△	B3		35-36.5'	Very dark gray silty fine SAND-micaceous.	SP-SM

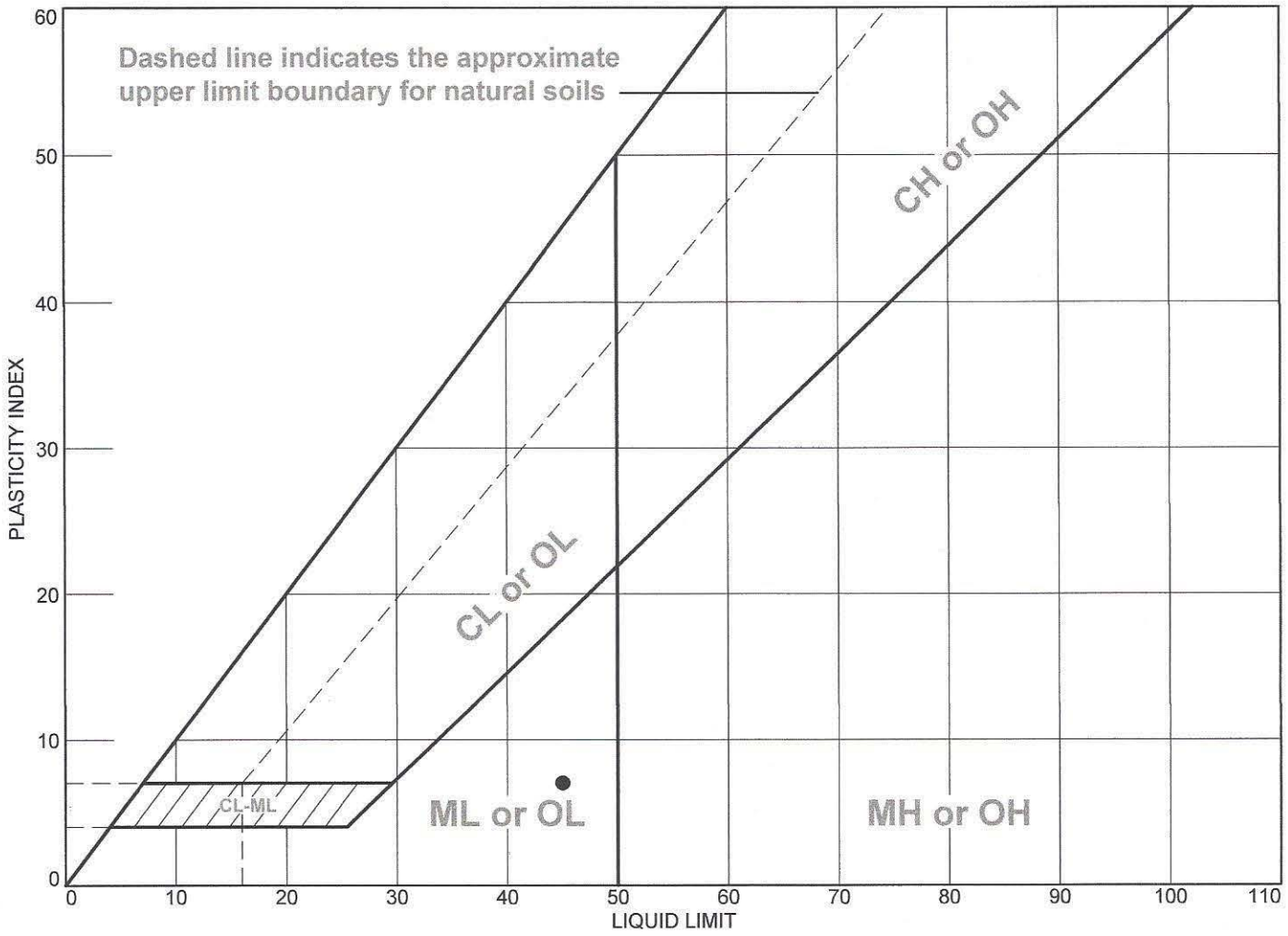
Soil Mechanics Lab

Oakland, California

Client: Geotechnical Consultants,Inc.
Project: Carmel WWTP
Project No.: SF13035 **Figure**

Tested By: MA

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Soft,grayish black clayey SILT w/organics.	45	38	7	96.2	85.2	ML
■	Soft,grayish black silty fine SAND-micaceous.	NV	NP	NP			SM

Project No. SF13035 **Client:** Geotechnical Consultants,Inc.

Project: Carmel WWTP

● **Source of Sample:** B2 **Depth:** 46-46.5'

■ **Source of Sample:** B2 **Depth:** 56-56.5'

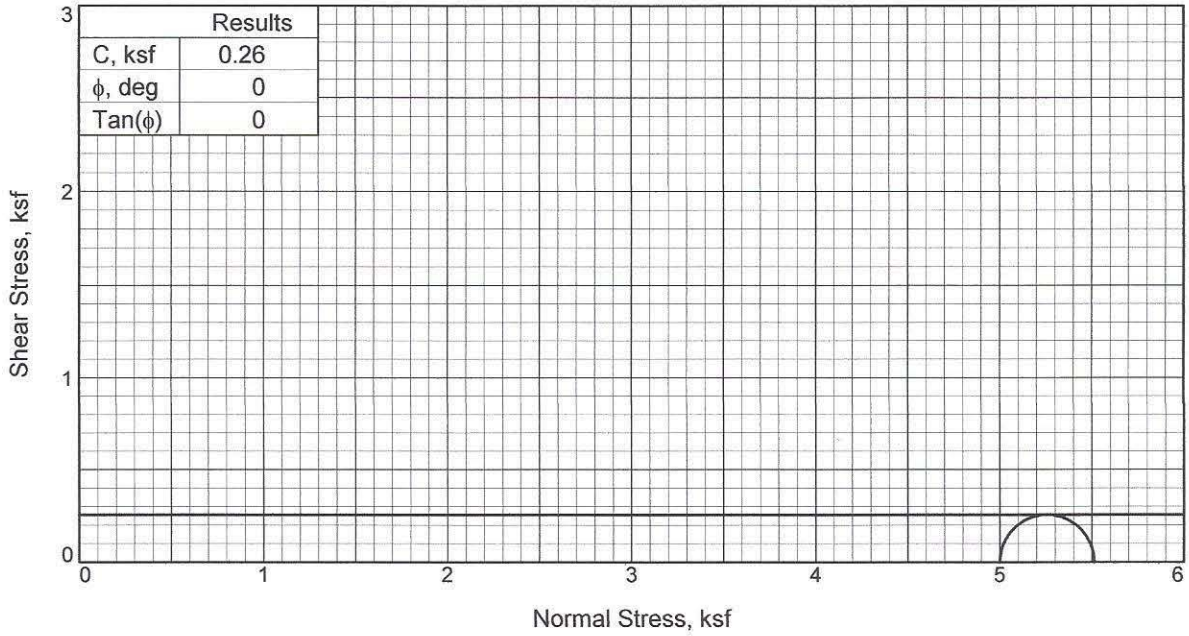
Remarks:

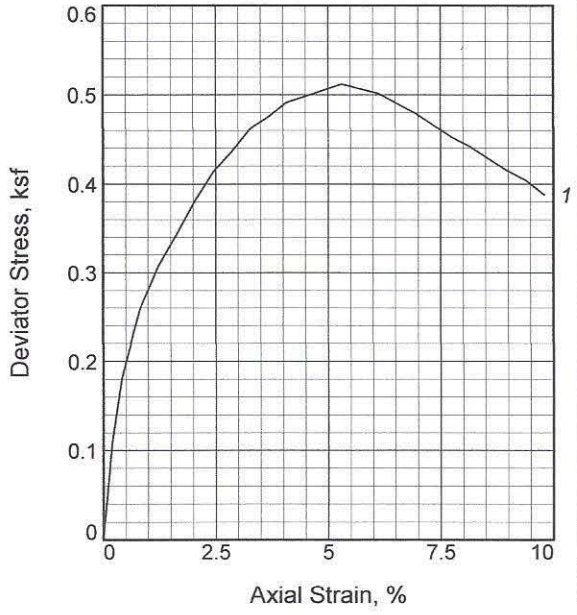
Soil Mechanics Lab

Oakland, California

Figure

Tested By: MA





Sample No.		1
Initial	Water Content, %	44.7
	Dry Density, pcf	76.0
	Saturation, %	99.0
	Void Ratio	1.2181
	Diameter, in.	2.42
	Height, in.	4.90
At Test	Water Content, %	44.7
	Dry Density, pcf	76.0
	Saturation, %	99.0
	Void Ratio	1.2181
	Diameter, in.	2.42
	Height, in.	4.90
Strain rate, in./min.		0.08
Back Pressure, psi		0.00
Cell Pressure, psi		34.72
Fail. Stress, ksf		0.51
Ult. Stress, ksf		
σ_1 Failure, ksf		5.51
σ_3 Failure, ksf		5.00

Type of Test:
Unconsolidated Undrained

Sample Type: Mod.Cal.

Description: Soft,grayish black clayey SILT w/ organics.

LL= 45 **PL=** 38 **PI=** 7

Specific Gravity= 2.70

Remarks:

Figure _____

Client: Geotechnical Consultants,Inc.

Project: Carmel WWTP

Source of Sample: B2 **Depth:** 46-46.5'

Proj. No.: SF13035 **Date Sampled:**

TRIAXIAL SHEAR TEST REPORT
Soil Mechanics Lab
Oakland, California

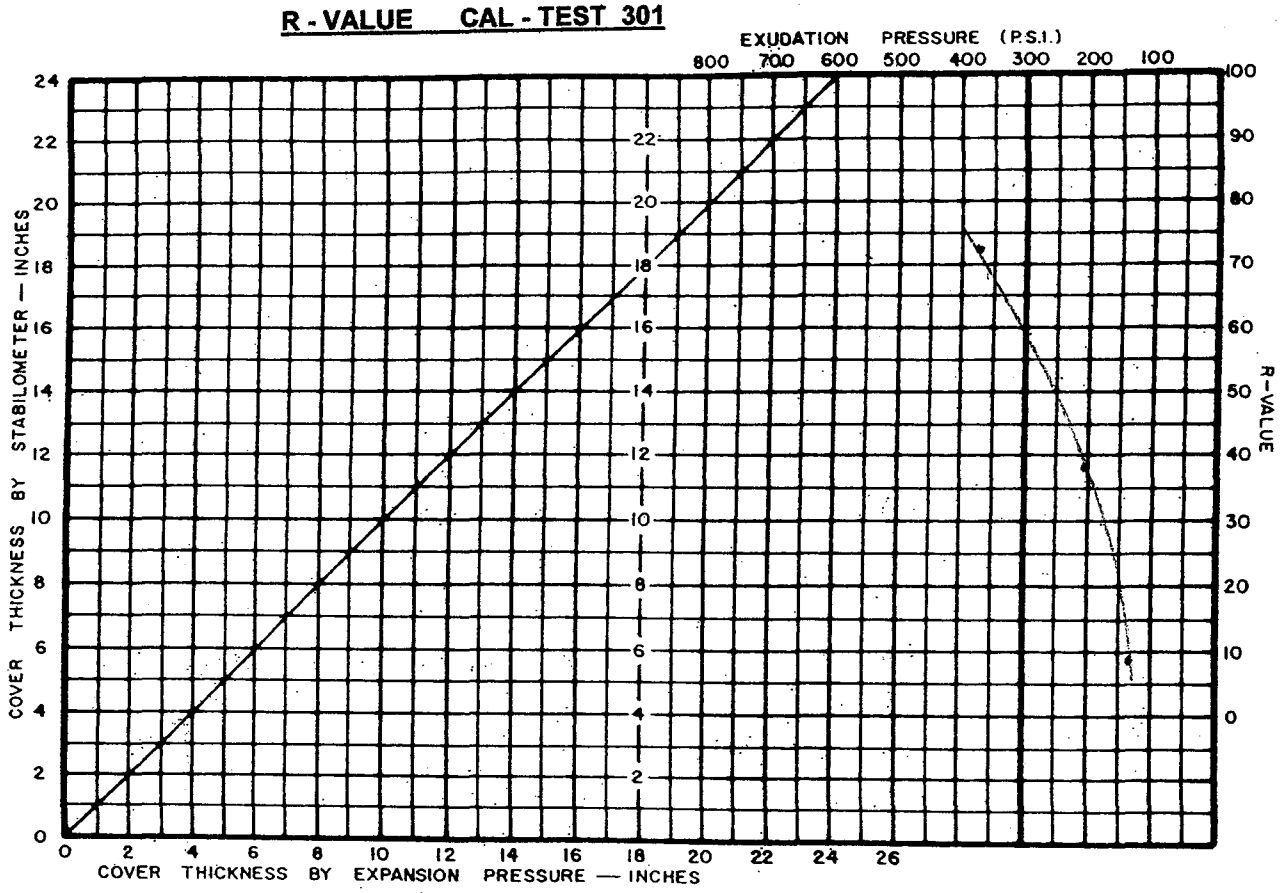
Tested By: MA

CONSTRUCTION MATERIALS TESTING, INC.

Job Name: SF13039
Sample Description: dark brown sand w/clay
Source: GTC B-2 @ 0 - 6'
Client Name: GTC

Job No: 10983
Sample No: 1
Date: 1-7-14
Sampled: client Tested: jpm

R - VALUE CAL - TEST 301



Exudation psi	Compaction psi	Expansion (0.0001")	Expansion psi	Moisture %	Dry Density	Resistance Value
373	350	0.0008	35	13.5	116.7	72
201	350	0.0001	4	15.1	115.1	38
137	300	0.0000	0	16.5	113.1	9

Remarks:

Resistance Value
59

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(925) 825-2840 • FAX (925) 682-7953

CONSTRUCTION MATERIALS TESTING, INC.

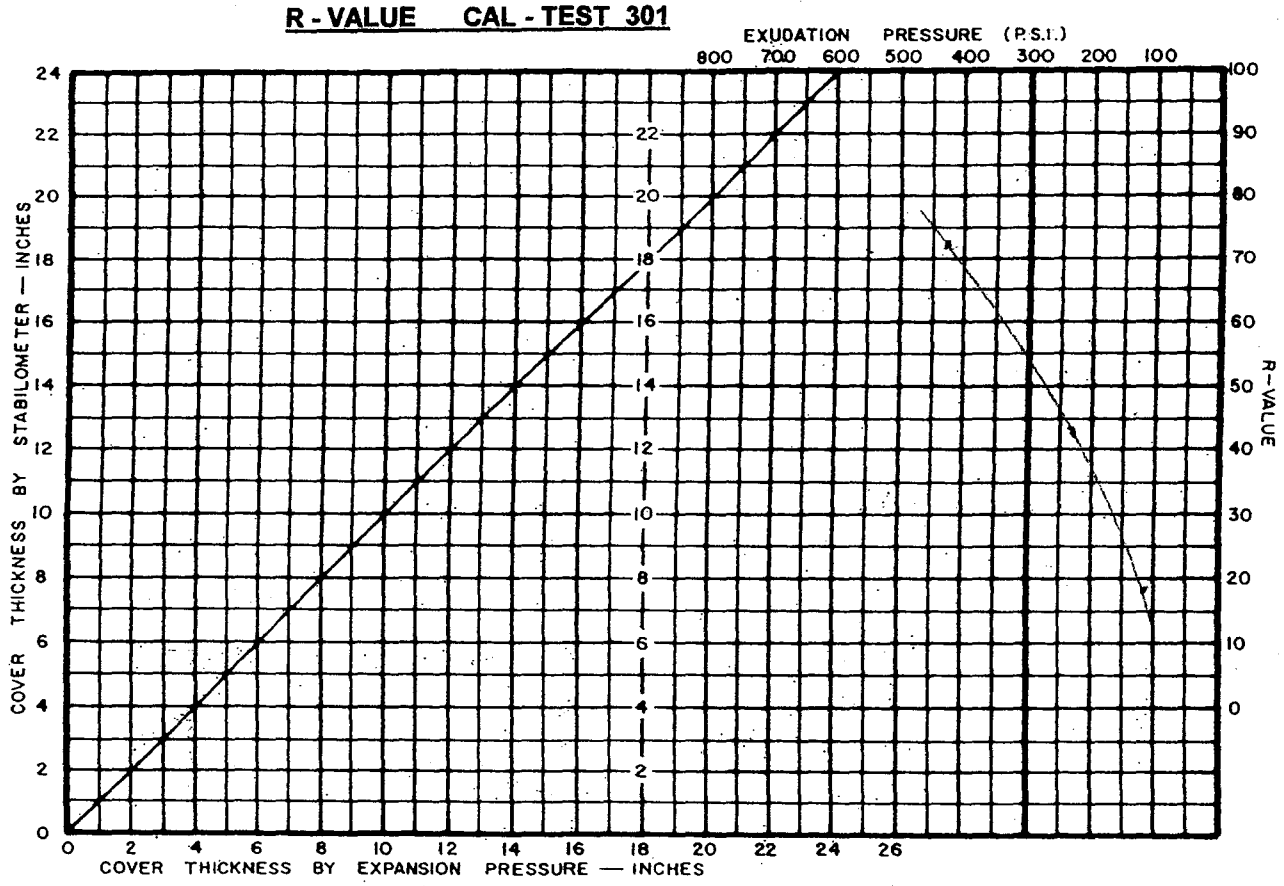
Job Name: SF13039 Job No: 10983

Sample Description: dark brown sand w/clay Sample No: 2

Source: GTC B-3 @ 0 - 8' Date: 1-7-14

Client Name: GTC Sampled: client Tested: jpm

R - VALUE CAL - TEST 301



Exudation psi	Compaction psi	Expansion (0.0001")	Expansion psi	Moisture %	Dry Density	Resistance Value
435	350	0.0019	82	12.2	117.9	72
238	350	0.0010	43	13.5	116.7	43
106	300	0.0000	0	14.8	115.6	18

Remarks:

Resistance Value
54

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Table 1 - Laboratory Tests on Soil Samples

Geotechnical Consultants, Inc.
Carmel Area WWTP
Your #SF13035, HDR|Schiff #13-0972LAB
18-Dec-13

Sample ID			GTC-B-1 @ 10.5-11.0' Silty Sand (SM)	GTC-B-2 @ 6.0-6.5' Poorly Graded Sand (SP)
Resistivity		**Units**		
as-received		ohm-cm	1,640	52,000
saturated		ohm-cm	1,000	8,000
pH			5.2	6.2
Electrical Conductivity		mS/cm	0.48	0.05
Chemical Analyses				
Cations				
calcium	Ca^{2+}	mg/kg	220	39
magnesium	Mg^{2+}	mg/kg	67	6.2
sodium	Na^{1+}	mg/kg	86	13
potassium	K^{1+}	mg/kg	64	8.5
Anions				
carbonate	CO_3^{2-}	mg/kg	ND	ND
bicarbonate	HCO_3^{1-}	mg/kg	21	24
fluoride	F^{1-}	mg/kg	0.7	ND
chloride	Cl^{1-}	mg/kg	41	5.8
sulfate	SO_4^{2-}	mg/kg	953	36
phosphate	PO_4^{3-}	mg/kg	ND	31
Other Tests				
ammonium	NH_4^{1+}	mg/kg	32	1.7
nitrate	NO_3^{1-}	mg/kg	2.3	40
sulfide	S^{2-}	qual	positive	negative
Redox		mV	185	60

