Technical Appendix for the Environmental Impact Report SCH # 2016041078

Cayucos Sustainable Water Project

Cayucos Sanitary District
200 Ash Avenue
Cayucos, California 93430

Prepared by:

firma
Landscape Architecture
Planning
Environmental Studies
Ecological Restoration

187 Tank Farm Road Suite 230
San Luis Obispo CA
93401
805.781.9800
Contact: David Foote ASLA

Technical Appendix Contents

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

January 15, 2009

Certified Mail No. 7004 2510 0006 9180 4216
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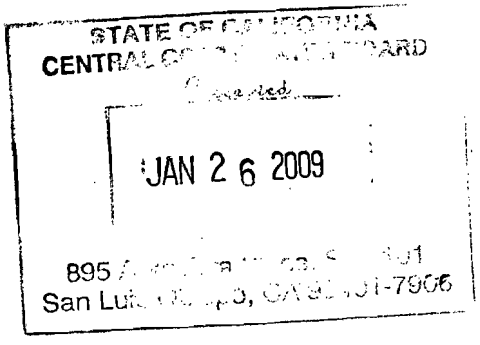
Mr. Bruce Keogh
City of Morro Bay
955 Shasta Avenue
Morro Bay, CA 93442

Mr. Bill Callahan
Cayucos Sanitary District
P.O. Box 333
Cayucos, CA 93430



RE: Issuance of Final Permit and 301(h) Variance Final Decision for the Morro Bay/Cayucos Treatment Plant

Dear Mr. Keogh and Mr. Callahan:

The U.S. Environmental Protection Agency (EPA) and the Central Coast Regional Water Quality Control Board have issued a final National Pollutant Discharge Elimination System (NPDES) permit for:

Morro Bay/Cayucos Wastewater Treatment Plant
160 Atascadero Road
Morro Bay, California
San Luis Obispo County

The most recent public comment period was from September 12, 2008 to October 14, 2008, and a previous public comment period was from December 19, 2005 to February 3, 2006. Responses to comments are contained in the final fact sheet for the NPDES permit.

The final permit will become effective on March 1, 2009. If a request for review is filed, only those permit conditions which are uncontested will go into effect pending deposition of the request for review. Requests for review must be filed by March 1, 2009, and must meet the requirements of 40 CFR 124.19. All requests for review should be addressed to the Environmental Appeals Board (EAB) as follows. Requests sent through the U.S. Postal Service (except by Express Mail) must be addressed to the EAB's mailing address, which is:

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U.S. Environmental Protection Agency
Clerk of the Board
Environmental Appeals Board (MC 1103B)
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington D.C. 20460

All filings delivered by hand or courier, including Federal Express, UPS, and U.S. Postal Express Mail, should be directed to the following address:

Environmental Appeals Board
U.S. Environmental Protection Agency
Colorado Building
1341 G Street, N.W., Suite 600
Washington, D.C. 20460

Those persons filing a request for review must have filed comments on the tentative decision and draft permit, or participated in the public hearing, except as provided in 40 CFR 124.19. Otherwise, any such request for review may be filed only to the extent of changes from the draft permit to the final permit decision.

If you have any question regarding the final permit or permitting process, please contact Nancy Yoshikawa at (415) 972-3535 or electronic mail at yoshikawa.nancy@epa.gov.

Sincerely,

Douglas E. Eberhardt
Chief, NPDES Permits Office

Enclosure (2)

cc:

David LaCaro
Central Coast Regional Water Quality Control Board
895 Aerovista Place
Suite 101
San Luis Obispo, CA 93401-7906

Linda S. Adams
Secretary for Environmental Protection

California Regional Water Quality Control Board

Arnold Schwarzenegger
Governor

Central Coast Region

895 Aerovista Place, Suite 101, San Luis Obispo, California 93401
(805) 549-3147 • Fax (805) 543-0397
www.waterboards.ca.gov

STATE OF CALIFORNIA
CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD
JAN 26 2009
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401-7906

ORDER NO. R3-2008-0065
NPDES NO. CA0047881

WASTE DISCHARGES REQUIREMENTS FOR THE MORRO BAY AND CAYUCOS WASTEWATER TREATMENT PLANT DISCHARGES TO THE PACIFIC OCEAN, MORRO BAY, SAN LUIS OBISPO COUNTY

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	City of Morro Bay and Cayucos Sanitary District
Name of Facility	Morro Bay/Cayucos Wastewater Treatment Plant (WWTP)
Facility Address	160 Atascadero Road Morro Bay, California San Luis Obispo County