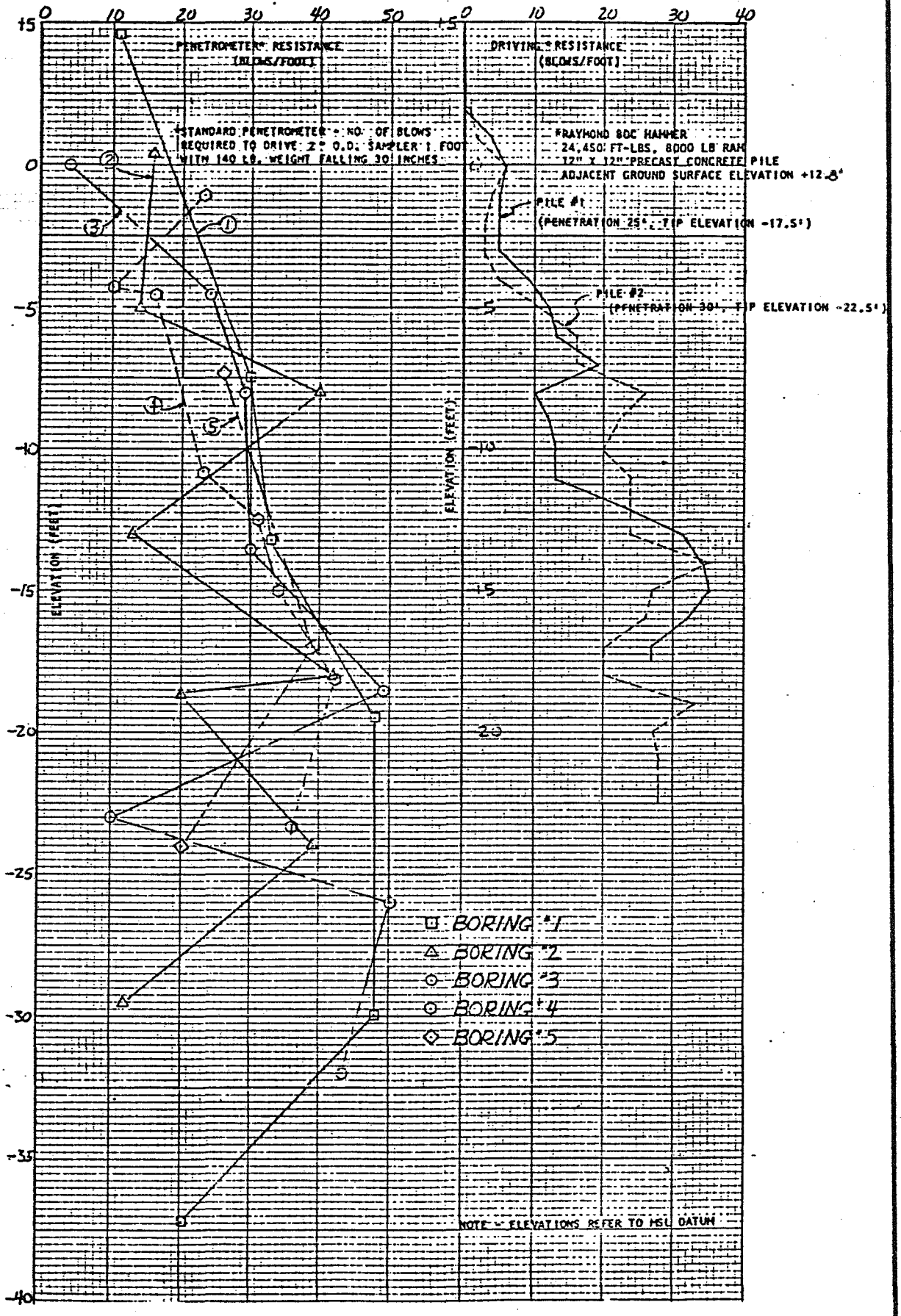
Electrical conductivity in millisiemens/cm and chemical analysis were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

APPENDIX B

LOGS AND LAB RESULTS FROM HISTORIC REPORTS

PILE LOAD TESTS AND SUBSURFACE INVESTIGATION PROPOSED WATER POLLUTION CONTROL PLANT

DAMES & MOORE, 1971



PILE DRIVING & PENETROMETER RESISTANCE

DAMES & MOORE

GEOTECHNICAL INVESTIGATION
WATER POLLUTION CONTROL PLANT IMPROVEMENTS AND RECLAIMED WATER PIPELINE

HARDING LAWSON ASSOCIATES, 1981

LOG OF BORING 1

Equipment Rotary Wash

Elevation 14.5 ft.** Date 4-1-81

Laboratory Tests	Blows/foot *	Moisture Content (%)	Dry Density (pcf)	Depth (ft)	Sample	
	13			0		DARK BROWN SILTY SAND (SM) medium dense, moist, with gravel, pieces of wood, and occasional pieces of asphalt concrete — FILL
	4			5		BROWN SILTY SAND (SM) loose, moist
	15					Water Level 4-9-81
						DARK BROWN SILT (ML) stiff, moist, with roots and occasional pieces of glass and asphalt concrete
	8			10		BROWN SAND (SP) loose to medium dense, moist, medium-grained
	12			15		GRAY SAND (SP) medium dense, saturated, medium to coarse-grained
	19	18.9	111	20		
						GRAY SILT (ML) stiff, saturated, with occasional sand lenses
	15			25		
						GRAY SAND (SP) medium dense to dense, saturated, medium-grained
	(34)			30		
6.6% Passing #200 Sieve	23			35		slightly silty at 35 feet
SA, 24.3% Passing #200 Sieve	14	14.3	114	40		medium to coarse-grained with gravel at 40 feet, silty at 41 feet
DS 5770(4000)	28	22.0	79	45		
				50		GRAY SILTY SAND (SM) medium dense, saturated
	14					GRAY SANDY SILT (ML) stiff, saturated, with occasional gravel
				55		GRAY SAND (SP) medium dense, saturated
	26					GRAY SILTY SAND (SM) medium dense, saturated
				60		
	17					
				65		
				70		
				75		
				80		

(Continuation of Log)

*Standard penetration test (SPT) (2" outside diameter sampler, 140 lb hammer falling 30") blow counts are shown in parentheses. Other blow counts are converted SPT values because actual hammer sizes and sampler dimensions varied.

**Mean Sea Level Datum, 1929, adjusted.

Harding Lawson Associates
Engineers, Geologists & Geophysicists

LOG OF BORING 1
Carmel Sanitary District
Water Pollution Control
Plant Improvements

PLATE 2

DRAWN RHC | JOB NUMBER 843,066.04 | APPROVED | DATE 11/24/81 | REVISED | DATE

LOG OF BORING 6

Equipment Hollow Stem Auger

Elevation 14.0 ft. Date 3-25-81

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Depth (ft.)	Sample	
	9	15.2	106	0		GRAY-BROWN SILTY SAND (SM) loose to medium dense, moist, with occasional gravel and fine roots — FILL
						Water Level 3-26-81
	10			5		DARK GRAY-BROWN SANDY SILT (ML) stiff, wet, with some organic material, wood chips and gravel
	7					BROWN SILTY SAND (SM-SP) medium dense, saturated
	5*			10		DARK GRAY-BROWN SANDY SILT (ML) medium stiff, saturated, with gravel and pieces of wood
DS 1250(1000) 3.4% passing #200 sieve	15	18.3	105			
	3					GRAY SAND (SP) medium dense, saturated, medium to coarse-grained
				15		DARK GRAY-BROWN SANDY SILT (ML) soft to medium stiff, saturated, with pieces of wood
SA, 7.5% passing #200 sieve	13					GRAY SILTY SAND (SM-SP) medium dense, saturated, with wood at 19 feet
				20		DARK GRAY-BROWN SANDY SILT (ML) stiff, saturated
	16					GRAY SAND (SP) medium dense, saturated, medium-grained
				25		DARK GRAY SANDY SILT (ML) stiff, saturated
	10					GRAY SILTY SAND (SM) medium dense, saturated
				30		
						GRAY SAND (SP) medium dense, saturated, medium-grained
	19			35		
						DARK GRAY SANDY SILT (ML) stiff, saturated
	11	46.7	73	40		

*Attempt to sample, no recovery.

(Continuation of Log)

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Depth (ft.)	Sample	
				40		DARK GRAY SILTY SAND (SM) medium dense, saturated, fine-grained
	13			45		DARK GRAY SANDY SILT (ML) stiff, saturated
	13			50		
				55		
				60		
				65		
				70		
				75		
				80		

Harding Lawson Associates
Engineers, Geologists & Geophysicists

LOG OF BORING 6
Carmel Sanitary District
Water Pollution Control
Plant Improvements

PLATE 7

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
R.W.O	843,066.04		11/24/81		

MAJOR DIVISIONS					TYPICAL NAMES
COARSE GRAINED SOILS (MORE THAN HALF IS LARGER THAN #200 SIEVE)	GRAVELS (MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS, GRAVEL - SAND MIXTURES
			GP		POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, POORLY GRADED GRAVEL - SAND - SILT MIXTURES
			GC		CLAYEY GRAVELS, POORLY GRADED GRAVEL - SAND - CLAY MIXTURES
	SANDS (MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE)	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS, GRAVELLY SANDS
			SP		POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM		SILTY SANDS, POORLY GRADED SAND - SILT MIXTURES
			SC		CLAYEY SANDS, POORLY GRADED SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN HALF IS SMALLER THAN #200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS

UNIFIED SOIL CLASSIFICATION SYSTEM

Shear Strength, psf

Confining Pressure, psf

Consol	—	Consolidation	*Tx	320 (2600)	Unconsolidated Undrained Triaxial
LL	—	Liquid Limit (in %)	TxCU	320 (2600)	Consolidated Undrained Triaxial
PL	—	Plastic Limit (in %)	DS	2750 (2000)	Consolidated Drained Direct Shear
G_s	—	Specific Gravity	FVS	470	Field Vane Shear
SA	—	Sieve Analysis	*UC	2000	Unconfined Compression
■		"Undisturbed" Sample	LVS	700	Laboratory Vane Shear
⊠		Bulk Sample			

Notes: (1) All strength tests on 2.8" or 2.4" diameter samples unless otherwise indicated.

(2) * indicates 1.4" diameter sample.

KEY TO TEST DATA

Harding Lawson Associates
Engineers, Geologists
& Geophysicists

SOIL CLASSIFICATION CHART
AND KEY TO TEST DATA
Carmel Sanitary District

PLATE
10

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
R.W.O.	843,066.04		11/24/81		

GEOTECHNICAL INVESTIGATION
WASTEWATER TREATMENT PLANT ADDITION

HARDING LAWSON ASSOCIATES, 1992

DIETERICH-POST 130713

Equipment Rotary Wash

Elevation 12 ft** Date 3/20/91

Laboratory Tests	Blows/ft	Moisture Cont. (%)	Dry Density (pcf)	Depth ft Sample	
				0	BROWN SANDY SILT (ML) soft, wet
					GRAY POORLY-GRADED SAND WITH SILT (SP-SM) medium dense, wet, fine-grained — FILL
	9*	11.9	130	5	LIGHT GRAY-BROWN POORLY-GRADED SAND WITH GRAVEL (SP) loose, saturated water level 3/20/91
	3*			10	with coarse rounded gravel at 11 feet DARK GRAY SILTY SAND (SM) loose, saturated GRAY POORLY-GRADED SAND (SP) medium dense, saturated, medium-grained
-200 = 1.8% MA, see Plate A-15	18*			15	with silt lens at 18 feet
	29*	25.4	94	20	
	35			25	becoming dense
	22			30	becoming medium dense
-200 = 4.0%	22			35	
	17			40	DARK GRAY SILTY SAND (SM) medium dense, saturated
	23			45	
-200 = 38.0%	16*				
	18*			50	increased fine sand content
-200 = 37.8% MA, see Plate A-16	25*			55	decreased silt content, with some organics

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring B- 1 (sheet 1 of 2)
Carmel Wastewater Treatment Plant
Carmel, California

PLATE **A-1a**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
10712G17	9853,005.04	J. E. Ikemoto	9/91	1/92

Equipment Rotary Wash

Elevation 12 ft** Date 3/20/91

Laboratory Tests	Blows/ft	Moisture Cont. (%)	Dry Density (pcf)	Depth ft	Sample	
	25*	32.6	90	60		increased silt content
	15			65		GRAY ELASTIC SILT (MH) medium stiff, saturated
	15*			70		GRAY SILTY SAND (SM) very dense, saturated
	48*/11"			75		with gravel at 79 feet
	53/11"			80		Boring was terminated at 81.5 feet. Groundwater was encountered at 7 feet.
				85		
				90		
				95		
				100		
				105		
				110		
				115		

*Converted to pseudo-standard penetration test blow counts by multiplying field values by 0.6. Applicable for Borings B-1 through B-4.

**Based on elevation contours on 1"=20' topographic map of plant, untitled, undated.

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring B- 1 (sheet 2 of 2)
Carmel Wastewater Treatment Plant
Carmel, California

PLATE A1b

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
10712G17	9853,005.04	J. E. Ikemoto	9/91	1/92

Equipment Rotary Wash

Elevation 13 ft** Date 11/19/91

Laboratory Tests	Blows/ft	Moisture Cont. (%)	Dry Density (pcf)	Depth ft	Sample	
				0		DARK GRAY SILTY SAND (SM) medium dense, moist
	23*			5		FILL
						water level 11/19/91
	12			10		DARK GRAY POORLY-GRADED SAND WITH SILT (SP-SM) medium dense, saturated, coarse-grained
	19			15		decreased drilling resistance at 17 feet GRAY WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM) medium dense, saturated, medium-grained
-200 = 5.5% MA, See Plate A-18	16			20		
	21			25		GRAY POORLY-GRADED SAND WITH SILT (SP-SM) medium dense, saturated, medium- to coarse-grained drilling resistance indicates gravels at 31 feet
	32			30		
	30			35		GRAY POORLY-GRADED SAND (SP) dense, saturated, fine-grained
						silt lens at 38 feet
	46			40		GRAY POORLY-GRADED SAND WITH SILT (SP-SM) dense, saturated, coarse-grained
	35			45		becoming medium dense, fine- to medium-grained
	17			50		GRAY ELASTIC SILT (MH) stiff, saturated, with organics
	17*			55		with sand lens
						GRAY SANDY SILT (ML) stiff, saturated

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring B-10 (sheet 1 of 2)
Carmel Wastewater Treatment Plant
Carmel, California

PLATE A-8a

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
10712G17	9853,005.04	J.E. Okamoto	1/92	

DIETERICH-POST 130713

Equipment Rotary Wash

Elevation 13 ft** Date 11/19/91

Laboratory Tests	Blows/ft	Moisture Cont.(%)	Dry Density (pcf)	Depth ft	Sample
	29*			60	

Boring was terminated at 60.0 feet.
Groundwater was encountered at 8.8 feet.

65
70
75
80
85
90
95
100
105
110
115

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring B-10 (sheet 2 of 2)
Carmel Wastewater Treatment Plant
Carmel, California

PLATE **A-8b**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
10712G17	9853,005.04	J. E. Ikemoto	1/92	

Equipment Rotary Wash

Elevation 13 ft** Date 11/20/91

Laboratory Tests	Blows/ft	Moisture Cont. (%)	Dry Density (pcf)	Depth ft	Sample	
				0		BROWN SILTY SAND (SM) medium stiff, moist, with roots
	20			5		LIGHT BROWN POORLY-GRADED SAND (SP) medium dense, moist, medium-grained BROWN SANDY SILT WITH GRAVEL (ML) medium stiff, moist BROWN POORLY-GRADED SAND (SP) loose, wet water level 11/20/91
	6 9			10		GRAY SILTY SAND (SM) medium stiff, saturated
	Push			15		GRAY POORLY GRADED SAND (SP) medium dense, saturated, medium-grained
-200 = 4.4%	20			20		
Chemical analyses See Appendix C	32			25		becoming dense
	34			30		
	35			35		becoming medium- to coarse-grained
	38			40		
	Push			45		GRAY ELASTIC SILT WITH SAND (MH) medium stiff, saturated LIGHT GRAY POORLY-GRADED SAND (SP) medium dense, saturated
	13			50		GRAY SILTY SAND (SM) medium dense, saturated, fine-grained GRAY ELASTIC SILT WITH SAND (MH) medium stiff, saturated, with organics
	21			55		GRAY SILTY SAND (SM) medium dense, saturated, fine-grained, micaceous GRAY SANDY SILT (ML) medium stiff, saturated

FILL

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring B-11 (sheet 1 of 2)
Carmel Wastewater Treatment Plant
Carmel, California

PLATE A-9a

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
10712G17	9853,005.04	J. E. Okamoto	1/92	

Equipment Rotary Wash

Elevation 13 ft** Date 11/20/91

Laboratory Tests	Blows/ft	Moisture Cont.(%)	Dry Density (pcf)	Depth ft	Sample	
TxUU 975(6000) See Plate A-20	Push	40.1	80	60		
	19			65		GRAY POORLY-GRADED SAND (SP) medium dense, saturated, medium-grained GRAY SILTY SAND (SM) medium dense, saturated GRAY ELASTIC SILT WITH SAND (MH) stiff, saturated
	10			70		
TxUU 1679(7500) See PLate A-21	Push	39.8	79	75		GRAY POORLY-GRADED SAND (SP) medium dense, saturated, fine-grained silt lens at 77 to 78 feet
	17			80		silt lens at 79 to 80 feet GRAY POORLY-GRADED SAND (SP) medium dense, saturated, fine-grained
	55			85		becoming very dense, medium-grained silt lens at 87 to 88 feet
	17			90		GRAY SILTY SAND (SM) medium dense, saturated, fine-grained
	57			95		GRAY POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM) very dense, saturated, medium-grained
	84			100		Boring was terminated at 100.0 feet. Groundwater was encountered at 8 feet.
				105		
				110		
				115		

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring B-11 (sheet 2 of 2)
Carmel Wastewater Treatment Plant
Carmel, California

PLATE **A-9b**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
10712G17	9853,005.04	J. E. Okamoto	1/92	

135230

UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D2487-85

MAJOR DIVISIONS					GROUP NAMES
COARSE-GRAINED SOILS More than 50% retained on the No. 200 sieve	GRAVELS More than 50% of coarse fraction retained on No. 4 sieve	Clean gravels less than 5% fines	GW		WELL-GRADED GRAVEL, WELL-GRADED GRAVEL WITH SAND
			GP		POORLY-GRADED GRAVEL, POORLY-GRADED GRAVEL WITH SAND
		Gravels with more than 12% fines	GM		SILTY GRAVEL, SILTY GRAVEL WITH SAND
			GC		CLAYEY GRAVEL, CLAYEY GRAVEL WITH SAND
	SANDS 50% or more of coarse fraction passes No. 4 sieve	Clean sand less than 5% fines	SW		WELL-GRADED SAND, WELL-GRADED SAND WITH GRAVEL
			SP		POORLY-GRADED SAND, POORLY-GRADED SAND WITH GRAVEL
		Sands with more than 12% fines	SM		SILTY SAND, SILTY SAND WITH GRAVEL
			SC		CLAYEY SAND, CLAYEY SAND WITH GRAVEL
FINE-GRAINED SOILS 50% or more passes the No. 200 sieve	SILTS AND CLAYS Liquid limit less than 50%		ML		SILT, SILT WITH SAND OR GRAVEL, SANDY OR GRAVELLY SILT
			CL		LEAN CLAY, LEAN CLAY WITH SAND OR GRAVEL, SANDY OR GRAVELLY LEAN CLAY
			OL		ORGANIC SILT OR CLAY, ORGANIC SILT OR CLAY WITH SAND OR GRAVEL, SANDY OR GRAVELLY ORGANIC SILT OR CLAY
	SILTS AND CLAYS Liquid limit 50% or more		MH		ELASTIC SILT, ELASTIC SILT WITH SAND OR GRAVEL, SANDY OR GRAVELLY ELASTIC SILT
			CH		FAT CLAY, FAT CLAY WITH SAND OR GRAVEL, SANDY OR GRAVELLY FAT CLAY
			OH		ORGANIC SILT OR CLAY, ORGANIC SILT OR CLAY WITH SAND OR GRAVEL, SANDY OR GRAVELLY ORGANIC SILT OR CLAY
HIGHLY ORGANIC SOILS			Pt		PEAT

For definition of dual and borderline symbols, see ASTM D2487-85.