The discharge by the City of Morro Bay and Cayucos Sanitary District from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Municipal Wastewater	35°, 23', 11" N	120°, 52', 29" W	Pacific Ocean

Table 3. Administrative Information

This Order was adopted by the Central Coast Water Board on:	December 4, 2008
This Order shall become effective on: March 1st, 2009.	USEPA Issuance Date + 33 days
This Order shall expire on: February 28th, 2014.	Effective Date + 5 years
The U.S. Environmental Protection Agency (USEPA) and the Central Coast Water Board have classified this discharge as a major discharge.	
The Discharger shall file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, by June 13, 2013, as application for issuance of new waste discharge requirements.	

IT IS HEREBY ORDERED, that Order No. 98-15 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the California Water Code (CWC) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA), and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

This certifies that the following is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on December 4, 2008, and of an NPDES permit issued by the U.S. Environmental Protection Agency, Region IX, on 13 January 2009.

Roger W. Briggs
Executive Officer, Central Coast Region
California Regional Water Quality Control Board

Alexis Strauss
Director, Water Division, Region IX
U.S. Environmental Protection Agency

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IX
75 Hawthorne Street
San Francisco, CA 94105

In Re:

CITY OF MORRO BAY/CAYUCOS SANITARY DISTRICT'S APPLICATION FOR A MODIFIED NPDES PERMIT UNDER SECTION 301(h) OF THE CLEAN WATER ACT	DECISION OF THE REGIONAL ADMINISTRATOR PURSUANT TO 40 CFR PART 125, SUBPART G

I have reviewed the attached evaluation analyzing the merits of the application of the City of Morro Bay/Cayucos Sanitary District (MBCSD) requesting a variance from secondary treatment requirements of the Clean Water Act (the Act) pursuant to section 301(h). It is my decision that MBCSD be granted a variance in accordance with the terms, conditions and limitations of the attached evaluation, subject to concurrence by the State of California with the granting of a variance as required by section 301(h) of the Act.

My decision is based on available evidence specific to this particular discharge. It is not intended to assess the need for secondary treatment in general, nor does it reflect on the necessity for secondary treatment by other publicly owned treatment works discharging to the marine environment.

This decision shall become effective 33 days following the date it is mailed to the applicant, unless a request for review is filed. If a request for review is filed, this decision is stayed. Requests for review must be filed within 33 days following the date the final decision is mailed to the applicant and must meet the requirements of 40 CFR 124.19. All requests for review should be addressed to the Environmental Appeals Board. Those persons filing a request for review must have filed comments on the tentative decision, or participated in the public hearing. Otherwise, any request for review may be filed only to the extent of changes from the tentative decision to the final decision.

Dated: 13 JAN 2009

Wayne Nastri
Regional Administrator

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INTRODUCTION

The City of Morro Bay and the Cayucos Sanitary District (the applicant) have requested a variance under section 301(h) of the Clean Water Act, 33 U.S.C. section 1311(h), from the secondary treatment requirements contained in section 301(b)(1)(B) of the Act, 33 U.S.C. section 1311(b)(1)(B). The variance is being sought for the Morro Bay-Cayucos Wastewater Treatment Plant, which is a publicly owned treatment works (POTW). The applicant is seeking permit renewal for a variance from secondary treatment requirements for the discharge of sewage into the Pacific Ocean (Estero Bay) located off of Central California. This document presents Findings and Conclusions of the U.S. Environmental Protection Agency (EPA) Region IX, Water Division regarding the compliance of the applicant's proposed discharge with the criteria set forth in section 301(h) of the Act, as implemented by regulations contained in 40 CFR Part 125, Subpart G (59 Fed. Reg. 40642, August 9, 1994).

Secondary treatment is defined in regulations (40 CFR Part 133) in terms of effluent quality for suspended solids (SS), biochemical oxygen demand (BOD) and pH. The secondary treatment requirements for SS, BOD and pH are listed below:

SS: (1) The 30-day average shall not exceed 30 mg/L. (2) The 7-day average shall not exceed 45 mg/L. (3) The 30-day average percent removal shall not be less than 85%;

BOD: (1) The 30-day average shall not exceed 30 mg/L. (2) The 7-day average shall not exceed 45 mg/L. (3) The 30-day average percent removal shall not be less than 85%;

pH: The effluent limits for pH shall be maintained within the limits of 6.0 to 9.0 pH units.

A modified National Pollutant Discharge Elimination System (NPDES) permit was issued to the City of Morro Bay and the Cayucos Sanitary District in March 1985 (Permit No. CA0047881) by the U.S. Environmental Protection Agency (EPA), Region IX and the California Regional Water Quality Control Board, Central Coast (RWQCB). This original permit expired in March of 1990 and has been reissued by EPA and the RWQCB twice since, in March 1993 and March 1999. The 1999 permit expired on March 1, 2004, and was administratively extended until a decision regarding the application is made. On December 4, 2008, the RWQCB approved the reissuance of the modified NPDES permit, and EPA is issuing the permit concurrently with this final decision on the 301(h) variance.

The 1999 permit contains the following limits for SS and BOD:

SS: (1) A 30-day average for suspended solids of 70 mg/L. (2) The maximum allowable at any time shall not exceed 105 mg/L. (3) The 30-day average percent removal shall not be less than 75%.

BOD: (1) The 30-day average shall not exceed 120 mg/L. (2) The maximum allowable at any time shall not exceed 180 mg/L.

The applicant submitted a renewal application for a modification of secondary treatment requirements in July 2003, requesting a continued variance for SS and BOD based on the current effluent limitations and characteristics.

The Morro Bay-Cayucos Wastewater treatment plant provides full primary and partial secondary wastewater treatment for a service population of about 13,800. The application is based on an average dry-weather flow of 2.06 million gallons per day (MGD). Based on the definition in 40

CFR 125.58(c), the applicant is considered to be a small discharger.

DECISION CRITERIA

Under section 301(b)(1)(B) of the Act, 33 U.S.C. section 1311(b)(1)(B), publicly owned treatment works (POTWs) in existence on July 1, 1977, were required to meet effluent limitations based upon secondary treatment as defined by the Administrator of EPA. Secondary treatment has been defined by the Administrator in terms of three parameters: BOD, SS, and pH. Uniform national effluent limitations for these pollutants were promulgated and included in NPDES permits for POTWs issued under section 402 of the Act. POTWs were required to comply with these limitations by July 1, 1977.

Congress subsequently amended the Act, adding section 301(h), which authorizes the Administrator, with State concurrence, to issue NPDES permits which modify the secondary treatment requirements of the Act [P.L. 95-217, 91 Stat. 1566, as amended by, P.L. 97-117, 95 Stat. 1623; and section 303 of the Water Quality Act (WQA) of 1987]. Section 301(h) provides that the Administrator, with the concurrence of the State, may issue a permit under section 402 [of the Act] which modifies the requirements of subsection (b)(1)(B) of this section [the secondary treatment requirements] with respect to the discharge of any pollutant from a publicly owned treatment works into marine waters, if the applicant demonstrates to the satisfaction of the Administrator that:

> (1) there is an applicable water quality standard specific to the pollutant for which the modification is requested, which has been identified under section 304(a)(6) of this Act;
>
> (2) the discharge of pollutants in accordance with such modified requirements will not interfere alone or in combination with pollutants from other sources, with the attainment or maintenance of that water quality which assures protection of public water supplies and the protection and propagation of a balanced, indigenous population (BIP) of shellfish, fish, and wildlife, and allows recreational activities, in and on the water;
>
> (3) the applicant has established a system for monitoring the impact of such discharge on a representative sample of aquatic biota, to the extent practicable, and the scope of the monitoring is limited to include only those scientific investigations which are necessary to study the effects of the proposed discharge;
>
> (4) such modified requirements will not result in any additional requirements on any other point or nonpoint source;
>
> (5) all applicable pretreatment requirements for sources introducing waste into such treatment works will be enforced;
>
> (6) in the case of any treatment works serving a population of 50,000 or more, with respect to any toxic pollutant introduced into such works by an industrial discharger for which pollutant there is no applicable pretreatment requirement in effect, sources introducing waste into such works are in compliance with all applicable pretreatment requirements, the applicant will enforce such requirements, and the applicant has in effect a pretreatment program, which, in combination with the treatment of discharges from such works, removes the same amount of such pollutant as would be removed if such works were to apply

secondary treatment to discharges and if such works had no pretreatment program with respect to such pollutant;

(7) to the extent practicable, the applicant has established a schedule of activities designed to eliminate the entrance of toxic pollutants from nonindustrial sources into such treatment works;

(8) there will be no new or substantially increased discharges from the point source of the pollutant to which the modification applies above that volume of discharge specified in the permit;

(9) the applicant at the time such modification becomes effective will be discharging effluent which has received at least primary or equivalent treatment and which meets the criteria established under section 304(a)(1) of the Clean Water Act after initial mixing in the waters surrounding or adjacent to the point at which such effluent is discharged.