KEY TO TEST DATA

Perm	-	Permeability
Consol	-	Consolidation
LL	-	Liquid Limit (%)
PI	-	Plasticity Index (%)
Gs	-	Specific Gravity
MA	-	Particle Size Analysis
■	-	"Undisturbed" Sample
▨	-	Bulk or Classification Sample
▤	-	Lost Sample
-200	-	Percent Passing No. 200 Sieve

Shear Strength (psf) / Confining Pressure

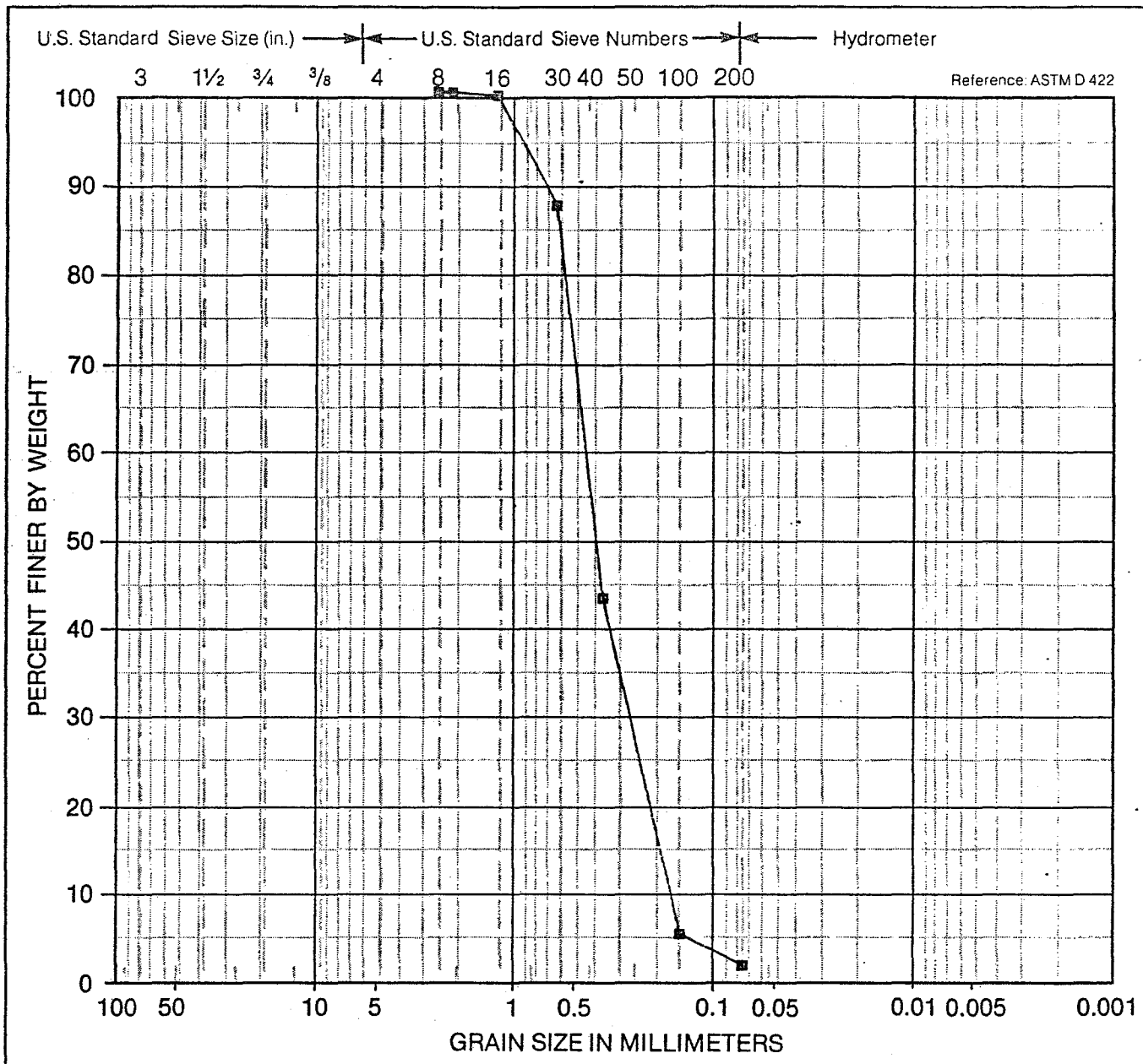
TxUU (FM)	3200 or (S)	(2600)	- Unconsolidated-Undrained Triaxial Shear (field moisture or saturated)
TxCU	3200 (P)	(2600)	- Consolidated-Undrained Triaxial Shear (with or without pore pressure measurement)
TxCD	3200	(2600)	- Consolidated Drained Triaxial Shear
SSCU	3200 (P)	(2600)	- Simple Shear Consolidated Undrained (with or without pore pressure measurement)
SSCD	3200	(2600)	- Simple Shear Consolidated Drained
DSCD	2700	(2000)	- Consolidated Drained Direct Shear
UC	470		- Unconfined Compression
LVS	700		- Laboratory Vane Shear
TV	800		- Torvane Shear
PP	400		- Pocket Penetrometer (actual reading divided by 2)

Harding Lawson Associates
Engineering and Environmental Services

Soil Classification Chart and Key to Test Data
Wastewater Treatment Plant Additions
Carmel, California

PLATE **A-12**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AM	9853,005.04	g. E. Klemetson	10/91	1/92



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Symbol	Sample Source	Classification
■	1 @ 16.0 FT	GRAY POORLY-GRADED SAND (SP)

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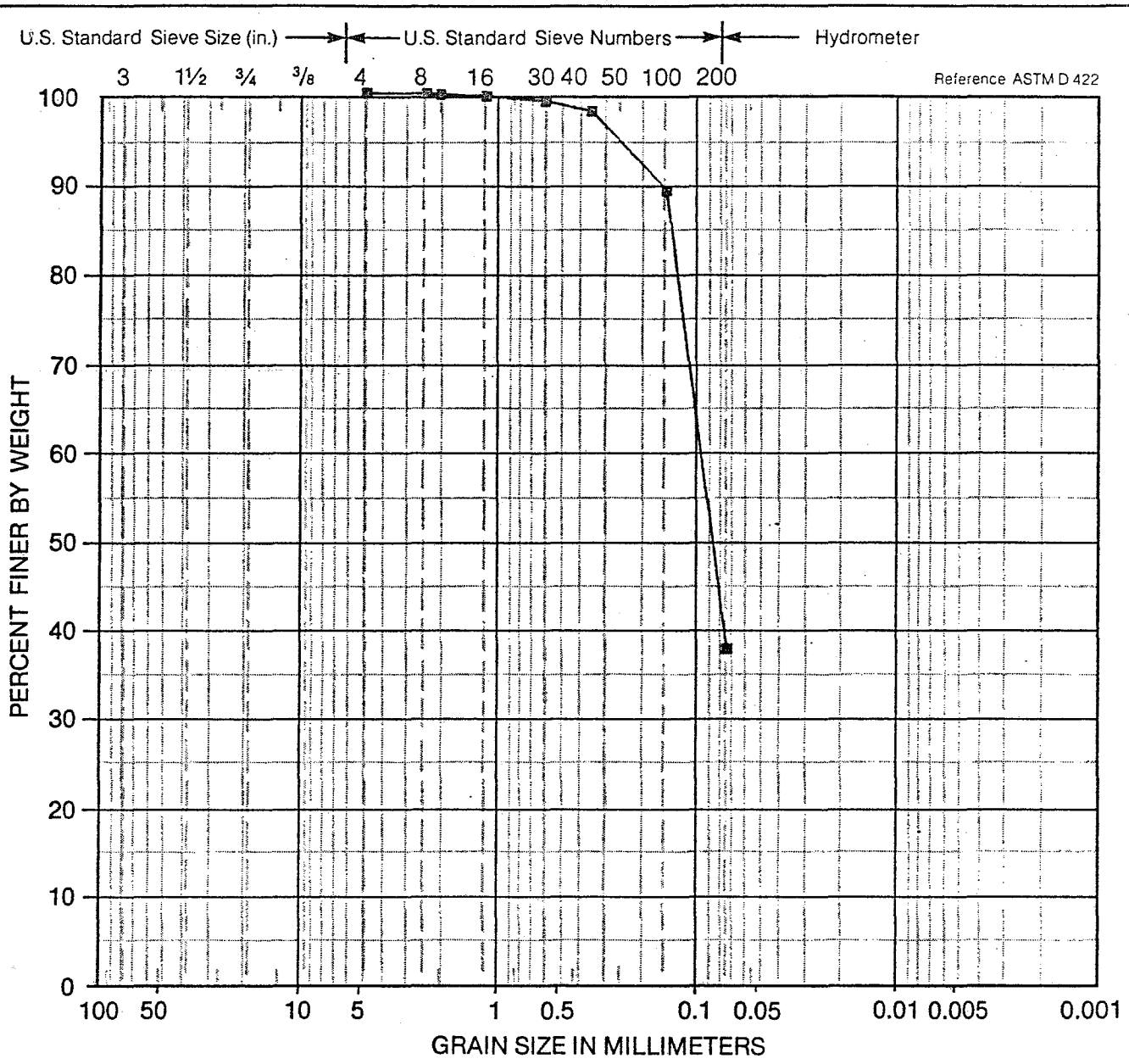
Particle Size Analysis
Wastewater Treatment Plant Additions
Carmel, California

PLATE
A-15

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	9853,005.04		04-08-1991		1/92



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Symbol	Sample Source	Classification
■	1 @ 55.5 FT	DARK GRAY SILTY SAND (SM)

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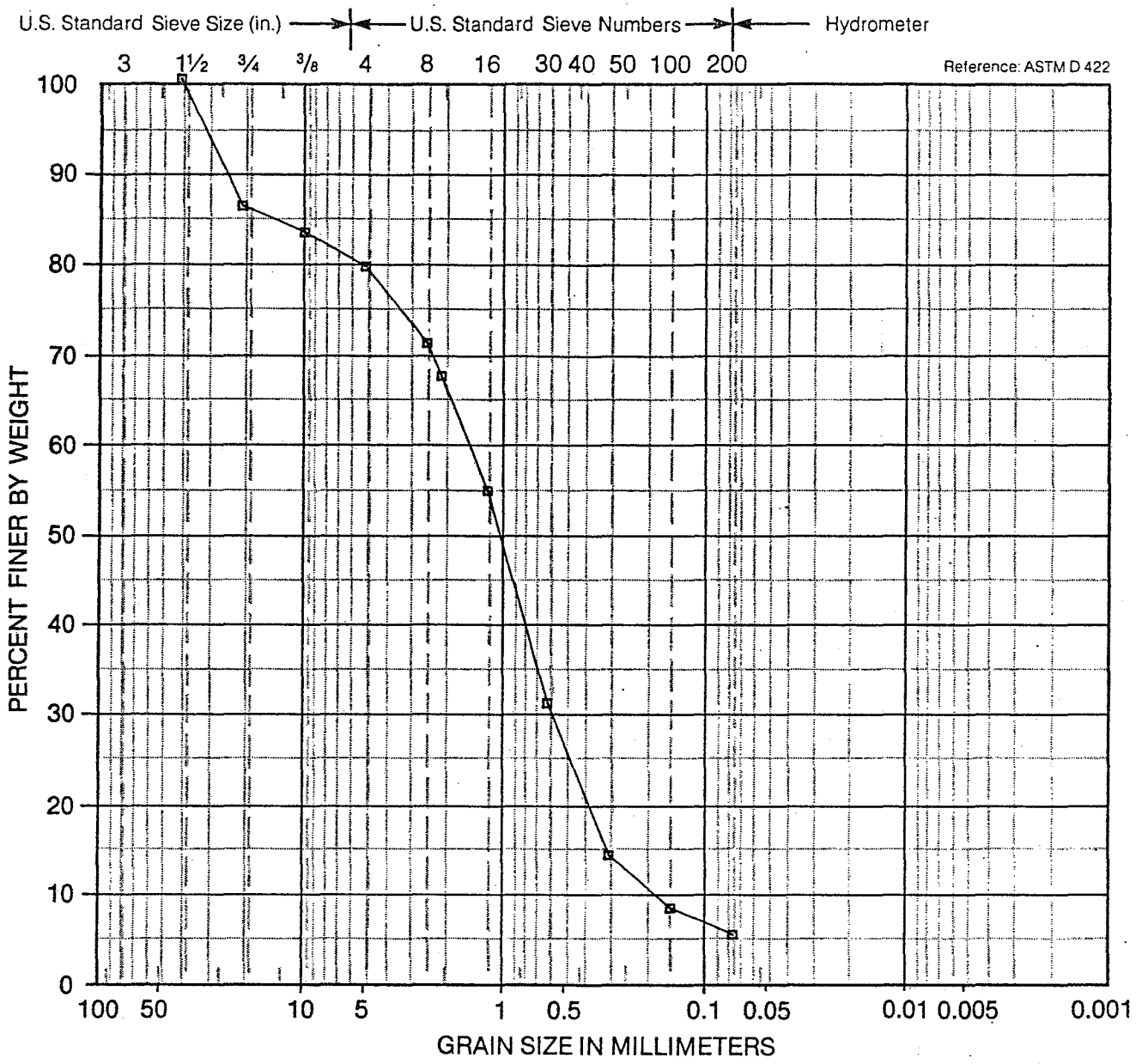
Particle Size Analysis
Wastewater Treatment Plant Additions
Carmel, California

PLATE
A-16

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	9853,005.04	DBG	04-08-1991		1/92



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Symbol	Sample Source	Classification
■	B-10 @ 20.0 FT	GRAY SAND W/SILT AND GRAVEL (SW-SM)

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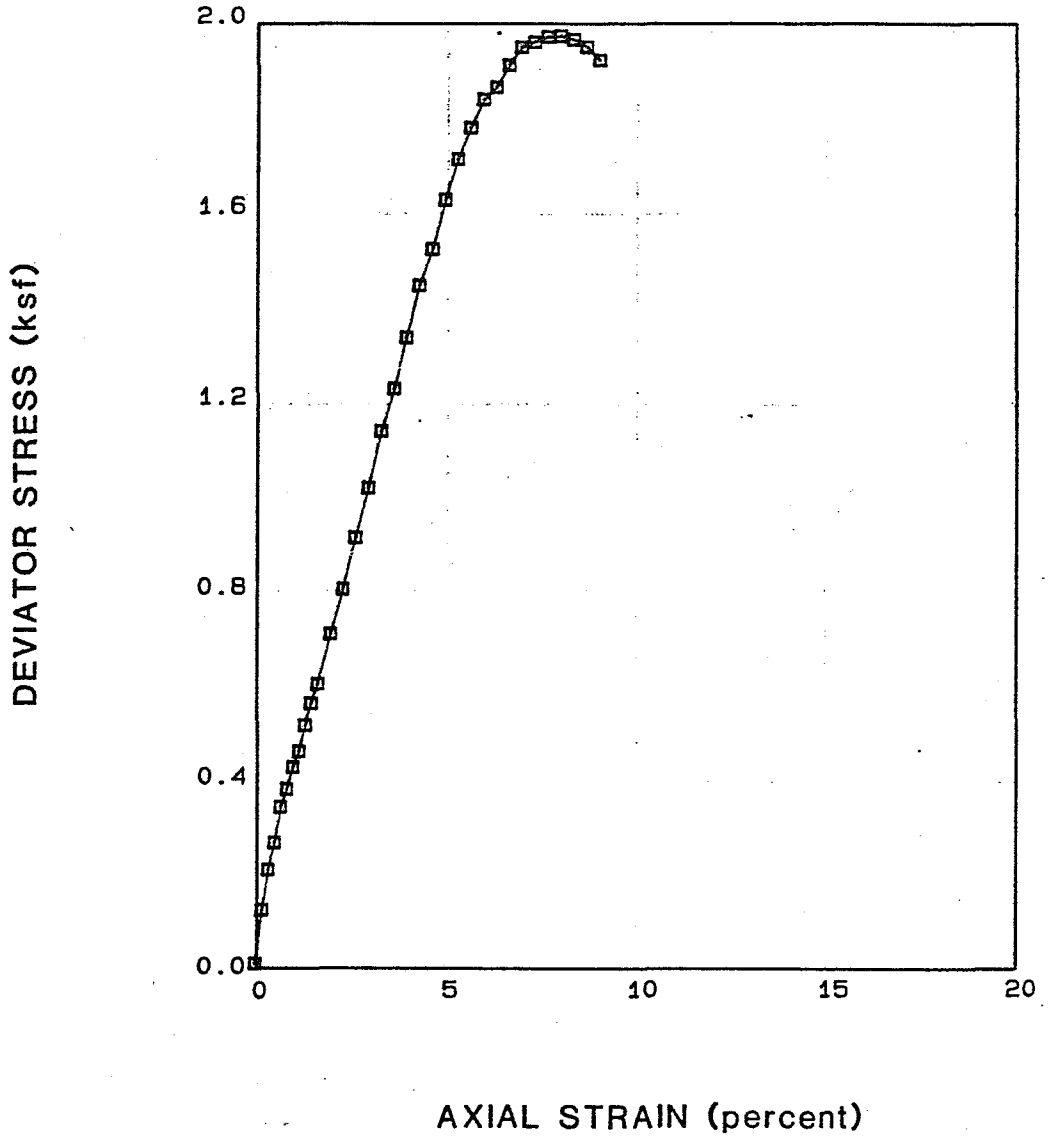
Particle Size Analysis
Wastewater Treatment Plant Additions
Carmel, California

PLATE
A-18

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	09853.005.04		01-07-1992		



SPECIMEN TYPE	UNDISTURBED			SHEAR STRENGTH	975 psf
DIAMETER (in)	2.87	HEIGHT (in)	6.00	STRAIN AT FAILURE	8.0 %
MOISTURE CONTENT	40.1 %			CONFINING PRESSURE	6000 psf
DRY DENSITY	80 pcf			STRAIN RATE	0.60 %/min
CLASSIFICATION	GRAY SANDY SILT (ML)			SOURCE	B-11 @ 59.0'

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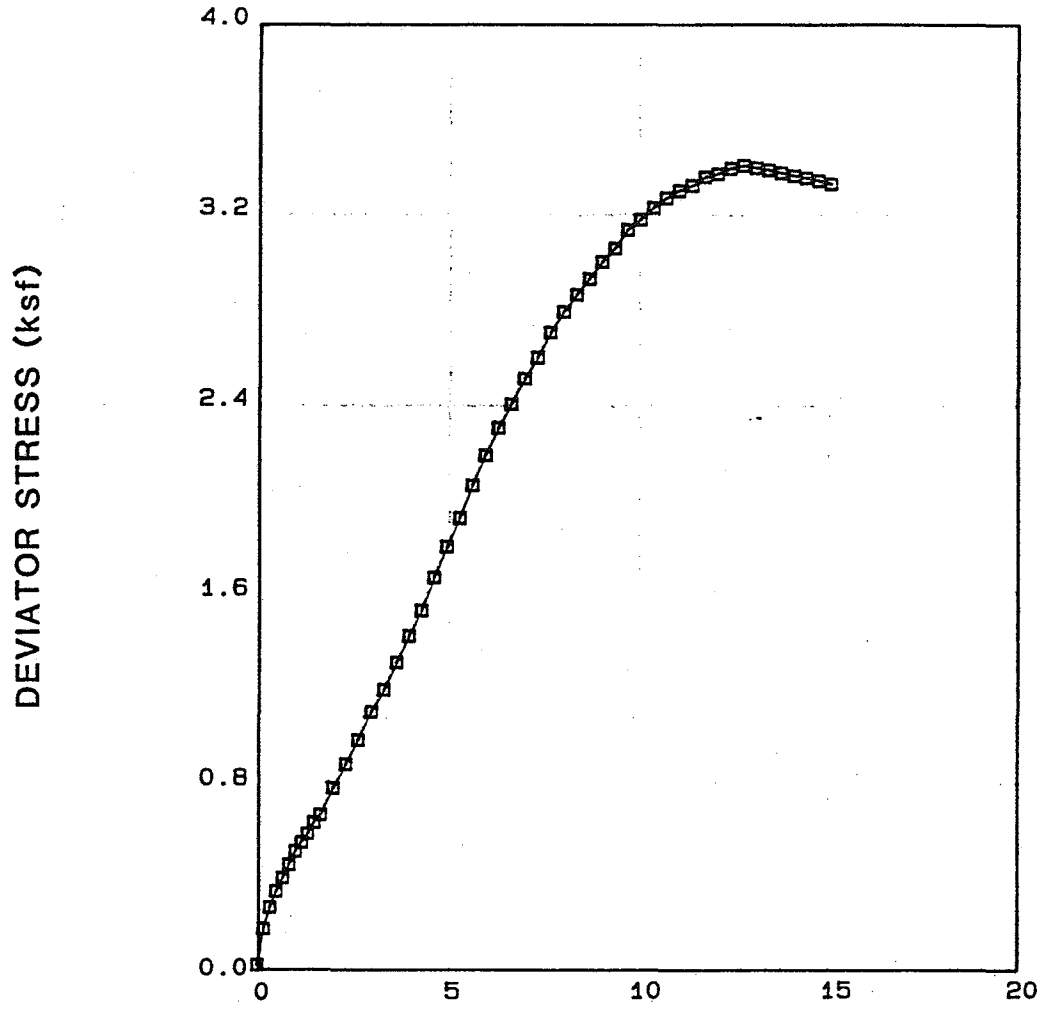
Engineers, Geologists
& Geophysicists