For the purposes of this subsection the phrase "the discharge of any pollutant into marine waters" refers to a discharge into deep waters of the territorial sea or the waters of the contiguous zone, or into saline estuarine waters where there is strong tidal movement or other hydrological and geological characteristics which the Administrator determines necessary to allow compliance with paragraph (2) of this subsection, and section 101(a)(2) of this Act. For the purposes of paragraph (9), "primary or equivalent treatment" means treatment by screening, sedimentation, and skimming adequate to remove at least 30 percent of the biological oxygen demanding material and of the suspended solids in the treatment works influent, and disinfection, where appropriate. A municipality which applies secondary treatment shall be eligible to receive a permit under this subsection which modifies the requirements of subsection (b)(1)(B) of this section with respect to the discharge of any pollutant from any treatment works owned by such municipality into marine waters. No permit issued under this subsection shall authorize the discharge of sewage sludge into marine waters. In order for a permit to be issued under this subsection for the discharge of a pollutant into marine waters, such marine waters must exhibit characteristics assuring that water providing dilution does not contain significant amounts of previously discharged effluent from such treatment works.

No permit issued under this subsection shall authorize the discharge of any pollutant into saline estuarine waters which at the time of application do not support a balanced, indigenous population of shellfish, fish, and wildlife, or allow recreation in and on the waters or which exhibit ambient water quality below applicable water quality standards adopted for the protection of public water supplies, shellfish, fish, and wildlife or recreational activities or such other standards necessary to assure support and protection of such uses. The prohibition contained in the preceding sentence shall apply without regard to the presence or absence of a causal relationship between such characteristics and the applicant's current or proposed discharge. Notwithstanding any other provisions of this subsection, no permit may be issued under this subsection for discharge of a pollutant into the New York Bight Apex consisting of the ocean waters of the Atlantic Ocean westward of 73 degrees 30 minutes west longitude and northward of 40 degrees 10 minutes north latitude.

EPA regulations implementing section 301(h) provide that a 301(h) modified NPDES permit may not be issued in violation of 40 CFR 125.59(b), which requires among other things,

compliance with the provisions of the Coastal Zone Management Act (16 U.S.C. 1451 et seq.), the Endangered Species Act (16 U.S.C. 1531 et seq.), the Marine Protection, Research, and Sanctuaries Act (16 U.S.C. 1431 et seq.), and all other applicable provisions of State or Federal law or Executive Order. In the discussion which follows, the data submitted by the applicant are analyzed in the context of the statutory and regulatory criteria.

SUMMARY OF FINDINGS

Based upon review of the data, references, and empirical evidence furnished in the 2003 re-application, and associated monitoring reports, EPA Region IX makes the following findings with regard to compliance with the statutory and regulatory criteria:

1. The applicant's proposed discharge will comply with the California Ocean Plan water quality standards for suspended solids, dissolved oxygen, and pH. [Section 301(h)(1), 40 CFR 125.61].

2. The applicant's proposed discharge will not adversely impact public water supplies or interfere with the protection and propagation of a balanced, indigenous population of fish, shellfish, and wildlife. [Section 301(h)(2), 40 CFR 125.62].

3. The monitoring program, as proposed by the applicant and modified during the permit reissuance process, is adequate, and the applicant has demonstrated that it has the resources necessary to carry out the monitoring program. [Section 301(h)(3), 40 CFR 125.63].

4. The applicant's proposed discharge will not result in any additional treatment requirements on any other point or nonpoint source. [Section 301(h)(4), 40 CFR 125.64].

5. The applicant is exempt from the pretreatment requirements specified under 40 CFR 125.66(c). The NPDES permit implements pollution prevention requirements specified in 40 CFR 125.66(d) in lieu of the General Pretreatment Regulations specified in 40 CFR 403.

6. The applicant is a small discharger and exempt from the urban area pretreatment requirement. [Section 301(h)(6), 40 CFR 125.65].

7. The requirement for a nonindustrial source control program is being met through a Pollution Prevention Program (as specified in the NPDES permit) which implements public education and waste minimization/source reduction programs to limit entrance of toxic pollutants and pesticides into the treatment plant. [Section 301(h)(7), 40 CFR 125.66].

8. There will be no substantially increased discharge from the point source of the pollutants to which the variance would apply (BOD and SS), above those which are specified in the section 301(h) permit. [Section 301(h)(8), 40 CFR 125.67].