Unconsolidated - Undrained
Triaxial Compression Test Report
Wastewater Treatment Plant Additions
Carmel, California

PLATE
A-20

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	09853.005.04		01-02-1992		



SPECIMEN TYPE	UNDISTURBED		SHEAR STRENGTH	1679	psf
DIAMETER (in)	2.87	HEIGHT (in) 6.00	STRAIN AT FAILURE	12.7	%
MOISTURE CONTENT	39.8	%	CONFINING PRESSURE	7500	psf
DRY DENSITY	79	pcf	STRAIN RATE	0.60	%/min
CLASSIFICATION	GRAY ELASTIC SILT WITH SAND (MH)		SOURCE	B-11 @ 74.0'	

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Unconsolidated - Undrained
Triaxial Compression Test Report
Wastewater Treatment Plant Additions
Carmel, California

PLATE
A-21

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	09853.005.04	EH	01-02-1992		

APPENDIX C

SITE-SPECIFIC GROUND MOTION STUDY

APPENDIX C
SITE-SPECIFIC GROUND MOTION STUDY

C.1. INTRODUCTION

Based on the results of our subsurface investigation and analysis, the proposed structures that are the subject of this report (Digester No. 2, control building, ferric chloride, sodium hypochlorite and sodium bisulfite storage tanks, transformer platform, and septage and vactor concrete storage tanks) at the Carmel Area Wastewater District (CAWD) Wastewater Treatment Plant (WWTP) are underlain by potentially liquefiable sands and therefore the site is classified as Site Class "F" by the 2013 California Building Code (CBC) and the American Society of Civil Engineers (ASCE) 7-10: Minimum Design Loads for Buildings and Other Structures. In accordance with Section 1803.5.12 of the 2013 CBC and Section 11.4.7 of ASCE 7-10, a site-specific seismic analysis was performed. This appendix documents the development and results of the site-specific seismic design analysis.

C.2. SEISMIC SOURCE CHARACTERIZATION

A seismogenic source is a geologic feature which exhibits evidence of activity during the late Holocene epoch (approximately the past 10,000 years). Important characteristics of seismogenic sources include:

- Magnitude
- Site to source distance
- Type of faulting
- Fault length, rupture length, and rupture width
- Slip rate

Seismic source information for this project was obtained from the United States Geological Survey (USGS) and the Working Group on California Earthquake Probabilities (WGCEP).

Earthquake Recurrence and Activity Rates. Deaggregation of probabilistic fault rupture and hazard data available from the USGS was analyzed to determine the faults that primarily contribute to the earthquake hazard for the CAWD WWTP. The deaggregated hazard contribution is shown on ***Figure C1*** for a spectral period of 0.0 seconds (peak ground

acceleration) and on ***Figure C2*** for a spectral period of 1.0 second. The information was analyzed to determine the faults that primarily contribute to the earthquake hazards for the CAWD WWTP. Based on the data, the two faults contributing the majority of the seismic hazard are the San Gregorio fault and the Monterey Bay-Tularcitos fault. The San Gregorio fault zone is a structurally complex transpressional fault zone as much as 5 km wide that extends for about 230 km from the Big Sur region south of Monterey Bay to the north where it merges with the San Andreas Fault System near Bolinas Bay north of San Francisco. The closest strand of the San Gregorio fault zone is located offshore, approximately 4 miles to the west of the project site. Note that site-to-source distances used in analysis and calculations may differ slightly based on specific rupture and probability data used in ground motion prediction equations (GMPEs). The Monterey Bay - Tularcitos fault zone is a complex, generally northwest-striking zone up to 15 km wide of dextral, dextral-reverse, and thrust faults. Although there is documented evidence of Holocene displacement along the Hatton Canyon, Sylvan Thrust, and Tularcitos faults, the Monterey Bay - Tularcitos fault zone, in general, lacks detailed studies. The Hatton Canyon fault (part of the Monterey Bay - Tularcitos zone), located 1.5 miles northeast of the project site, consists of northwest-striking, near-vertical reverse faults that extend from Carmel Valley Road northwest to Point Joe. Both the San Gregorio and Monterey-Bay Tularcitos fault zones are "Type B", indicating slip rate data is available but data to model stress-renewal probabilities is insufficient. Fault parameters from the 2007 Working Group on California Earthquake Probabilities report (WGCEP, 2008) are summarized in ***Table C1 – Fault Parameters*** below.

TABLE C1 – FAULT PARAMETERS

Name	Monterey Bay-Tularcitos	San Gregorio Connected
Magnitude (Ellsworth B)	7.3	7.5
Magnitude (Hans & Bakun 2002)	7.2	7.4
Poisson Probability (Mag>=6.7)	0.007454191	0.078582689
Mean Probability (Mag>=6.7)	0.006601687	0.069033615
Minimum Probability (Mag>=6.7)	0.003948804	0.038091782
Maximum Probability (Mag>=6.7)	0.008415245	0.091900632
Empirical Correction	0.885634243	0.878483713
Slip Rate (mm/yr)	0.5	5.49298
Area (sq-km)	1168.2	1899.5
Length (km)	83.4	175.9
Moment Rate (Newton-meters/yr)	1.58E+16	2.82E+17
Fault Model	F2.1,F2.2	F2.1,F2.2

Source: WGCEP, 2008.

C.3. SEISMIC HAZARD ANALYSIS

C.3.1 PROJECT LOCATION

The project is located approximately 6 km from the closest segment of the San Gregorio fault and approximately 3 km from the closest segment of the Monterey Bay - Tularcitos fault zone. The geographic coordinates used in this seismic hazard analysis are:

(36.539347° latitude, -121.919222° longitude)

The location approximates the center of the WWTP site.

C.3.2 SUBSURFACE CONDITIONS

For detailed subsurface and location information, see Section 2 of the geotechnical report. Three rotary-wash borings were drilled to depths of 50 to 80 feet in the footprint of the WWTP. Historical borings from Harding Lawson Associates (HLA, 1981) were also analyzed for

comparison. For the purpose of this seismic response analysis, the subsurface is assumed to be characterized by:

- Approximately 10 feet of artificial fill consisting of silty sand and poorly graded sand with silt.
- A high groundwater depth of 2.5 feet in boring B-5 (HLA, 1981) below current ground surface.
- Under the artificial fill, floodplain deposits consisting mainly of poorly graded sand extend to a depth of approximately 50 feet. Based on our analysis, the majority of this sand layer is assumed to be liquefiable. In GTC-B-1, an approximately 2 foot thick peat layer was encountered beginning at about 8 feet below the existing ground surface. However, this peat layer was not encountered in nearby borings GTC-B-2 and GTC-B-3.
- The floodplain deposits consist of a significant deposit of silt and elastic silt extending from about 50 feet to 76 feet deep.
- The silt is underlain by dense sand deposits that extend to a depth of at least 100 feet based on historical boring HLA B-11 (HLA, 1981). This layer will be referred to as "dense sand" for the purpose of this analysis.

C.3.3 DEVELOPMENT OF TARGET RESPONSE SPECTRUM

The most widely accepted and up to date ground motion prediction models generally estimate ground motion levels for bedrock and stiff soil horizons. The Next Generation Attenuation (NGA) relationships use the shear wave velocity of the upper 100 feet of soil to predict spectral accelerations for a given magnitude, distance, and set of fault and rupture parameters. For this analysis, the dense sand stratum at 100 feet in depth was assumed to be a meaningful stiff soil horizon to estimate ground shaking levels using the NGA relationships. The shaking levels at a depth of 100 feet were then propagated through the softer, potentially liquefiable soils in the upper 100 feet to evaluate the site response at the ground surface and at 10 feet below the ground surface (see *Section C.5* of this appendix).

In order to use the GMPEs in the NGA model, the average shear wave velocity over the 30 meters (~100 feet) below the elevation at which ground motions are to be estimated ($V_{s,30}$) is required. Limited geotechnical data was available to estimate the $V_{s,30}$ extending about 100 feet below the dense sand horizon (a depth range of 100 to 200 feet below existing ground surface). Therefore, $V_{s,30}$ was assumed to be approximately equal to the shear wave velocities encountered in the sands immediately below the elastic silt layer. We estimate an average shear wave

velocity of approximately 537 m/s, identifying the soils below the dense sand stratum as site class "C" based on the 2008 National Seismic Hazard Mapping Project (NSHMP).

The target spectrum at the top of the stiff soil horizon at a depth of 100 feet was developed following the guidelines of the 2013 CBC and ASCE 7-10.

ASCE 7-10 Section 21.1 requires that a site-specific risk-targeted maximum considered earthquake (MCE-R) acceleration response spectrum be developed. ASCE 7-10 Section 21.2 states the MCE-R response spectrum shall be the lesser of a probabilistic MCE-R spectrum and a deterministic MCE-R spectrum.

Deterministic MCE-R Spectrum. Per ASCE 7-10 Section 21.2.2, the deterministic MCE-R spectrum shall be calculated as an 84th percentile 5% damped spectral acceleration response spectrum in the direction of maximum horizontal response computed at that period. The largest acceleration calculated for the characteristic earthquakes on all known active faults within the region shall be used. The ordinates of the response spectrum shall not be less than the deterministic MCE-R spectrum lower limit given in ASCE 7-10 Figure 21.2-1.

For this analysis, the largest spectral accelerations were determined to result from an M = 7.4 event at a source-to-site distance of 6.0 km on the San Gregorio fault. The 84th percentile deterministic response spectrum is plotted in ***Figure C3 – Stiff Soil MCE-R and Design Target Response Spectra.***

Probabilistic MCE-R Spectrum. Per ASCE 7-10 Section 21.2.1, the probabilistic MCE-R acceleration response spectrum is the spectral accelerations in the direction of maximum horizontal response represented by a 5% damped acceleration response spectrum that is expected to achieve a 1% probability of collapse within a 50 year period. This response spectrum is estimated as the product of the mapped risk coefficient C_R and the spectral response acceleration from a 5% damped acceleration response spectrum having a 2% probability of exceedance in 50 years in accordance with ASCE 7-10 Section 21.2.1.1. Probabilistic hazard computation involves the evaluation of probabilities of all possible fault rupture scenarios that contribute to the defined hazard (in this case 2% probability of exceedance of spectral acceleration in 50 years) at given periods. In summary, a probabilistic hazard spectrum is the result of the

overall hazard contributions of a large number of deterministic computations adjusted for each earthquake scenario's probability.

The probabilistic response spectrum is plotted alongside the deterministic spectra in ***Figure C3.***

Near-source and Directionality Effects. Due to the site's close proximity to the San Gregorio fault, near-source effects were judged to be important and were incorporated in the target response spectrum. Directivity effects cause pulse-like ground motions that are known to increase seismic hazard and risk in near-fault regions (Shahi and Baker, 2013). The applied directivity model accounts for the period of the average directivity pulse likely to be observed at the site and amplifies spectral accelerations in a band of periods similar to that of the pulse.

ASCE 7-10 Chapter 21 requires that the deterministic and probabilistic MCE-R response spectra be calculated in the direction of maximum horizontal acceleration. The current NGA West GMPEs predict the average spectral acceleration caused by ground motions. However, many engineers prefer to design structures to resist maximum horizontal accelerations instead of the average (NEHRP, 2009). Because ASCE 7-10 calls for accelerations in the direction of maximum horizontal acceleration, the model by Shahi and Baker (2013) was used to convert average horizontal accelerations from the NGA West GMPEs to maximum horizontal accelerations.

Epistemic Uncertainty. To account for scientific uncertainty, the average accelerations of four widely used empirical attenuation relationships were used to determine the target response spectrum:

- Abrahamson and Silva (2008)
- Boore and Atkinson (2008)
- Campbell and Bozorgnia (2008)
- Chiou and Youngs (2008)

The deterministic MCE-R response spectrum was determined using an average of the four attenuation models listed above while the probabilistic spectrum was determined using an average of all except the Abrahamson and Silva model.

Target Spectrum. ***Figure C3*** shows the probabilistic MCE-R response spectrum plotted alongside the 84th percentile deterministic MCE-R response spectrum and the deterministic lower limit prescribed in ASCE 7-10. The probabilistic spectrum plots lower spectral accelerations than the deterministic lower limit at defined periods. The probabilistic spectrum is therefore the MCE-R response spectrum per ASCE 7-10. Prior to propagating the ground motions through the upper soft soil profile, we elected to develop a "design" stiff soil spectrum. Accordingly, the design target spectral accelerations are taken to be 67% of the MCE-R spectral accelerations as described in ASCE 7-10 Section 21.3. The design target spectrum is also plotted on ***Figure C3.***

This approach differs from the approach described in ASCE 7-10 Chapter 21. For this analysis, the chosen ground motions were scaled to the "design" stiff soil target spectrum which is taken to be 67% of the MCE-R stiff soil target spectral accelerations. ASCE 7-10 calls for ground motions to first be scaled to the MCE-R stiff soil target spectrum and that the final surface response spectrum used for design be taken as 67% of the MCE-R calculated surface response spectrum. However, for sites underlain by significant deposits of soft soils, such as liquefied sand (or soft clays), this approach can be unconservative. Cyclic shear strains and corresponding non-linear soil behavior are higher at the MCE-R response level than at the design response level. Consequently, if ground motions are scaled to the MCE-R response spectrum, higher attenuation of ground shaking is calculated at lower periods (generally T < 1.0 second). This increased attenuation is then factored into the resulting design surface response spectrum, leading to potentially unconservative final design spectra.

C.4. GROUND MOTIONS

C.4.1 SELECTION

Eight acceleration time histories were selected and scaled to the dense sand stiff soil design spectrum. The main selection criteria were:

- Magnitude and distance
- Tectonic environment (style of faulting: strike slip, reverse, etc.)
- Overall shape of response spectrum compared to design spectrum
- Subsurface conditions at recording station (specifically $V_{s,30}$)

Based on deaggregated hazard information from the USGS, the primary contributor to the 2% probability of exceedance in 50 years hazard is an M = 7.4 event at a distance of 6.0 km on the San Gregorio fault (strike-slip). Preference was given to ground motion recordings with magnitudes, source-to-site distances, and tectonic environments similar to the faulting environment and severity of seismic event expected at the site for the 2% in 50 years hazard level. Additionally, ground motions were selected with regard to overall fit of the chosen design spectrum.

Table C2 – Selected Ground Motions summarizes the selected ground motions. Time histories were downloaded from the 2005 Pacific Earthquake Engineering Research Center (PEER) database (http://peer.berkeley.edu/nga/search.html).

TABLE C2 – SELECTED GROUND MOTIONS

NGA#	Earthquake	Recording station	Mw	Distance (km)	File
NGA0983	1994 Northridge, USA	USGS 655 Jensen Filter Plant Generator	6.69	5.43	0655-022
NGA1633	1990 Manjil, Iran	BHRC 99999 Abbar	7.37	12.56	ABBAR--T
NGA1193	1999 Chi Chi, Taiwan	CWB 99999 CHY024	7.62	9.6	CHY024-N
NGA0763	1989 Loma Prieta, USA	CDMG 47006 Gilroy - Gavilan Coll.	6.93	9.1	GIL337
NGA0164	1979 Imperial Valley, USA	UNAMUCSD 6604 Cerro Prieto	6.53	15	H-CPE237
NGA0187	1979 Imperial Valley, USA	USGS 5051 Parachute Test Site	6.53	12.7	H-PTS225
NGA0879	1992 Landers, USA	SCE 24 Lucerne	7.28	2.2	LCN260
NGA0900	1992 Landers, USA	CDMG 22074 Yermo Fire Station	7.28	24	YER270

C.4.2 SCALING

The selected acceleration time histories were scaled so their median response spectrum resembled the stiff soil target design spectrum with minimal error. A single scalar multiplier was applied to each ground motion changing only the amplitude of acceleration while leaving the frequency content of the time history unchanged. The computer program SigmaSpectra (Kottke and Rathje, 2013) was used to select and scale the eight time histories from a larger user-defined library of motions. The library of motions was selected with regard to the aforementioned earthquake parameters. SigmaSpectra's algorithm was then used to choose a defined number of time histories (eight in this case) for which the median response spectrum matches the target response spectrum at all defined periods. See Kottke and Rathje (2010) for a detailed explanation of the SigmaSpectra algorithm. The results of the time history scaling are presented

in ***Table C3 – Ground Motion Scaling Factors.*** The resulting scaled individual ground motion response spectra for the eight time histories along with their median response and the original stiff soil target spectrum are plotted in ***Figure C4 – Target Spectrum and Scaled Response Spectra.***

TABLE C3 – GROUND MOTION SCALING FACTORS

NGA#	Earthquake	File	Scale
NGA0983	1994 Northridge, USA	0655-022	0.95
NGA1633	1990 Manjil, Iran	ABBAR--T	0.92
NGA1193	1999 Chi Chi, Taiwan	CHY024-N	2.29
NGA0763	1989 Loma Prieta, USA	GIL337	2.26
NGA0164	1979 Imperial Valley, USA	H-CPE237	2.82
NGA0187	1979 Imperial Valley, USA	H-PTS225	4.18
NGA0879	1992 Landers, USA	LCN260	0.74
NGA0900	1992 Landers, USA	YER270	2.06

C.5. SITE RESPONSE ANALYSIS

C.5.1 METHODOLOGY

The site surface is underlain by significant deposits of potentially liquefiable sands. During the characteristic earthquake on the San Gregorio fault (M = 7.4, distance = 6.0 km), sand deposits which are below the water table and above the elastic silt stratum are expected to liquefy, significantly altering the profile's stiffness and strength properties. It is expected that strong ground motions propagating through the profile will be significantly altered at the ground surface. To estimate surface spectral accelerations, analyses were run in which ground motions were propagated through the elastic silt and softened sand layers.

The computer program SHAKE2000 (Geomotions, 2013) was used to model the dynamic behavior of the soil profile during strong ground shaking. SHAKE2000 integrates SHAKE91, a computer program for conducting one-dimensional equivalent linear seismic response analyses of horizontally layered soil deposits with ShakEdit, a pre- and post-processor.

C.5.2 IDEALIZED SOIL PROFILE

The subsurface conditions consist of loose to medium dense sand underlain by silt, which is then underlain by dense sand at a depth of approximately 76 feet. The upper sand layer contains a

thin, peat layer from 8 to 10 feet below ground surface (bgs). Also, portions of the upper sand layer are prone to liquefaction-induced softening during a large earthquake whereas other portions are not. A typical, idealized profile was input into SHAKE2000 as represented in ***Table C4 – Idealized Profile***.

TABLE C4 – IDEALIZED PROFILE

Layer No.	Layer top (ft)	Layer bot (ft)	Layer thickness (ft)	Depth at middle of layer (ft)	Soil type	Unit weight (pcf)	Factor of Safety against liquefaction below 1.0?	Estimated small strain Vs (ft/s)
1	0	2.5	2.5	1.25	sand	120	N	280
2	2.5	5.25	2.75	3.88	sand	125	Y	522
3	5.25	8	2.75	6.63	sand	125	Y	522
4	8	10	2	9.00	peat	105	N	400
5	10	12	2	11.00	sand	132	Y	400
6	12	14	2	13.00	sand	132	Y	400
7	14	16	2	15.00	sand	132	Y	400
8	16	18	2	17.00	sand	132	Y	400
9	18	20.5	2.5	19.25	sand	132	Y	431
10	20.5	23	2.5	21.75	sand	132	Y	431
11	23	25.5	2.5	24.25	sand	132	Y	431
12	25.5	28	2.5	26.75	sand	132	Y	431
13	28	30.5	2.5	29.25	sand	132	Y	431
14	30.5	33	2.5	31.75	sand	132	Y	431
15	33	36	3	34.50	sand	125	N	1000
16	36	37	1	36.50	sand	125	N	900
17	37	38	1	37.50	sand	125	N	800
18	38	39	1	38.50	sand	132	Y	700
19	39	42	3	40.50	sand	132	Y	600
20	42	43	1	42.50	sand	132	Y	700
21	43	44	1	43.50	sand	132	N	800
22	44	45	1	44.50	sand	132	N	900
23	45	48	3	46.50	sand	132	N	1000
24	48	50	2	49.00	sand	132	N	1000
25	50	55.2	5.2	52.60	silt	112	N	575
26	55.2	60.4	5.2	57.80	silt	112	N	575
27	60.4	65.6	5.2	63.00	silt	112	N	575
28	65.6	70.8	5.2	68.20	silt	112	N	575
29	70.8	76	5.2	73.40	silt	112	N	575
30	76	88	12	82.00	sand	132	N	1000
31	88	100	12	94.00	sand	132	N	1000

Maximum shear modulus G_{max} can be obtained with the relationship:

$$G_{\max} = \rho V_s^2$$

Where ρ is the total mass density of the soil and V_s is the shear wave velocity.

Shear wave velocities were estimated using the correlations in ***Table C5 – Shear Wave Velocity Correlations.***

TABLE C5 – SHEAR WAVE VELOCITY CORRELATIONS

Reference	Soil type	Correlation	Units
Dickenson (1994)	Clay	$V_s = 18(S_u)^{0.475}$	ft/s
Wair, DeJong, and Shantz (2012)	Clay	$V_s = 26(N_{60})^{0.17}\sigma'_v{}^{0.32}$	m/s
Wair, DeJong, and Shantz (2012)	Sand	$V_s = 30(N_{60})^{0.23}\sigma'_v{}^{0.25}$	m/s

Notes:
V_s = small-strain shear wave velocity
S_u = undrained cohesive strength (psf)
N_{60} = corrected SPT-N blow count
σ'_v = effective overburden stress (kPa)

The Dickenson relationship was developed for undrained clay soils and is well known and used. The Wair, DeJong, and Shantz relationships are the result of a PEER-sponsored study that reviewed numerous existing shear wave velocity and SPT blow-count correlations. The authors judged the relative strength of each correlation based on the size of the dataset, coefficients of determination, and documentation of hammer energy. The authors conclude that use of the provided shear wave velocity equations results in a reliable value based the strongest V_s – N_{60} correlations that have been developed (Wair, DeJong, and Shantz, 2012).

C.5.3 SHEAR MODULUS AND DAMPING PROPERTIES

Shear modulus reduction and damping curves were used to model the dynamic response of soil deposits in SHAKE2000. The curves are plotted in ***Figure C5 – Dynamic Material Curves*** and were used as follows:

- Seed and Idriss (1970) sand curves: applied to sands;
- Vucetic and Dobry (1991) PI = 15: applied to elastic silt; and
- Wehling (2003) peat: applied to very thin peat layer in upper sands.

C.5.4 RESULTS – SITE SPECIFIC RESPONSE SPECTRA

The eight acceleration time histories were initially scaled to the stiff soil design target spectrum (***Figure C4***). Once the idealized subsurface profile and static and dynamic soil properties were input into SHAKE2000, the scaled time histories were propagated from the dense sand layer up through the elastic silt and upper sand layers. The surface horizontal acceleration response spectrum with 5% damping is plotted in ***Figure C6 – 5% Damped Surface Response Spectra***. Analyses were run to determine site response at the surface as well as 10 feet below existing ground surface, but because of only small differences in calculated accelerations, the surface response spectra were judged to be sufficient to represent the upper 10 feet of the soil profile.

It has been shown that the effects of vertical accelerations can be significant on the seismic response of structures closer than about 15 km to the seismogenic source (Gulerce and Abrahamson, 2011). To calculate vertical accelerations, results of the model described in Gulerce and Abrahamson (2011) were used to obtain factors by which to multiply horizontal spectral accelerations.

The horizontal spectral accelerations at 0.5% damping were also obtained using adjustment factors to the accelerations at 5% damping. The model described in Rezaeian et al. (2012) was used to obtain factors by which to multiply 5% damped spectral accelerations. To obtain 0.5% damped vertical accelerations, 5% damped horizontal accelerations were multiplied by both the vertical-to-horizontal factors obtained from Gulerce and Abrahamson (2011) and the 5%-to-0.5% damping factors obtained from Rezaeian et al. (2012).

The horizontal surface response spectra for 5% and 0.5% damping are plotted together on ***Figure C7 – Site-specific Horizontal Response Spectra*** along with the ASCE 7-10 80% Site Class E spectrum. Per ASCE 7-10 Section 21.3, horizontal 5% damped surface spectral accelerations for Site Class F soils shall not be less than 80% of the Site Class E spectrum determined in Section 11.4.5.

Vertical 5% and 0.5% damped surface spectral accelerations are plotted in ***Figure C8 – Site-specific Vertical Response Spectra.***

Results Summary.

For design, we recommend the following:

- Horizontal 5% damped accelerations: use the computed spectral accelerations (solid black line on ***Figure C7***) except when the ASCE 7-10 80% Site Class E spectrum (dashed black line on ***Figure C7***) is greater in value. ASCE 7-10 80% Site Class E is the minimum spectral acceleration that may be used.
- Horizontal 0.5% damped accelerations: use the computed spectral accelerations (solid red line on ***Figure C7***). Note that ASCE 7-10 80% Site Class E corresponds only to the 5% damped acceleration response spectrum.
- Vertical accelerations: use the computed vertical acceleration response spectra on ***Figure C8.*** The solid black line corresponds to 5% damped vertical accelerations while the solid red line corresponds to 0.5% damped vertical accelerations.

The design acceleration parameters (S_{DS} and S_{D1}) are calculated in accordance with ASCE 7-10 Section 21.4 for 5% damped horizontal response spectra. S_{DS} is the larger of the spectral acceleration at 0.2 seconds or 90% of any spectral acceleration corresponding to periods greater than 0.2 seconds. S_{D1} is the larger of the spectral acceleration at a period of 1.0 second or two times the spectral acceleration at a period of 2.0 seconds. The values obtained shall not be less than 80% of the S_{DS} and S_{D1} values from ASCE 7-10 Section 11.4.4. The resulting parameters are listed below:

Horizontal, 5% damping

$S_{DS} = 0.87$

$S_{D1} = 1.28$

Table C6 – CBC Seismic Design Parameters summarizes the CBC seismic design parameters.

TABLE C6 – CBC SEISMIC DESIGN PARAMETERS

Description	Parameter	Values (Horizontal 5% damped)
Mapped	S_s	1.612 g
Mapped	S_1	0.612 g
Soil Profile	Site Class	F
Long period transition	T_L	12 seconds
Site-specific design coefficients	S_{Ds}	0.87 g
	S_{D1}	1.28 g

C.5.5 OTHER CONSIDERATIONS

The CAWD WWTP is underlain by significant deposits of potentially liquefiable sand. In general, sand below the water table and above the elastic silt stratum is expected to liquefy during the characteristic earthquake on the nearby San Gregorio fault (M = 7.4, distance = 6.0 km). The liquefied sand will be softened during ground shaking and therefore spectral acceleration attenuation is expected at relatively short spectral periods while amplification is possible at longer periods.

The upper sand deposits may not liquefy to the extent modeled in this analysis during a less severe seismic event. However, the results presented in this analysis are judged to be appropriately conservative for design. The sand is modeled with dynamic strength and stiffness to capture the effects of liquefaction, thus increasing spectral acceleration attenuation at shorter periods. However, the seismic event used for the analysis is severe enough so that the liquefied site response spectrum is appropriately conservative to account for milder ground shaking with minimal or no liquefaction.

C.6. REFERENCES

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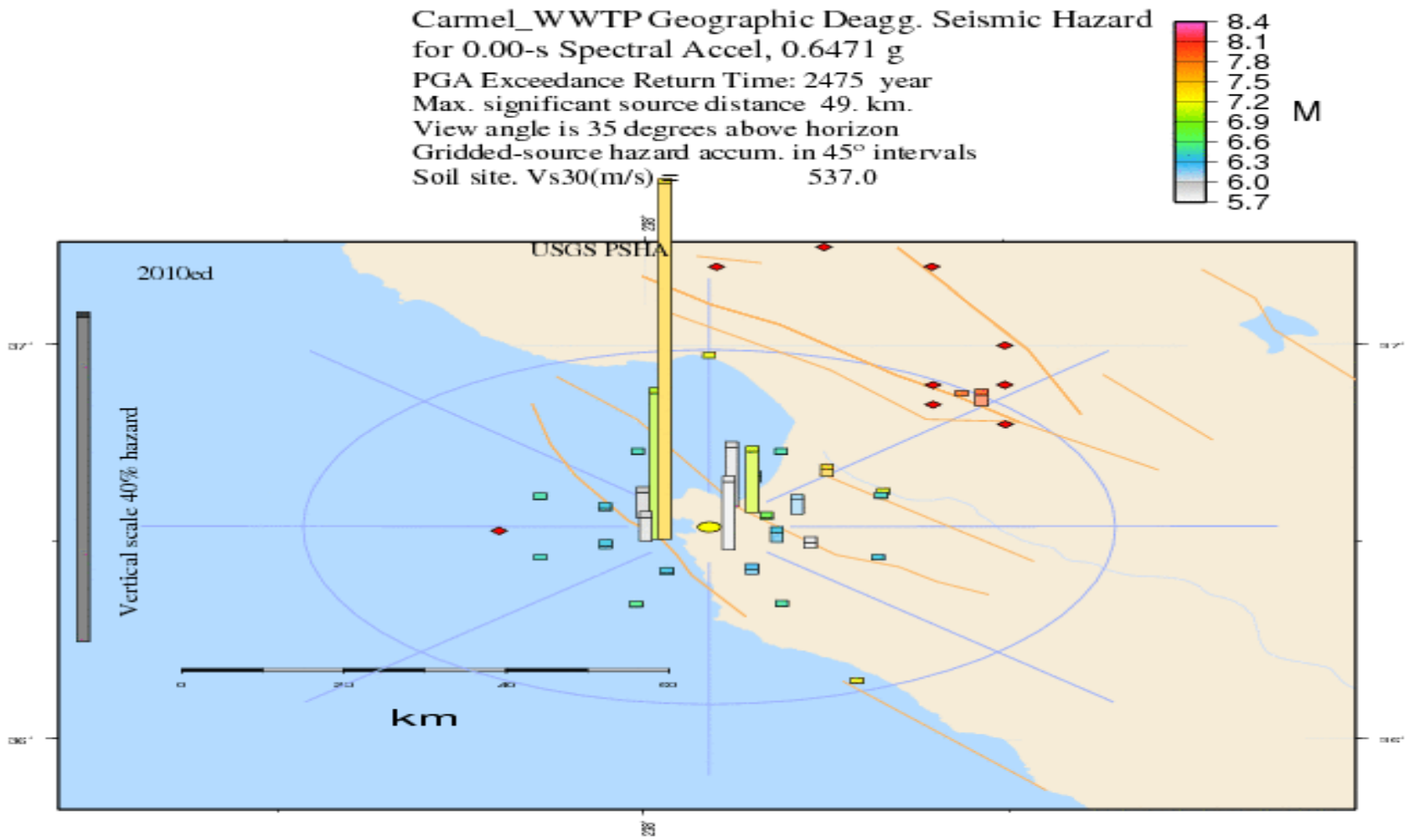
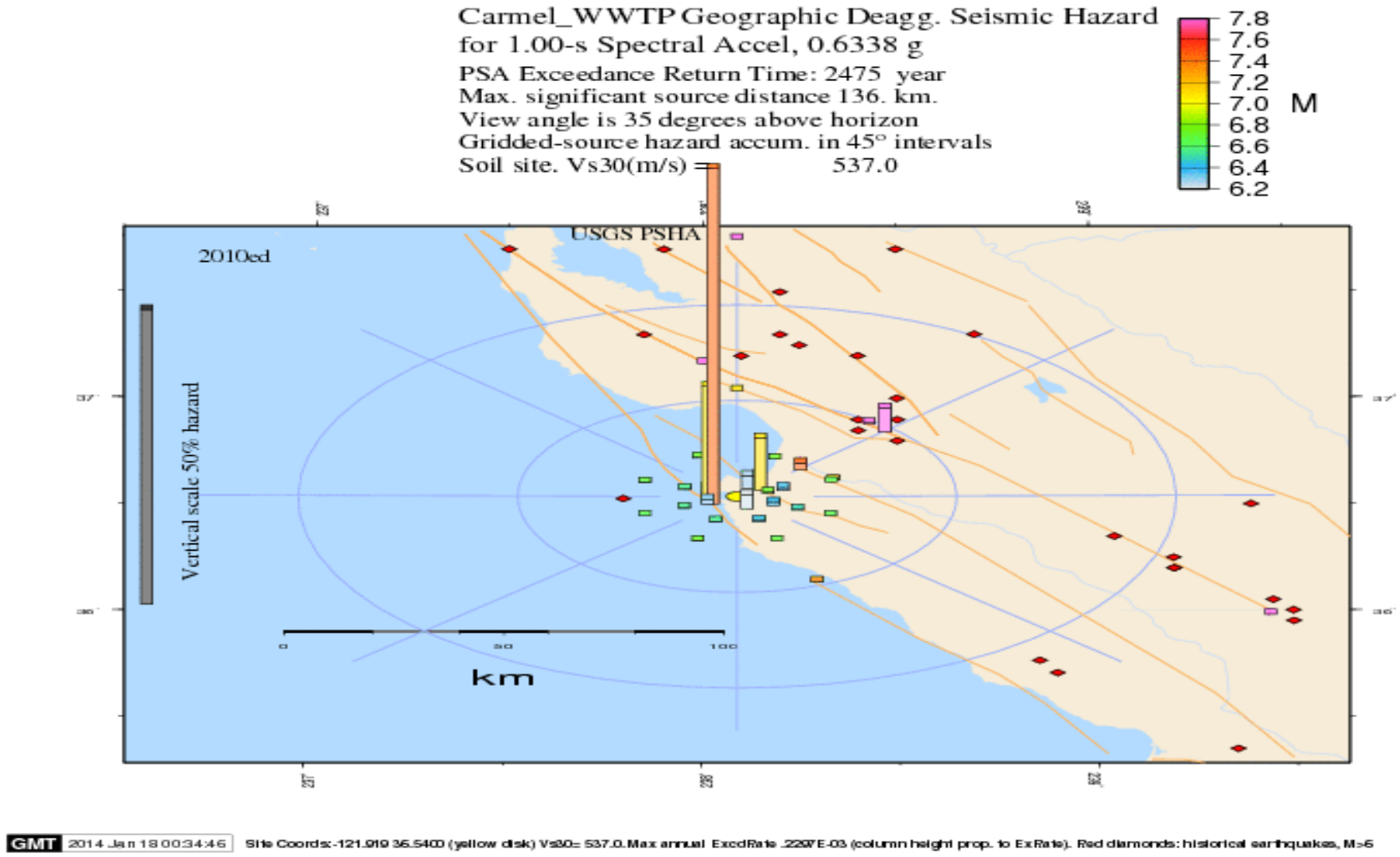
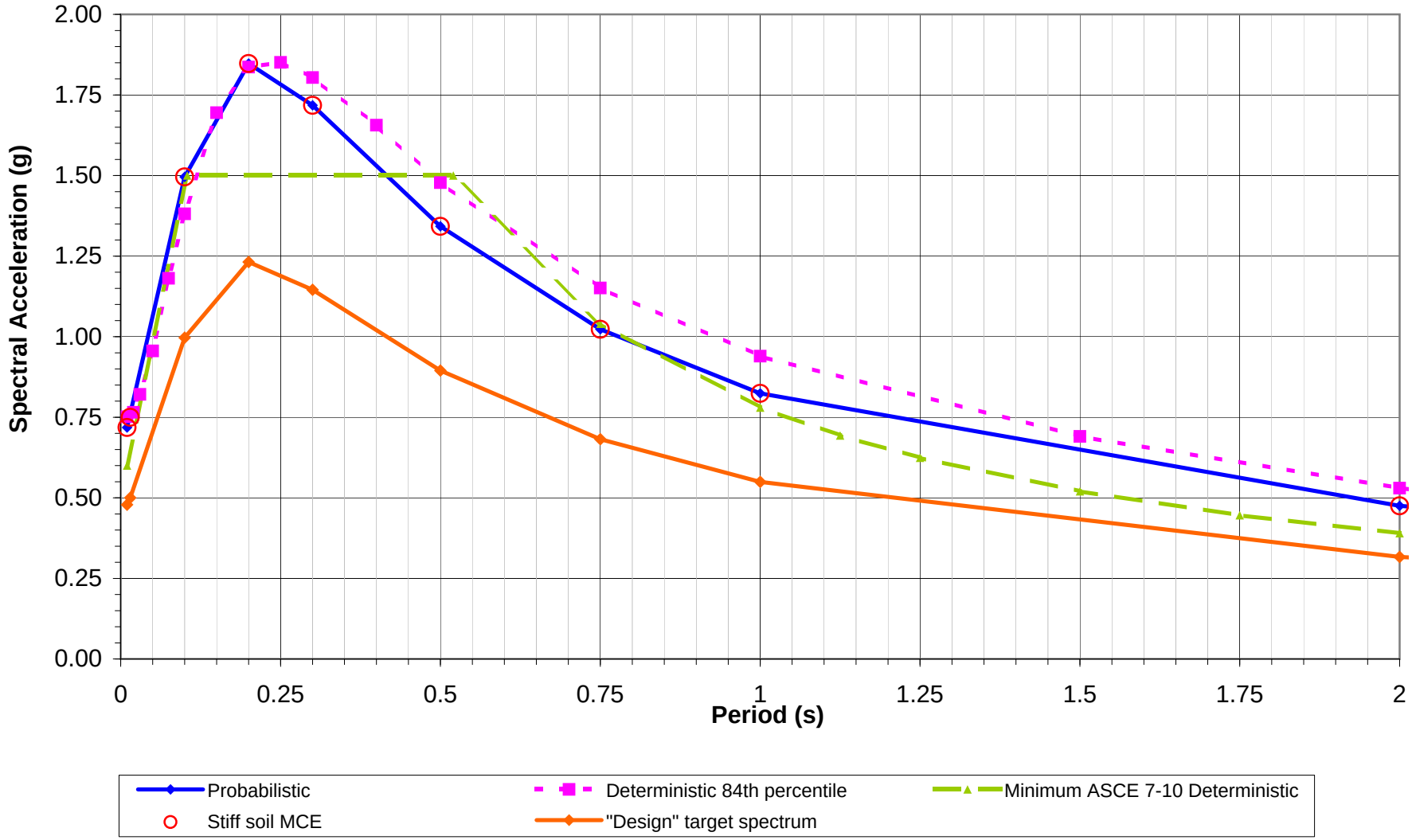