9. The applicant has demonstrated through past performance that its treatment facilities will be removing greater than 30% of the influent BOD and suspended solids. The applicant will be in compliance with all applicable water quality standards and Federal water quality criteria, as established under Section 304(a) of the Clean Water Act. [Section 301(h)(9), 40 CFR 125.60, 40 CFR 125.62]

10. The Central Coast Regional Water Quality Control Board has determined that the NPDES permit contains provisions to ensure that the applicant's discharge will meet water quality standards for the Pacific Ocean and not require imposition of additional treatment or

control requirements to be applied to other dischargers. Issuance of final waste discharge requirements constituted the State's certification and concurrence under 40 CFR 124.54.

CONCLUSION

EPA Region IX concludes that the applicant's proposed discharge will comply with the requirements of section 301(h) and 40 CFR Part 125, subpart G, as stated above.

In December 2008, the applicant, Morro Bay/Cayucos Sanitation District (MBCSD) and the Central Coastal Regional Water Quality Control Board agreed to an 8.5 year infrastructure development and implementation plan which will provide for full secondary treatment of the facility's wastewater by March 2014. As part of this process, MBCSD is also contemplating advanced tertiary treatment and a water re-use program for part or all of the wastewater it treats. MBCSD requested that EPA continue to evaluate and consider the ocean waiver reapplication, since it would be several years before MBCSD would achieve full secondary treatment. Until the MBCSD can provide full secondary treatment to their discharge, they would need to operate under a section 301(h) variance.

The EPA completed the review of the reapplication. The applicant retains the section 301(h) variance in accordance with the above findings, contingent upon the satisfaction of the following conditions, and that an NPDES permit be renewed in accordance with the applicable provisions of 40 CFR Parts 122-125. The applicant's renewal of a section 301(h) variance is contingent upon:

1. Implementation of the approved monitoring program upon issuance of the renewed 301(h) modified permit (40 CFR 125.63).

2. The California Coastal Commission determination that the applicant's proposal is consistent with the relevant State Coastal Zone Program [40 CFR 125.59(b)(3)].

3. No findings from the U.S. Fish and Wildlife Service and the National Marine Fisheries Service that operation of the discharge will adversely impact threatened or endangered species or critical habitats pursuant to the Endangered Species Act [40 CFR 125.59(b)(3)].

4. Final concurrence from the Central Coast Regional Water Quality Control Board on the approval of a section 301(h) variance [40 CFR 125.59(i)(2)].

The final NPDES permit includes, in addition to all applicable terms and conditions required under 40 CFR Part 122, the following terms and conditions specific to section 301(h):

i. Final effluent limitations (including flows, concentrations and loadings) in accordance with the terms and conditions of this document.

ii. Reporting requirements in accordance with 40 CFR 125.68(d). These include reporting the monitoring results at the prescribed frequency in the approved monitoring program.

CHANGES FROM TENTATIVE DECISION

This final decision is not materially changed from the TDD. Some changes have been made to

correct typographical errors and increase clarity. Additionally, updated information regarding the southern sea otter and Section 7 Endangered Species Act consultation has been added.

DESCRIPTION OF THE TREATMENT SYSTEM

The Morro Bay-Cayucos WWTP is located in the northwest sector of the City of Morro Bay, California, approximately midway between San Francisco and Los Angeles, on the California coast (Figure 1). The area served is the City of Morro Bay and the community of Cayucos, which is located seven miles to the north. The population of the areas served by the subject facility is approximately 13,800. The treatment plant is designed for an average dry weather flow of 2.06 MGD and a peak dry weather flow of 6.64 MGD. The treatment plant discharged an annual average of just over 1.1 and 1.0 million gallons per day for 2002 and 2003, respectively.

The two major industrial sources are represented by a fish processing plant and a water softening plant. The Cayucos Sanitary District and City of Morro Bay have a separate storm water drainage system.

The existing system is a combined primary and secondary treatment plant. The plant was originally built in 1954 and expanded in 1964. A new outfall was constructed and came into operation in 1982.

The current treatment system includes primary treatment of all influent by screening, grit removal and primary sedimentation. In addition, a major portion of the primary effluent receives secondary treatment on a daily basis to achieve 75 percent solids removal in the subsequent primary and secondary blend, as reported by the applicant (see Section II-1 of the applicant's "2003 Permit Application Supplement", Marine Research Specialists, July 2003; hereafter referred to as "the applicant's Supplemental Report"). The secondary treatment process consists of parallel single-stage, high-rate trickling filters whose combined outflow flows to a solid contact channel, and then to a secondary sedimentation tank. The secondary effluent is combined with the primary effluent and disinfected with chlorine prior to discharge to the ocean via an outfall/diffuser system.