GTC	GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	DEAGGREGATED HAZARD CONTRIBUTION FOR PGA	FIGURE
		CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT	**C1**
		OCTOBER 2014	SF13035



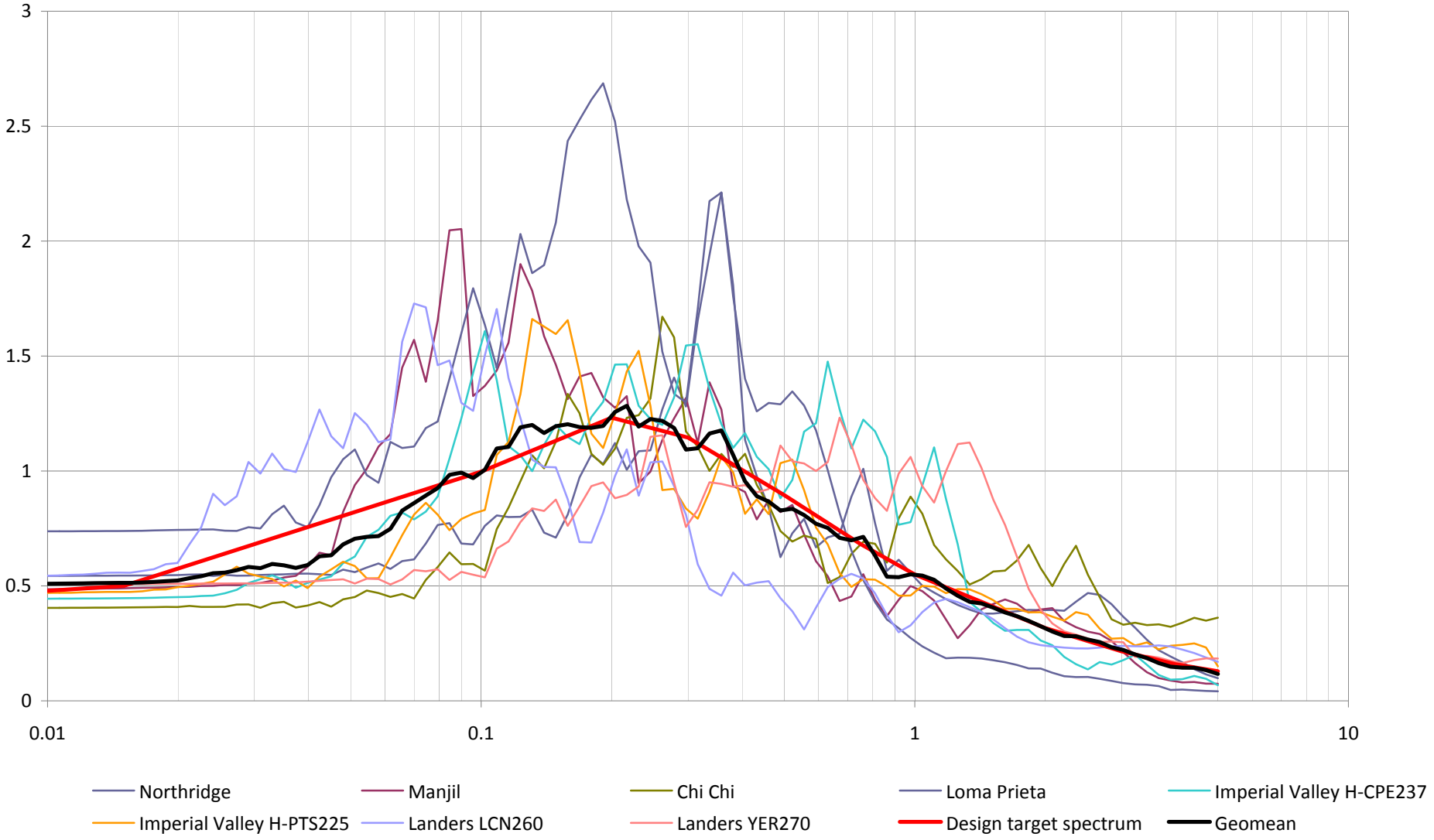
GTC	GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	DEAGGREGATED HAZARD CONTRIBUTION FOR Sa AT 1.0 S	FIGURE
		CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT	**C2**
		OCTOBER 2014	SF13035

Stiff Soil MCE and Design Target Response Spectra
(adjusted for directivity and directionality)

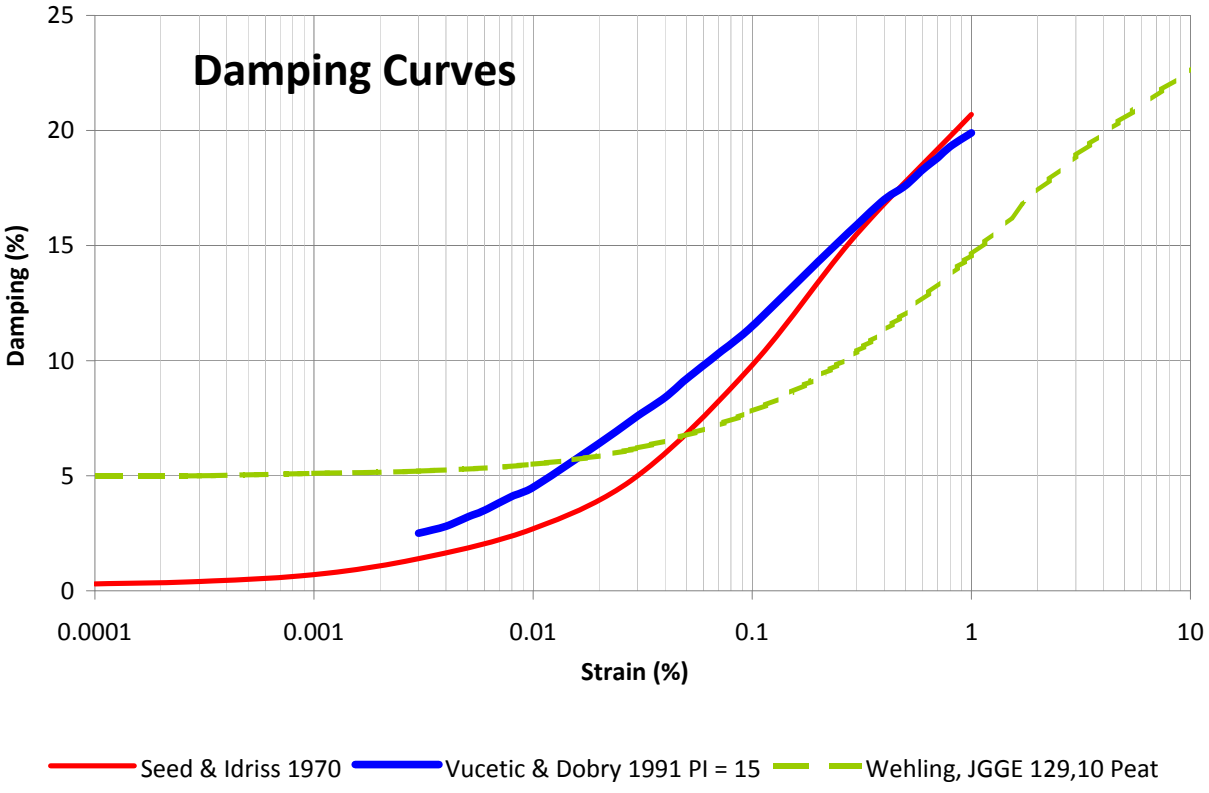


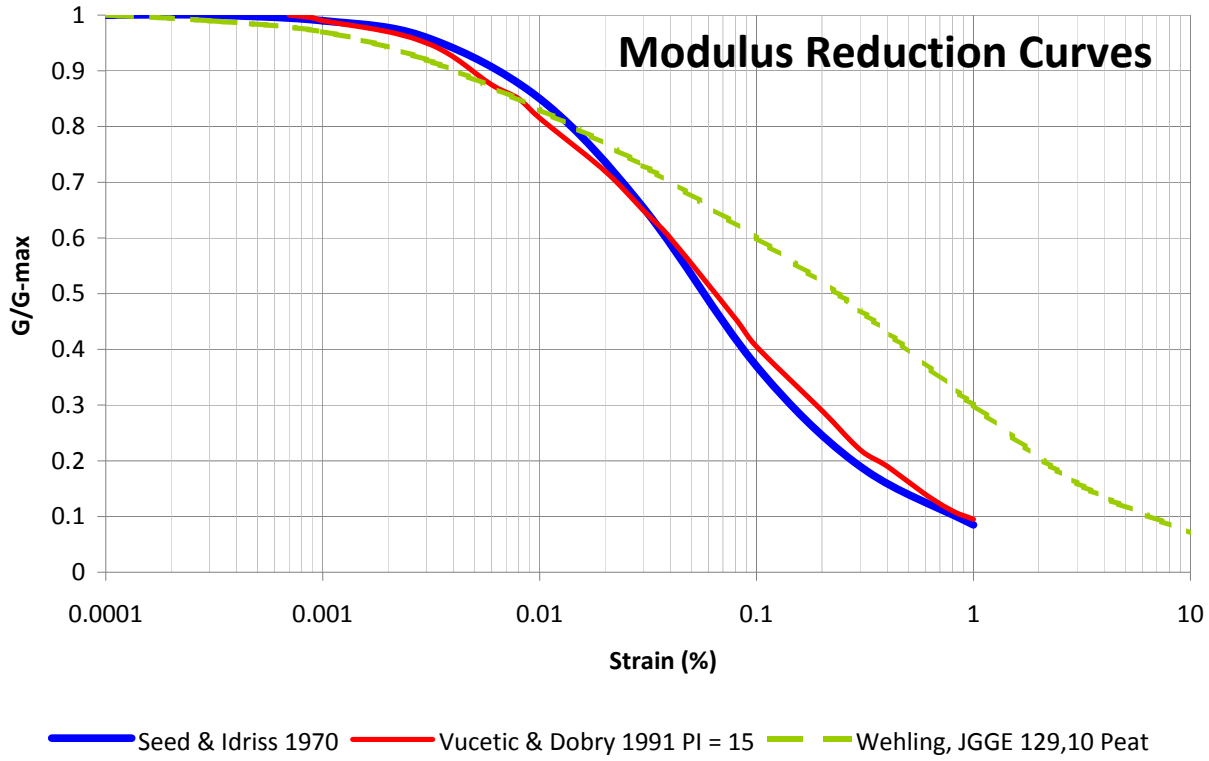
GTC	GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	STIFF SOIL MCE-R AND DESIGN TARGET RESPONSE SPECTRA	FIGURE
		CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT	**C3**
		OCTOBER 2014	SF13035

Stiff soil target spectrum and scaled ground motion suite, 5% damping



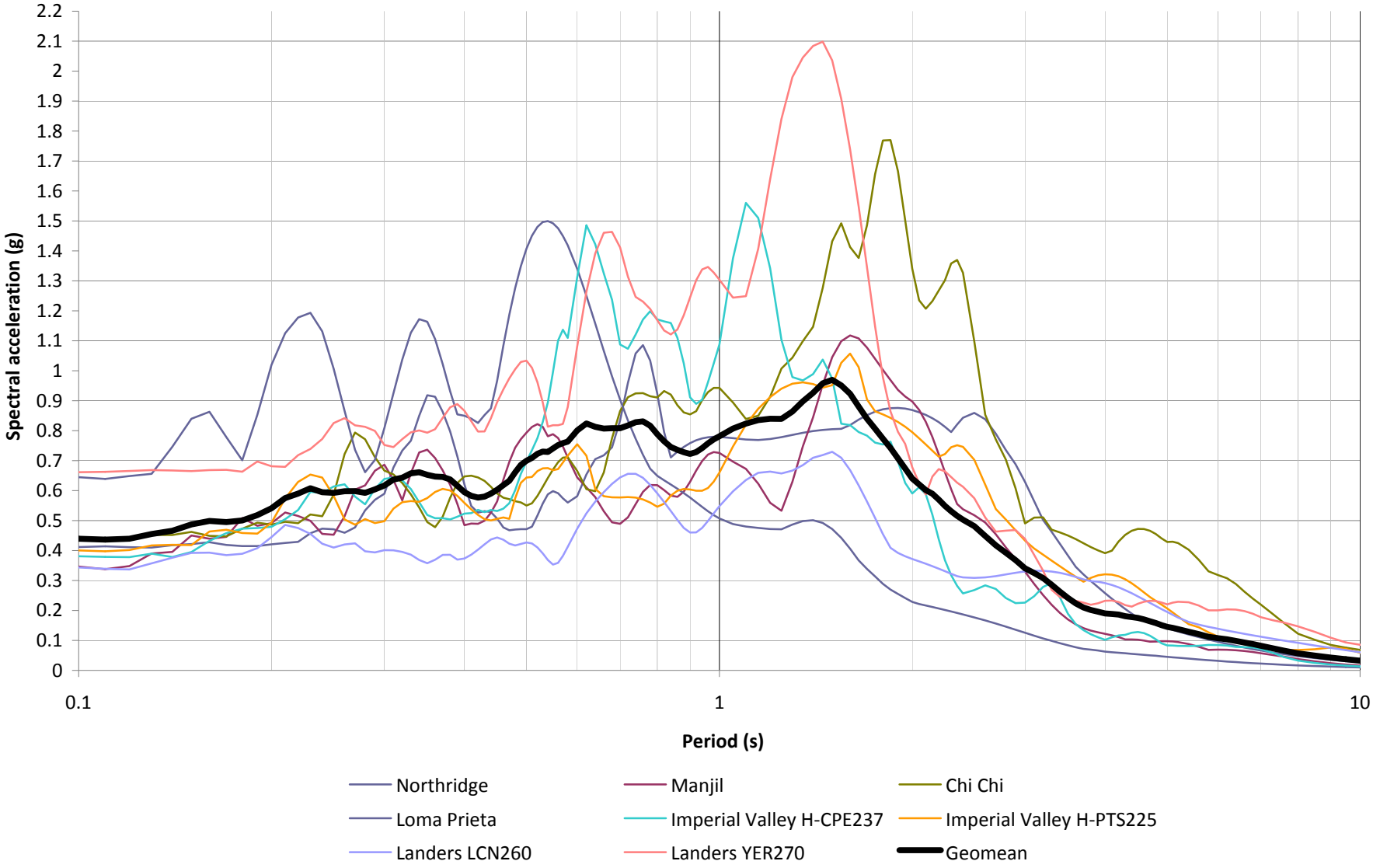
GTC	GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	TARGET SPECTRUM AND SCALED RESPONSE SPECTRA CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT OCTOBER 2014	FIGURE **C4** SF13035





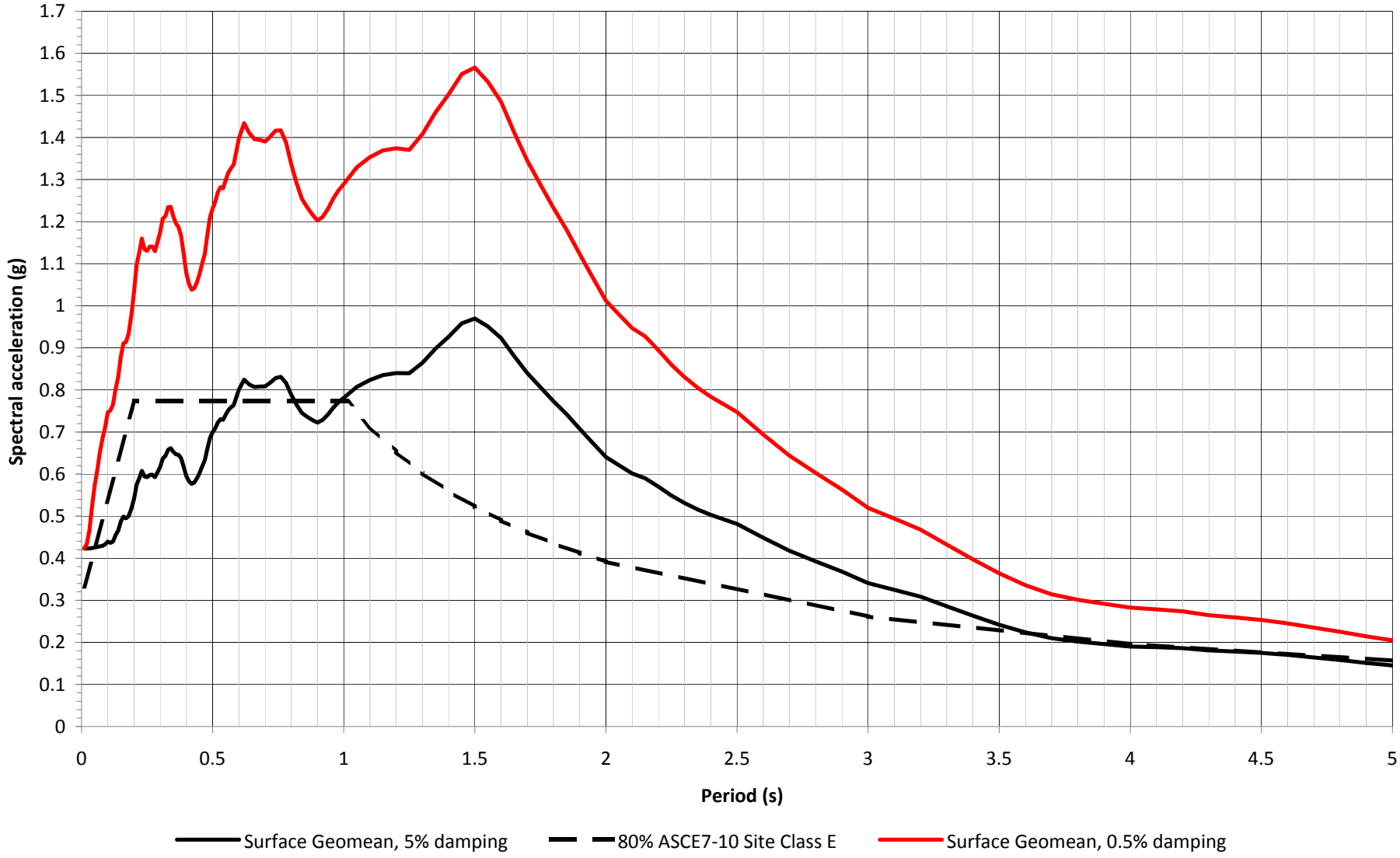
GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	DYNAMIC MATERIAL CURVES CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT OCTOBER 2014	FIGURE **C5** SF13035

Surface response spectrum, 5% damping



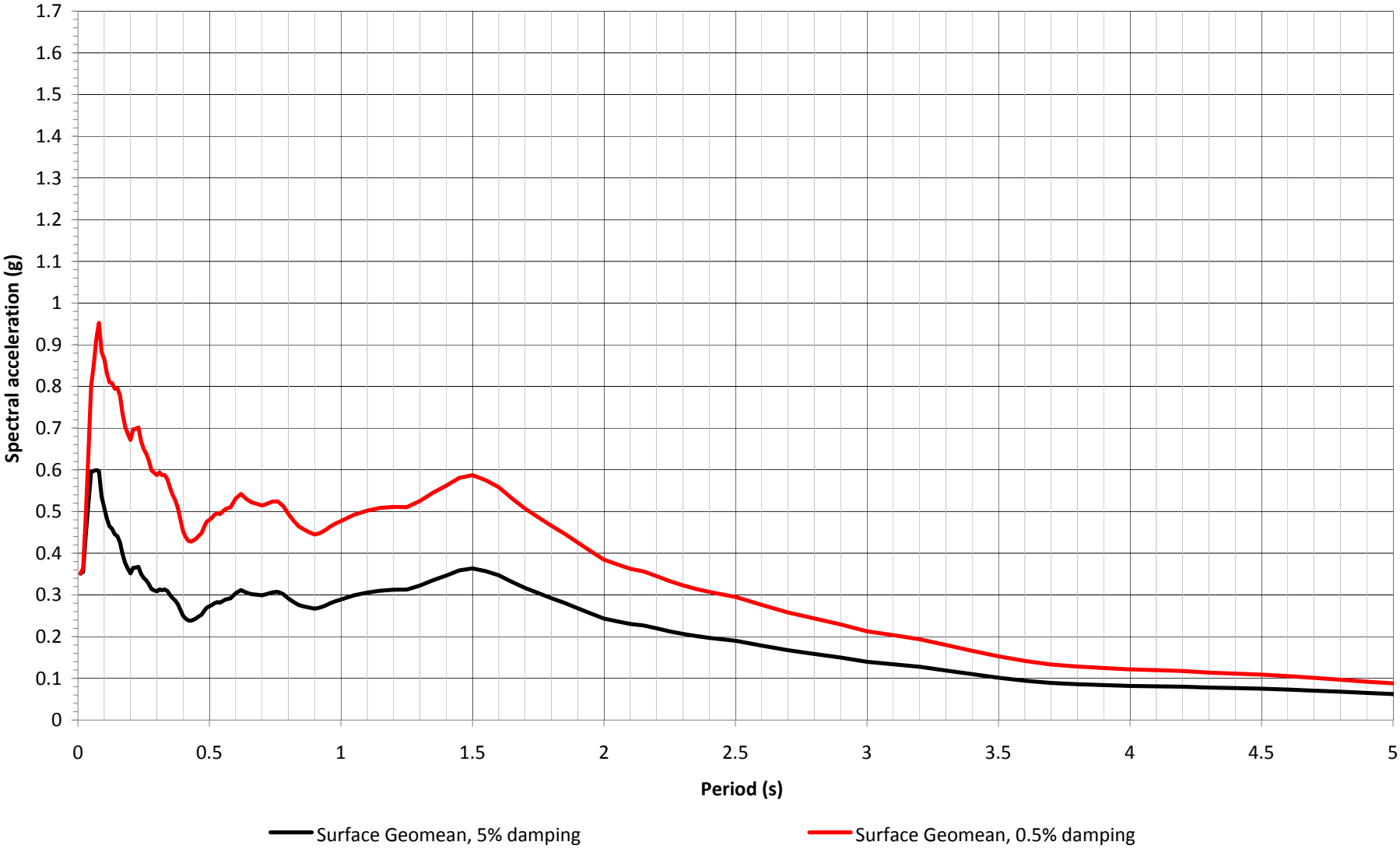
GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	5% DAMPED HORIZONTAL SURFACE RESPONSE SPECTRA	FIGURE
	CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT	**C6**
	OCTOBER 2014	SF13035

Site-specific Horizontal Response Spectra



GTC	GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	SITE-SPECIFIC HORIZONTAL RESPONSE SPECTRA	FIGURE
		CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT	C7
		OCTOBER 2014	SF13035

Site-specific Vertical Response Spectra



GTC	GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111	SITE-SPECIFIC VERTICAL RESPONSE SPECTRA CAWD WASTEWATER TREATMENT PLANT REHABILITATION PROJECT OCTOBER 2014	FIGURE **C8** SF13035

Appendix D
Sample AB 52 Letter

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Carmel Area Wastewater District

P.O. Box 221428 Carmel California 93922 v (831) 624-1248 v FAX (831) 624-0811

Barbara Buikema
General Manager
Ed Waggoner
Operations Superintendent
Alex J. Lorca
Legal Counsel

Board of Directors
Scott Lonergan
Suzanne Cole
Robert Siegfried
Kevan Urquhart
Ken White

May 22, 2025

NOTIFICATION OF PROJECT

FROM: CARMEL AREA WASTEWATER DISTRICT/ JEFF BANDY

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

Dear Vice-Chairperson Ketchum,

The Carmel Area Wastewater District has made a determination to undertake the following project: **Wastewater Treatment Plant (WWTP) Perimeter Improvements Project**. Below please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to PRC § 21080.3.1 (d).

Project Description

Carmel Area Wastewater District (CAWD) proposes to replace the dilapidated perimeter security fence around the existing WWTP and remove approximately ninety (90) Eucalyptus trees along the alignment of the fence to improve the safety and security of the facility. No changes are being made to the existing building structures.

Project Location

The general location of the Project is shown in Figure 1. The Plant is located south of the Carmel River, as shown in Figure 2. The infrastructure being improved is located within the property line of the existing developed wastewater treatment plant site and is typical of industrial facilities that are found on a site of a publicly owned wastewater treatment plant. The site is categorized as Public/Quasi-Public in the Monterey County Land Use Plan.

Description of Project Components

The components of the Project are described below. The site layout showing the location of the components of the Project is shown in Figure 3. This demolition drawing shows the fence and gates that will be removed and replaced in the same locations.

Removal of Perimeter Eucalyptus Trees

The Eucalyptus trees along the perimeter of the plant were planted in the 1980s to provide visual screening to the plant. However, in the intervening years, the native cottonwood, sycamore and willow groves in the State Parks land to the south of the WWTP have grown to the point where they provide a sufficient visual barrier to the plant without the need to keep the Eucalyptus trees for visual screening. The Eucalyptus trees pose a risk to District staff and infrastructure from falling limbs, and the District incurs ongoing costs for tree trimming.

Replacement of Existing Security Fence

The existing fence was constructed in the 1970s and has significantly deteriorated. The fence is failing in multiple locations and is no longer functional as a security barrier. The new fence will be an eight (8) foot tall, galvanized steel chain link security fence. This work is necessary to increase the safety and security of the WWTP.

A California Historical Resources Information System (CHRIS) Rapid Response Records Search was completed on June 30, 2020 for a previous project at the WWTP and is provided as an attachment to this letter. The proposed work for this project does not require excavation, only digging post holes for the replacement security fence.

Pursuant to PRC § 21080.3.1 (b), you have 30 days from receipt of this letter to request consultation, in writing, with the Carmel Area Wastewater District.

Any questions or comments should be directed to Jeff Bandy, Principal Engineer, at (831) 624-1248 or by email at bandy@cawd.org.

Very Respectfully,

Jeff Bandy
Principal Engineer
Carmel Area Wastewater District

Attachments:

- June 30, 2020 California Historical Resources Information System (CHRIS) Rapid Response Records Search Report (NWIC File No. 19-2315)

Figure 1 - Project Vicinity Map

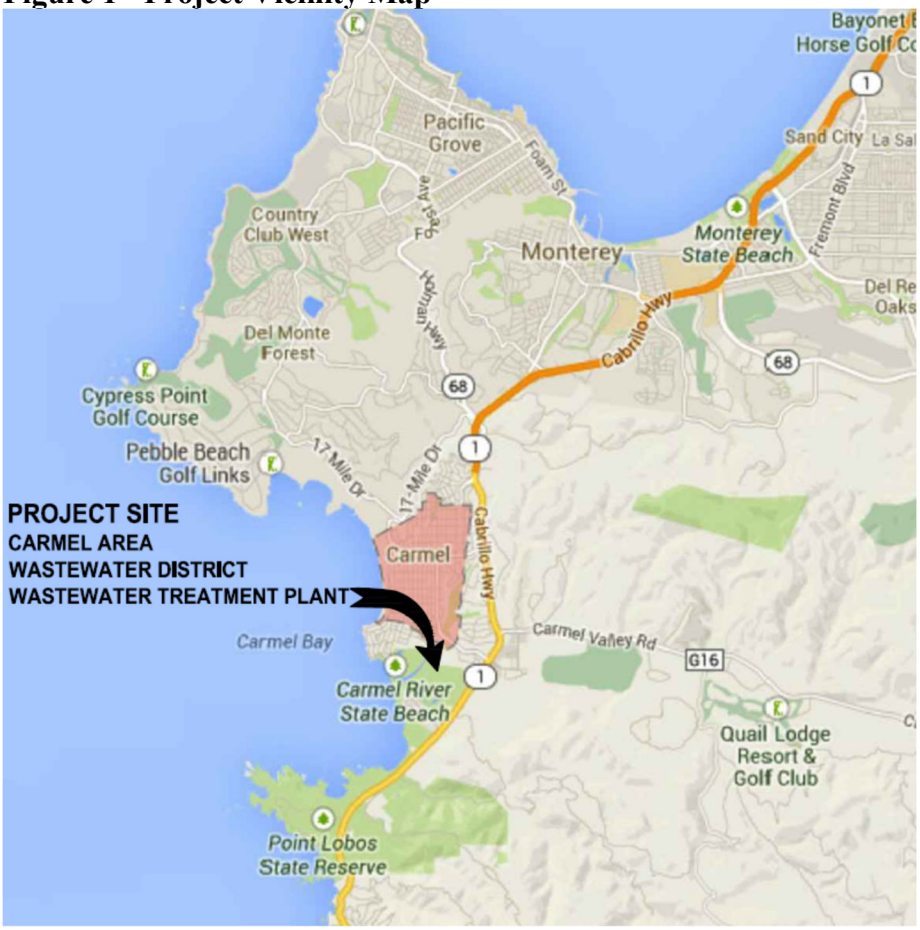
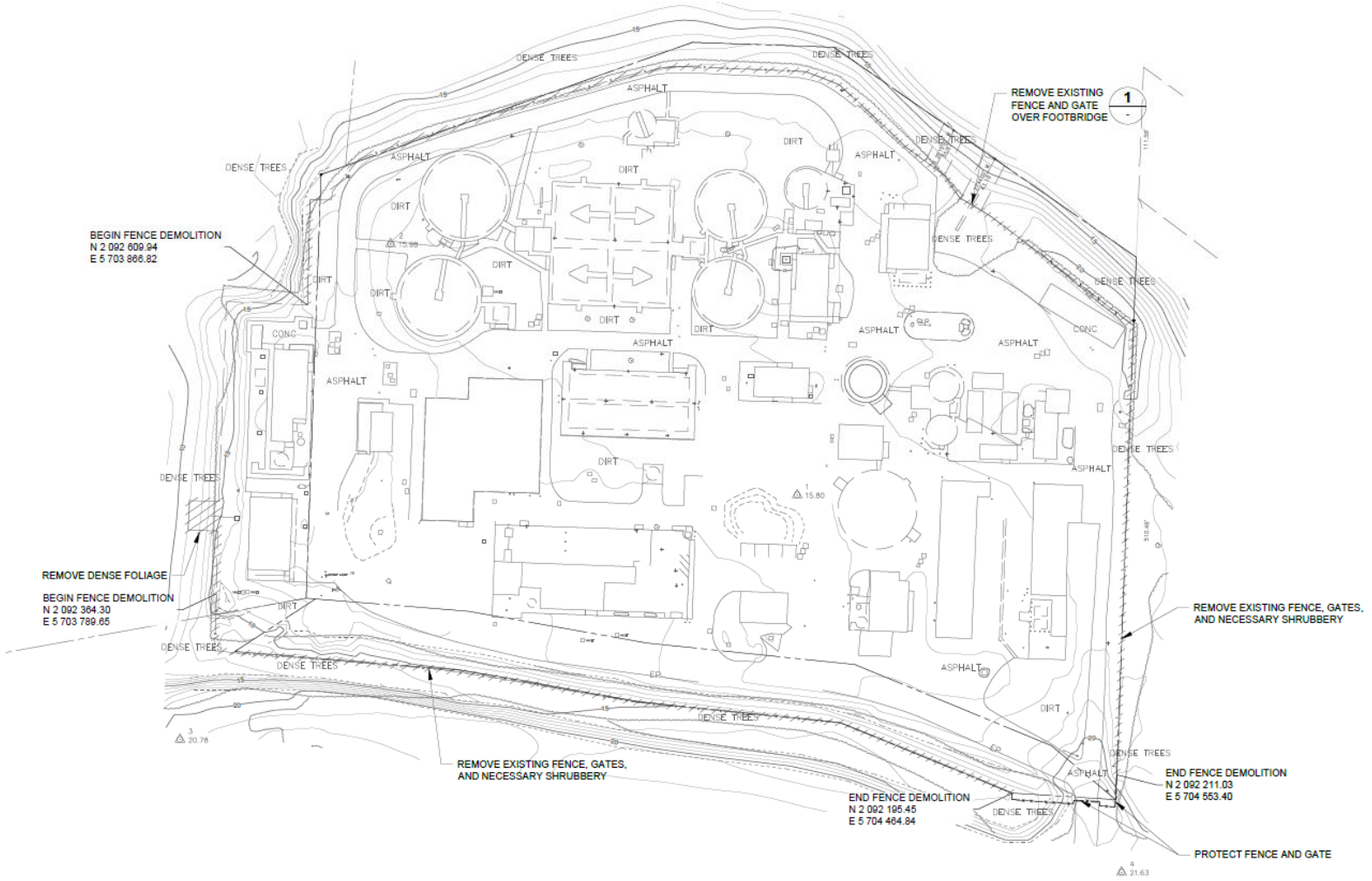


Figure 2 - Project Location

Address: 26900 State Route 1, Carmel, CA 93923

Figure 3 - Site Layout



CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE
HUMBOLDT
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLATA
SANTA CRUZ
SOLANO
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June 30, 2020 NWIC File No.: 19-2315

Patrick Treanor
Carmel Area Wastewater District
3945 Rio Road
Carmel, CA 93923

Re: Record search results for the proposed Project #18-01 Carmel Area Wastewater District (CAWD) Wastewater Treatment Plant (WWTP) Elec/Mech Rehab and Sludge Holding Tank Project.

Dear Mr. Patrick Treanor:

Per your request received by our office on June 22, 2020, a rapid response records search was conducted for the above referenced project by reviewing pertinent Northwest Information Center (NWIC) base maps that reference cultural resources records and reports, historic-period maps, and literature for Monterey County. Please note that use of the term cultural resources includes both archaeological resources and historical buildings and/or structures.

Review of this information indicates that there have been three cultural resource studies that cover approximately 100% of the #18-01 CAWD WWTP project area, and one newer cultural resource study that may include a portion of the #18-01 CAWD WWTP project area (see attached report listing). This #18-01 CAWD WWTP project area contains no recorded archaeological resources. The State Office of Historic Preservation Built Environment Resources Directory (OHP BERD), which includes listings of the California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and the National Register of Historic Places, lists no recorded buildings or structures within or adjacent to the proposed #18-01 CAWD WWTP project area. The California Inventory of Historic Resources lists the town of Carmel-By-The-Sea as an historic settlement area (1976, p.244). In addition to these inventories, the NWIC base maps show no recorded buildings or structures within the proposed #18-01 CAWD WWTP project area.

At the time of Euroamerican contact the Native Americans that lived in the area were speakers of the Rumsen language, part of the Costanoan/Ohlone language family (Levy 1978:485). There is one Native American resource in or adjacent to the proposed #18-01 CAWD WWTP project area referenced in the ethnographic literature [village of *Iczenta* (San Jose) (Levy 1978:485)].

Based on an evaluation of the environmental setting and features associated with known sites, Native American resources in this part of Monterey County have been found in areas marginal to the Pacific Ocean and Carmel Bay, and inland near intermittent and perennial watercourses, and in upland areas near ecotones. The #18-01 CAWD WWTP project area is located in alluvial valley soils on the south side of the Carmel River approximately one mile from Carmel Bay and the Pacific Ocean. Given the similarity of these environmental factors and the ethnographic sensitivity of the area, there is a high potential for unrecorded Native American resources to be within the proposed #18-01 CAWD WWTP project area.

Review of historical literature and maps indicated the possibility of historic-period activity within the #18-01 CAWD WWTP project area. The 1947 Monterey USGS 15-minute topographic quadrangle depicts four structures within the #18-01 CAWD WWTP project area. With this in mind, there is a moderate potential for unrecorded historic-period archaeological resources to be within the proposed #18-01 CAWD WWTP project area.

As mentioned above, the 1947 Monterey USGS 15-minute topographic quadrangle depicts four buildings or structures within the #18-01 CAWD WWTP project area. If present, these unrecorded buildings or structures meet the Office of Historic Preservation's minimum age standard that buildings, structures, and objects 45 years or older may be of historical value.

RECOMMENDATIONS:

1) There is a high potential of identifying Native American archaeological resources and a moderate potential of identifying historic-period archaeological resources in the project area. Due to the passage of time since the previous surveys that covered the project area (1976, 1978) and the changes in archaeological theory and method since that time, we recommend a qualified archaeologist conduct further archival and field study for the entire project area to identify archaeological resources.

The proposed project area, however, has been highly developed and is presently covered with asphalt, buildings, or fill that obscures the visibility of original surface soils, which negates the feasibility of an adequate surface inspection. Therefore, prior to demolition or other ground disturbance, we recommend a qualified archaeologist conduct further archival and field study to identify archaeological resources, including a good faith effort to identify archaeological deposits that may show no indications on the surface.

Field study may include, but is not limited to, hand auger sampling, shovel test units, or geoarchaeological analyses as well as other common methods used to identify the presence of buried archaeological resources. Please refer to the list of consultants who meet the Secretary of Interior's Standards at http://www.chrisinfo.org.

2) We recommend the lead agency contact the local Native American tribe(s) regarding traditional, cultural, and religious heritage values. For a complete listing of tribes in the vicinity of the project, please contact the Native American Heritage Commission at 916/373-3710.

3) The proposed #18-01 CAWD WWTP project area may contain unrecorded buildings or structures that meet the minimum age requirement. In addition, the California Inventory of Historic Resources lists the town of Carmel-By-The-Sea as an historic settlement area (1976, p.244). Prior to commencement of project activities, it is recommended that potential impacts to these resources be assessed by a qualified professional familiar with the history and architecture of Monterey County. Please refer to the list of consultants who meet the Secretary of Interior's Standards at http://www.chrisinfo.org.

4) Review for possible historic-period buildings or structures has included only those sources listed in the attached bibliography and should not be considered comprehensive.

5) If archaeological resources are encountered **during construction,** work should be temporarily halted in the vicinity of the discovered materials and workers should avoid altering the materials and their context until a qualified professional archaeologist has evaluated the situation and provided appropriate recommendations. Project personnel should not collect cultural resources. Native American resources include chert or obsidian flakes, projectile points, mortars, and pestles; and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic-period resources include stone or adobe foundations or walls; structures and remains with square nails; and refuse deposits or bottle dumps, often located in old wells or privies.

6) It is recommended that any identified cultural resources be recorded on DPR 523 historic resource recordation forms, available online from the Office of Historic

Preservation's website: https://ohp.parks.ca.gov/?page_id=28351

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the California Historical Resources Information System (CHRIS) Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

The California Office of Historic Preservation (OHP) contracts with the California Historical Resources Information System's (CHRIS) regional Information Centers (ICs) to maintain information in the CHRIS inventory and make it available to local, state, and federal agencies, cultural resource professionals, Native American tribes, researchers, and the public. Recommendations made by IC coordinators or their staff regarding the interpretation and application of this information are advisory only. Such recommendations do not necessarily represent the evaluation or opinion of the State Historic Preservation Officer in carrying out the OHP's regulatory authority under federal and state law.

Thank you for using our services. Please contact this office if you have any questions, (707) 588-8455.

Sincerely,

Jillian Guldenbrein
Researcher

LITERATURE REVIEWED

In addition to archaeological maps and site records on file at the Northwest Information Center of the Historical Resources Information System, California Archaeological Inventory, the following literature was reviewed:

General Land Office
1873, 1890 Survey Plat for Township 16 South/Range 1 West.

Hester, Thomas Roy
1978a Esselen. In *California*, edited by Robert F. Heizer, pp. 496-499. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

1978b Salinan. In *California*, edited by Robert F. Heizer, pp. 500-504. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Levy, Richard
1978 Costanoan. In *California*, edited by Robert F. Heizer, pp. 485-495. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

State of California Department of Parks and Recreation
1976 *California Inventory of Historic Resources*. State of California Department of Parks and Recreation, Sacramento.