The outfall pipe is 27 inches in diameter and terminates to a 170-foot long multi-port diffuser, located approximately 2,900 feet from shore at a depth of approximately 50 feet. The discharge point coordinates are 35 23' 12" N latitude and 120 52' 27" W longitude.

Projected Flows: Based on the applicant's report, average wet weather flows in 2002 were 1.14 MGD. These flows are projected to slightly increase (with population growth) to 1.20 MGD in 2009 (based on 5.2% growth over that time period) and to 1.23 MGD in 2014 (based on a population increase of 9.8% between 2003 and 2014).

Performance: The average annual effluent concentration for SS between 1998-2003 was 41.4 mg/L (ranged from 37.4 to 49.2 mg/L). Annual removal efficiency for SS over the same time period averaged 87% (ranged from 84 to 89%). The COP requires at least 75% removal of SS. [Note: the concentrations for suspended solids being discharged by the applicant have consistently been below the permit limits].

The annual average BOD concentration in the effluent between 1998-2003 was 53.8 mg/L (ranged 39.1 to 67.5 mg/L). The removal efficiencies during this time period ranged from 81% to 83% with an average of 82% removal. The plant has been achieving removal rates greater

than 80% since 1992. [Note: the concentrations for BOD being discharged by the applicant are well below the permit limits].

Mass emissions: In terms of mass (measured in weight), suspended solids loadings have ranged from 56 to 102 million tons per year (MT/yr) between 1998-2003. Given the small projected increases in population, loadings are not likely to increase substantially. The annual mass emissions limit in the existing permit is for 199 MT/yr and, as reported, the applicant's loadings to the receiving waters have consistently been well below this limit.

There are no proposed changes to the current configuration of the treatment system or outfall in the next five years. The applicant states that "over the next five years, no downgrading of effluent quality is anticipated given the limited projected growth in population and industry in the service area." The permit limits being requested are the same as in the last permit cycle. Therefore, the renewal application is based on the current discharge.

APPLICATION OF STATUTORY AND REGULATORY CRITERIA

1. Compliance with the California State Water Quality Standards [Section 301(h)(1), 40 CFR 125.61]

Under 40 CFR 125.61, which implements section 301(h)(1), there must be a water quality standard applicable to the pollutants for which the modification is requested and the applicant must demonstrate that the proposed modified discharge will comply with these standards. The applicant must obtain a favorable State determination that the proposed discharge will comply with applicable provisions of State law including water quality standards. The applicable water quality standards are established in the California Ocean Plan [COP] (SWRCB, 2001).

Table A (Effluent Limitations) of the COP provides water quality standards for (1) Grease and Oil, (2) Suspended Solids, (3) Settleable Solids, (4) Turbidity, and (5) pH. According to the COP, as a 30-day average, the discharger shall remove 75% of suspended solids from the influent stream before discharging wastewaters to the ocean, except that the effluent limitation to be met shall not be lower than 60 mg/L. The COP specifies numeric water quality standards for turbidity for monthly (75 NTU), weekly (100 NTU), and maximum at any time (225 NTU) as effluent limitations, and narrative standards for light transmittance ("Natural light shall not be significantly reduced at any point outside the initial dilution zone as the result of the discharge of waste"). In lieu of specific numeric water quality standards for BOD, however, the COP (Water Quality Objectives, Water Contact Standards) specifies that the dissolved oxygen (DO) concentration shall not at any time be depressed more than 10% from that which occurs naturally, as the result of the discharge of oxygen demanding waste materials.

The applicant has requested modified requirements for biological oxygen demand (BOD) and suspended solids (SS). The applicant must demonstrate that it meets (and will continue to meet through the end-of-permit period) all effluent limits for suspended solids and turbidity and meets ambient standards for turbidity, light transmittance, and dissolved oxygen.

A. Suspended Solids.

1. Solids Removal. The COP calls for at least 75% removal of suspended solids (as a 30-day average). The applicant measures the suspended solids concentrations in the influent and effluent on at least a weekly basis. The applicant has demonstrated through past performance the ability to meet the 75% removal requirement and typically achieves removal efficiencies greater than 85% for suspended solids. Monthly removal efficiencies averaged greater than 88%

between 1986 and 2003; monthly removal efficiencies averaged 86% during the last permit cycle (1998-2003). The reissued NPDES permit will continue to require compliance with the 75% removal requirement of the COP.