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

State of California Office of Historic Preservation **
2019 *Built Environment Resources Directory*. Listing by City (through December 17, 2019). State of California Office of Historic Preservation, Sacramento.

**Note that the Office of Historic Preservation's *Historic Properties Directory* includes National Register, State Registered Landmarks, California Points of Historical Interest, and the California Register of Historical Resources as well as Certified Local Government surveys that have undergone Section 106 review.

Northwest Information Center REPORT LIST

(Archaeological Consulting and Research Services, Inc.)
1976 *Archaeological Reconnaissance and Literature Survey for the Proposed Solids Handling Modifications at the Carmel Sanitary District Water Pollution Control Plant.* **NWIC Report S-003309**

(Ann S. Peak & Associates)
1978 *Cultural Resource Assessment of the Golf Course Irrigation Project, Pacific Grove - Del Monte Forest, Monterey County, California.* **NWIC Report S-005427**

Stephen A. Dietz (Archaeological Consulting and Research Services, Inc.)
1978 *An Archaeological Reconnaissance of Carmel Sanitary District Facilities Alternative 631 - Reuse on Del Monte Forest Golf Courses.* **NWIC Report S-005452**

(Archaeological Consulting and Research Services, Inc.)
Preliminary Records and Literature Search and Evaluation of Potential Impacts upon Archaeological Resources, Carmel Sanitary District Areawide Facilities Plan. **NWIC Report S-005452a**

John Schlagheck (Holman & Associates)
2015 *Archaeological Records Search and Site Reconnaissance for the Rio Park/Larsen Field Trail Project, City of Carmel-By-The-Sea, Monterey County, California.* **NWIC Report S-047234**

Nichole Jordan Davis and Margo Nayyar (Michael Baker International)
2015 *Cultural Resources Letter Report Rio Park/Larsen Field Trail Project, City of Carmel-By-The-Sea, Monterey, California (letter report).* **NWIC Report S-047234a**

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CAWD WWTP Perimeter Improvements Project

Draft IS/MND – Errata Sheet[1]

Location	Text Edit	Description of Revision
Throughout document	(Revised Date)	*Revised date to "September" for final draft.*
Page I - Table of Contents	(Page Numbers)	*Page numbers revised based on updated pagination.*
Page 7 – Last paragraph.	Tree removal would also include the grinding of stumps. In addition, the Proposed Project includes cutting some of ~~of~~ the Eucalyptus trees located within the fenceline from the fence replacement area to a maximum height of 20-feet and pruning of all tree limbs.	*Revised to delete repeated instance of "of".*
Page 7 – Last paragraph.	No burning of organic materials is anticipated for trees removed as part of the Proposed Project. **Figure 3** shows a markup of ~~the~~ the locations of surveyed trees within five (5) feet of either side of the fence alignment based on an aerial view of the site.	*Revised to delete repeated instance of "the".*
Page 8 – First Paragraph	The Project would replace all other segments of fencing (including all damaged and/or fallen-down segments of fencing), and the Project includes replacement pedestrian and vehicle access gates and the addition of one additional vehicle access gate.	*Revised "addition" as "additional".*
Page 13	N/A	*Replaced with signed version of the determination page.*
Page 17 – Last paragraph	Kennedy Jenks supplemented the LiDAR survey data with an additional three (3) viewpoints that used approximate ground surface elevations sourced from Google Earth. The top of the Microfiltration/Reverse Osmosis facility was the reference point for WWTP visibility as it is the	*Added "that" to the second sentence of the paragraph.*

[1] Additions to the text are shown in underline. ~~Deletions~~ from the text are shown in ~~strikethrough~~.

Location	Text Edit	Description of Revision
	tallest point of the existing facility (approximately 28-feet from ground level).	
Page 18 – Figure 5	N/A	*Added missing Figure 5 to the document.*
Page 62 – Second Paragraph	The total area of disturbance associated with the Proposed Project is approximately 0.6 acres, <u>so the</u> ~~sohe~~ Proposed Project would not be required to obtain coverage under the RWQCB National Pollutant Discharge Elimination System ("NPDES") General Storm Water Permit.	*Corrected typographical error.*
Page 83 – Intentionally Left Blank Page	(Page Deleted)	*Removed placeholder "This Page Intentionally Left Blank" page due to changes in document pagination.*
Appendix D – Flysheet	Appendix <u>D</u> ~~E~~	*Fixed appendix lettering and added "This Page Intentionally Left Blank" placeholder pages for pagination*

CARMEL AREA WASTEWATER DISTRICT WASTEWATER TREATMENT PLANT PERIMETER IMPROVEMENTS PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

The Mitigation Monitoring and Reporting Program ("MMRP") is a California Environmental Quality Act ("CEQA") required component of the Mitigated Negative Declaration ("MND") process for the Carmel Area Wastewater District Wastewater Treatment Plant Perimeter Improvements Project (CEQA Guidelines §15074). Specifically, CEQA requires that lead agencies adopting MNDs take affirmative steps to determine that a project implements the approved mitigation measures subsequent to project approval (CEQA Guidelines §15074(d)).

As part of the CEQA environmental review procedures, Public Resources Code §21081.6 requires a public agency to adopt a monitoring and reporting program to ensure efficacy and enforceability of any mitigation measures applied to a proposed project. The lead agency must adopt an MMRP for mitigation measures incorporated into the project or proposed as conditions of approval. The MMRP must be designed to ensure compliance during project implementation. As stated in §21081.6(a)(1):

> "The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation. For those changes which have been required or incorporated into the project at the request of a responsible agency or a public agency having jurisdiction by law over natural resources affected by the project, that agency shall, if so requested by the lead agency or a responsible agency, prepare and submit a proposed reporting or monitoring program."

The final MMRP matrix is provided on the following pages. The table lists each of the mitigation measures proposed in the Initial Study/Mitigated Negative Declaration and specifies the agency responsible for implementation of the mitigation measure and the time period for the mitigation measure.

I, the undersigned, on behalf of the Carmel Area Wastewater District, hereby agree to implement mitigation measures described below which have been developed in conjunction with the preparation of an Initial Study/Mitigated Negative Declaration for the Carmel Area Wastewater District Wastewater Treatment Plant Perimeter Improvements Project.

_____ _____

Signature Date

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Environmental Impact	Mitigation Measures	Implementing Party	Timing	Verifying Party
Biological Impacts: Impacts to candidate, sensitive, or special status species.	**Mitigation Measure BIO-1**: Prior to construction, all personnel associated with the Proposed Project tree removal, tree cutting, tree pruning, and/or fence removal activities shall attend Worker Environmental Awareness Program ("WEAP") training, conducted by a qualified biologist, to aid workers in recognizing special-status species and sensitive biological resources that may occur on site. The WEAP shall include identification of the special-status species and their habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and a review of the limits of the work area and conservation measures required to reduce impacts to biological resources within the work area. If a trained contractor identifies that any of the species or habitats detailed in the training have the potential to be impacted they shall contact the on-call qualified biologist required in **MM BIO-2**. A fact sheet conveying this information shall be prepared for distribution to all workers and other personnel involved with the Project. All employees shall sign a form documenting that they have attended the WEAP and understand the information presented to them. The signed forms shall be provided to CAWD for their records.	Qualified biologist.	Prior to construction.	CAWD.
Biological Impacts: Impacts to candidate, sensitive, or special status species.	**Mitigation Measure BIO-2**: CAWD shall retain a qualified biologist to be present during all fence removal activities to monitor such activities for compliance and protection of all special status species and natural resources. The qualified biologist shall have the authority to stop work in the event any special-status species are encountered that may be at risk of injury or death due to Project activities. The qualified biologist shall establish appropriate buffers for any special-status species discovered on site and allow these individuals to move away on their own volition before work commences. If any special status species is encountered during biological monitoring, CDFW and the Service shall be notified immediately.	Qualified biologist.	During all fence removal activities.	CAWD, CDFW, and Service.
Biological Impacts: Impacts to candidate, sensitive, or special status species.	**Mitigation Measure BIO-3**: Throughout construction, the construction crew shall ensure that all stockpiles are placed where debris cannot pass into "Waters of the U.S. and State," including the Carmel River which borders the northern WWTP boundary. All stockpiles shall be inspected for special status species by the qualified biologist before and during removal from the WWTP.	Construction crew and qualified biologist.	Throughout construction.	Qualified biologist.
Biological Impacts: Impacts to candidate, sensitive, or special status species.	**Mitigation Measure BIO-4**: During fence replacement, tree removal, tree cutting, and tree pruning work activities, the construction contractor shall properly contain, remove from the work area, and dispose of regularly all trash that could attract predators. Following construction, the construction contractor shall remove all trash and construction debris from the Project site.	Construction contractor.	During fence replacement, tree removal, tree cutting, and tree pruning work activities.	Construction contractor.
Biological Impacts: Impacts to candidate, sensitive, or special status species.	**Mitigation Measure BIO-5**: The qualified biologist shall report any special-status species or natural communities detected during project surveys or monitoring to the California Natural Diversity Database ("CNDDB").	Qualified biologist.	During project surveys or monitoring.	CDFW.

Environmental Impact	Mitigation Measures	Implementing Party	Timing	Verifying Party
Biological Impacts: Impacts to candidate, sensitive, or special status species.	**Mitigation Measure BIO-6**: The qualified biologist shall develop and submit a biological monitoring report documenting construction progress, conservation measures implemented, and special status species encountered. Photographs of all activities shall be included to support documentation.	Qualified biologist.	Following construction.	CAWD.
Biological Impacts: Impacts to candidate, sensitive, or special status species.	**Mitigation Measure BIO-7**: If construction is timed between February 1 through September 15, CAWD shall retain a qualified biologist to conduct a pre-activity nesting bird survey no more than 10 days prior to the start of work. The qualified biologist shall survey the Project site within a 500-foot radius for birds of prey and within a 250-foot radius for other avian species. If an active nest is found, the qualified biologist shall contact the CAWD Project Engineer to coordinate an appropriate exclusion zone radius or monitoring strategy for the species. If any federal or state-listed endangered or threatened species are found during nesting bird surveys, the biologist shall immediately notify the CAWD Project Engineer and facilitate consultation between CAWD and the Service and/or CDFW. If active nests are discovered during the nesting season when work is to occur, a qualified biologist shall continuously monitor nests during the work to detect behavioral changes resulting from the work. If behavioral changes occur, work that is causing the behavioral change shall be halted. If continuous monitoring is not feasible, a no-disturbance buffer of 250 feet shall be established around active nests of bird species and a 500-foot no-disturbance buffer around active nests of raptors. A qualified wildlife biologist shall advise and support any variance from these buffers and notify the Service and CDFW in advance of implementing a variance.	Qualified biologist.	10 days prior to the start of work if construction is timed between February 1 through September 15. During construction if an active nest is found.	CAWD, Service, and/or CDFW
Biological Impacts: Impacts to candidate, sensitive, or special status species.	**Mitigation Measure BIO-8**: CAWD shall retain a qualified biologist to conduct a pre-activity survey for CRLF, NCLL, and SPT no more than 24 hours prior to the start of vegetation disturbance. In the event a special-status species is discovered during the preconstruction survey, the Service shall be immediately notified, avoidance buffers shall be established, and the qualified biologist shall monitor the individual until it has moved out of the Project area on its own volition.	Qualified biologist.	24 hours prior to the start of vegetation disturbance. During construction in the event a special-status species is found until it has moved out of the area of its own volition.	Service.

Environmental Impact	Mitigation Measures	Implementing Party	Timing	Verifying Party
Biological Impacts: Impacts to candidate, sensitive, or special status species.	**Mitigation Measure BIO-9:** Each morning before the beginning of work, a trained contractor shall inspect the work area (including under staged equipment and vehicles) for any life stage of CRLF. All staging and storage areas for equipment, materials, fuels, lubricants and solvents shall be located inside of the WWTP property on areas previously cleared by the biologist. Fueling and maintenance of vehicles and other equipment shall occur at least 100 feet from any riparian or wetland habitat. Any equipment or vehicles driven or operated during the Project must be checked and maintained daily to prevent leaks of materials that could be deleterious to biological life. A qualified biologist shall monitor the work site on an ongoing basis for CRLF. If individuals are discovered and are likely to be killed or injured by work activities, a no disturbance buffer shall be established, and the special status species shall be allowed to move away at its own volition before work can commence in the area. Any sightings and/or injuries of CRLF shall be immediately reported to the Service.	Trained contractor.	Daily each morning during construction.	Qualified biologist and Service.
Biological Impacts: Impacts to candidate, sensitive, or special status species.	**Mitigation Measure BIO-10:** If non-native predators of the California red-legged frog, such as bullfrogs, are encountered during Project activities, they shall be captured and permanently removed from within the Project limits during Project activities, and if permissible by state law.	Qualified biologist and/or trained contractor.	During Project activities.	Qualified biologist.
Biological Impacts: Impacts to candidate, sensitive, or special status species.	**Mitigation Measure BIO-11:** CAWD shall retain a qualified biologist to conduct a pre-activity survey for monarch butterflies no more than 10 days prior to the start of vegetation disturbance if work will occur within the overwintering period (November through February). Work shall not proceed if aggregations of monarch butterflies are present.	Qualified biologist.	No more than 10 days prior to the start of vegetation disturbance if work will occur within the overwintering period (November through February).	CAWD.
Biological Impacts: Impacts to candidate, sensitive, or special status species.	**Mitigation Measure BIO-12:** If any other special-status species are encountered, the qualified biologist shall establish an appropriate no-disturbance buffer until the individual(s) have moved out of the Project area of their own volition before work can recommence.	Qualified biologist.	During construction.	Qualified biologist.

Environmental Impact	Mitigation Measures	Implementing Party	Timing	Verifying Party
Cultural Resources: Impacts to undiscovered buried cultural resources.	**Mitigation Measure CUL-1:** CAWD shall note on any plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources including prehistoric Native American burials. Archaeological site information supplied to the Contractor shall be considered confidential. CAWD shall retain a Professional Archaeologist to inspect initial ground disturbing activities while exposed during construction. The Professional Archaeologist shall be retained on an "on-call" basis to visit the site and evaluate any potential finds during ground disturbing construction and to review, identify, and evaluate cultural resources that may be inadvertently exposed during construction. The archaeologist shall review and evaluate any discoveries to determine if they are historical resource(s) and/or unique archaeological resources or Tribal cultural resources under CEQA. If the Professional Archaeologist determines that any cultural resources exposed during construction constitute a unique archaeological resource or Tribal cultural resource under CEQA, he/she shall notify CAWD and other appropriate parties of the evaluation. The Professional Archaeologist shall recommend mitigation measures to mitigate to less-than-significant in accordance with California PRC Section 15064.5. Tribal cultural resources shall be evaluated with the assistance of Native American tribes and/or individual Tribal members who have previously been contacted and responded to outreach efforts by CAWD. Mitigation measures may include avoidance, preservation in-place, recordation, additional archaeological testing and data recovery among other options. The completion of a formal *Archaeological Monitoring Plan* ("AMP") and/or *Archaeological Treatment Plan* ("ATP") that may include data recovery may be recommended by the Professional Archaeologist if significant archaeological deposits (or Tribal cultural resources) are exposed during ground disturbing construction. Development and implementation of the AMP and ATP, and treatment of significant cultural resources and/or Tribal cultural resources will be determined by CAWD in consultation with any regulatory agencies and Native American Tribes and Tribal individuals. A *Monitoring Closure Report* shall be filed with CAWD at the conclusion of ground disturbing construction if archaeological and Native American monitoring was undertaken.	CAWD, Professional Archaeologist, and Native American tribes and/or individual Tribal members who have previously been contacted and responded to outreach efforts by CAWD.	Prior to finalization of plans. During initial ground disturbing activities. During ground disturbing activities.	CAWD, Native American Tribes, and Tribal individuals.

Environmental Impact	Mitigation Measures	Implementing Party	Timing	Verifying Party
Cultural Resources: Impacts to human remains interred outside of formal cemeteries.	**Mitigation Measure CUL-2*:*** Throughout the duration of ground disturbing activities, the treatment of human remains, and any associated or unassociated funerary objects discovered during any soil-disturbing activity within the Project site shall comply with applicable State laws. This shall include immediate notification of the Monterey County Sheriff's Office and CAWD. In the event of the coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission, is required who shall appoint a Most Likely Descendant ("MLD") (PRC Section 5097.98). CAWD, the Professional Archaeologist and MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. The California PRC allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the project will follow PRC Section 5097.98(b) which states that ". . . the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."	CAWD, County Coroner, the Professional Archaeologist, and MLD.	Throughout the duration of ground disturbing activities.	CAWD.
Tribal Cultural Resources: Impacts from inadvertent discovery of tribal resources.	**Mitigation Measure TCR-1:** Prior to ground disturbing activities, CAWD shall retain a tribal cultural resource monitor affiliated with the Costanoan Rumsen Carmel Tribe to prepare an *Accidental Discovery Plan*. The *Accidental Discovery Plan* shall include policies and procedures for implementation in the event of the inadvertent discovery of tribal resources, including, but not limited to, human remains, during ground disturbing activities. Copies of the *Accidental Discovery Plan* shall be provided to all construction contractors prior to the initiation of ground disturbing activities. A copy of the *Accidental Discovery Plan* shall also be provided to CAWD to ensure compliance with this mitigation measure.	Tribal cultural resource monitor affiliated with the Costanoan Rumsen Carmel Tribe.	Prior to ground disturbing activities.	CAWD.
Tribal Cultural Resources: Impacts from inadvertent discovery of tribal resources.	**Mitigation Measure TCR-2:** Prior to ground disturbing activities, CAWD shall retain a tribal cultural resource monitor affiliated with the Costanoan Rumsen Carmel Tribe to perform a pre-construction tribal cultural resource sensitivity training for all construction personnel involved in ground disturbing activities. The training shall include the regulatory contexts guiding the Proposed Project and governing the protection of tribal resources, guidance for identifying tribal resources, protocols to follow in case of inadvertent discoveries, and contact information for all key Project personnel, the lead agency, and the Monterey County Sheriff-Coroner. Copies of the training materials and a sign-in sheet from the training shall be provided to CAWD to ensure compliance with this mitigation measure.	Tribal cultural resource monitor affiliated with the Costanoan Rumsen Carmel Tribe.	Prior to ground disturbing activities.	CAWD.

Environmental Impact	Mitigation Measures	Implementing Party	Timing	Verifying Party
Tribal Cultural Resources: Impacts from inadvertent discovery of tribal resources.	**Mitigation Measure TCR-3:** At least 30 days prior to the initiation of construction, CAWD shall notify the Costanoan Rumsen Carmel Tribe of the planned start of Project implementation. CAWD shall retain a tribal monitor affiliated with the Costanoan Rumsen Carmel Tribe to provide monitoring for tribal cultural resources. Tribal monitoring shall be required during all ground disturbing activities associated with the Proposed Project and shall be supplemental to monitoring by a qualified archaeologist. Tribal monitors, at their discretion, may choose to open and close each construction work day with traditional songs and prayers. Tribal monitors would have the authority to halt work within 50 feet of a potential find until they have evaluated the potential find to be a tribal cultural resource under CEQA. If the tribal monitor determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource or tribal cultural resource under CEQA, he/she shall notify CAWD and other appropriate parties of the evaluation. Tribal monitors shall either review and provide edits to mitigation measures proposed by the project archaeologist or suggest alternate mitigation measures to reduce impacts to tribal cultural resources to a less-than-significant level. The tribal monitor shall contribute to and review the *Monitoring Closure Report* prepared by the project archaeologist and submitted to CAWD at the conclusion of ground disturbing construction activities.	CAWD and Tribal cultural resource monitor affiliated with the Costanoan Rumsen Carmel Tribe.	At least 30 days prior to the initiation of construction. During construction.	CAWD.