The applicant reports that between 1993 and 2002 the subject facility failed to meet the required 30–day average of 75% removal of suspended solids from the influent stream before discharge for the following three months: January 1995, April 1999, and December 2002. The first two events (January 1995 and April 1999) were reportedly related to low concentrations of TSS in the influent due to high inflow into the collection system following significant precipitation events. The third event (December 2002), on the other hand, resulted from a malfunction in the secondary clarifier at the facility which resulted in a 74.8% 30-day average removal for that month, which is 0.2 % below the 75% removal requirement.

2. Turbidity. The COP establishes the following effluent limits for turbidity.

	30-day Ave.	Weekly Ave.	Daily Max.
Turbidity	75 NTU	100 NTU	225 NTU

These turbidity standards are established as permit limits in the existing permit. Effluent turbidity is measured by the applicant on a daily basis. The applicant has shown through past performance the ability to meet these limits. For example, monthly averages of turbidity concentrations ranged from 34 to 48 NTU for the last permit period (1998-2003). To ensure continued compliance with the COP, these effluent limits for turbidity will be retained in the reissued NPDES permit.

3. Light Transmittance. The COP states that "natural light shall not be significantly reduced at any point outside the zone of initial dilution as the result of the discharge."

Increased suspended solids concentrations associated with municipal discharges can cause a decrease in light penetration in the water column. A worst-case estimate of the increase in suspended solids concentration following initial dilution for this particular facility can be obtained by dividing the maximum allowable concentration in the permit (105 mg/L) by the critical initial dilution of 133 (see Section III.B.4 in the applicant's Supplemental Report, page III-7, for further discussion). Using this method, and by assuming an ambient suspended solids concentration of 0 mg/L, EPA estimated a suspended solids concentration of 0.79 mg/L in the receiving waters immediately following initial dilution (Tetra Tech, 1992).

Transmissivity profiles collected by the applicant over the last permit period indicate that rarely is natural light transmittance impeded by effluent-related particulate (see Section III.B.6, page III-14, of the applicant's Supplemental Report for further discussion). Only one measure from 24 sampling efforts during this period indicate that particulate from the effluent may have inhibited the occurrence of natural light. This measure, taken on October 11, 1999, was collected from the seafloor area approximately 30 ft. from the outfall diffuser at a depth of 45 ft. However, the applicant reports that this transmissivity measure represents an approximate 6.9% decrease in natural light conditions relative to ambient measures taken at the same time.

The COP's narrative standard for light transmittance relies on the extent of variability between samples taken on the same day within the sampling area. If the results from a sample or samples are significantly different (using a 95% confidence interval) from other similar measures, in particular measures taken outside of the zone of initial dilution and the discharge area in general, the COP considers such results as indications of non-compliance with State water quality

standards for light transmittance. Overall, the applicant's discharge has met the State's water quality standards for light transmittance save the one measure mentioned above. The fact that this measure only represented a 6.9% decrease in natural light (relative to other transmissivity measures taken that day), at a depth for which natural light in temperate marine waters is hardly a biological factor, is not worrisome to EPA given the overall results of the applicant's monitoring of the discharge and its impact to the receiving water environment.

4. Summary of Suspended Solids. EPA finds that the discharge has consistently met water quality standards for TSS, Turbidity, and COP requirements for light transmittance over the last decade; the applicant has, without exception, met effluent turbidity limits over the last decade.

Based on the information reviewed, EPA believes that suspended solids concentrations around the discharge has not, and will not, significantly reduce light transmittance outside the zone of initial dilution. In general, EPA believes that the applicant has successfully demonstrated (through past performance) the ability to meet effluent limitations for suspended solids and turbidity established by the COP. No changes to the current limits for suspended solids and turbidity will be included in the reissued NPDES permit. This will ensure continued compliance for these parameters by the applicant. Based on our review of the offshore monitoring data, in particular the biological infaunal information, EPA concludes that these limits are sufficient to ensure continued compliance with the ambient water quality standard for transmissivity.

B. Dissolved Oxygen.

The COP does not have an effluent limit for BOD. The COP provides that the "dissolved oxygen concentration shall not at any time be depressed more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen-demanding waste materials."

The potential for outfall-related DO depressions was evaluated with respect to (1) initial dilution, and (2) BOD exertion in the farfield. The procedures for making these calculations are detailed in EPA's 301(h) Technical Support Document (EPA, 1982, 1994).

1. Dissolved Oxygen Depression Upon Initial Dilution. The applicant calculated a DO concentration following critical initial dilution of 6.2 mg/L, assuming an effluent concentration of 0 mg/L and an "immediate dissolved oxygen demand" (IDOD) of 3 mg/L. The applicant used a minimum initial dilution value of 133:1 which was originally provided by EPA (Tetra Tech, 1992). DO demands following initial dilution, therefore, would result in only minor depression (about 1%) of DO during periods of maximum stratification. Thus, the DO depression after initial dilution is considered to be negligible.

2. Dissolved Oxygen Depression Due to Biochemical Oxygen Demand in the Farfield. Subsequent to initial dilution, dissolved oxygen in the water column is consumed by the BOD in the waste field. This can be estimated using a simplified farfield oxygen depletion model for coastal waters as described in EPA, 1992. EPA predicted a maximum farfield depression of 0.045 mg/L based on worst-case assumptions (i.e., BOD of 180 mg/L, initial dilution of 133). The predicted farfield DO depression represents a 0.5% depression from ambient concentrations at trapping depth, and therefore, DO depression due to BOD exertion in the farfield is also considered to be negligible.

3. Conclusions on Dissolved Oxygen. The overall effect of the discharge on ambient DO concentrations is negligible and well below the 10% standard in the COP. There is no evidence from the applicant's monitoring efforts, be it from sediment chemistry, receiving water measures, and infaunal community structure, which indicates that the applicant's wastewater

discharge is causing the depression of ambient dissolved oxygen levels in as much to cause measurable impact to the receiving water and its biological inhabitants. EPA concludes that the discharge currently meets (and will continue to meet through the end of the proposed permit period) COP's narrative standard for dissolved oxygen.

C. pH Compliance.

The applicant has not requested a variance for pH. The COP states that "pH shall not be changed more than 0.2 units from that which occurs naturally." A review of the pH data provided by the applicant (for both effluent and receiving water) indicates that State standards for pH are being attained. The permit limits established in the permit are designed to meet the COP standard.

D. Conclusions on Applicable Water Quality Standards.

Based on the information provided by the applicant and a review of past performance, the discharge will be operated in a manner which ensures compliance with the State water quality standards relevant to suspended solids, BOD, and pH. This includes the effluent limits specified in the COP for suspended solids (75% removal), turbidity (75 NTU) and pH (6.0 to 9.0) and the ambient standards for dissolved oxygen and light transmittance. The reissued NPDES permit will contain effluent limitations for suspended solids, turbidity, BOD and pH to ensure continued compliance.

2. Protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife, and allows recreational activities [Section 301(h)(2), 40 CFR 125.62].

A. Physical Characteristics of the Discharge.

1. Outfall/Diffuser and Initial Dilution. 40 CFR 125.62(a)(1) provides that the proposed outfall and diffuser must be located and designed to provide adequate initial dilution, dispersion, and transport of wastewater to meet all applicable water quality standards at and beyond the boundary of the zone of initial dilution. This evaluation is based on conditions during periods of maximum stratification; and during other periods when discharge characteristics, water quality, biological seasons, or oceanographic conditions indicate more critical situations may exist.

Outfall/diffuser design. The existing outfall was constructed in 1982 with an upgraded 27-inch diameter steel pipe lined and coated with cement mortar. The outfall extends 4,756 feet from the wastewater facility to a water depth of 50 feet where it terminates in a 170-foot multi-port linear diffuser.

The linear diffuser section consists of 34 ports, each 2-inches in diameter. The ports are spaced approximately 50 feet apart on alternating sides of the pipe. Currently, flow through the treatment plant requires the use of 28 of the available 34 ports.

Initial Dilution. The COP states that "waste effluents shall be discharged in a manner which provides sufficient initial dilution to minimize the concentrations of substances not removed in the treatment." In the COP, minimum initial dilution is defined as the "lowest average initial dilution within any single month of the year." Dilution estimates are "based on observed waste flow characteristics, observed receiving water density structure and the assumption that no currents (of sufficient strength to influence the initial dilution process) flow across the discharge structure."

In 1992, EPA calculated a critical initial dilution of 133:1 for the outfall using the UMERGE model. The UMERGE model was run using a maximum flow of 6.64 MGD and zero currents, and a trapping depth of 6.37 m (associated with critical density profile). These worst-case assumptions result in a conservative estimate of initial dilution.

The initial dilution of 133:1 was used by Region IX in the re-issuance of MBCSD's permit in 1993 and 1999 for calculations of effluent limits, and is used similarly in the current review for assessing compliance with the COP standards, Federal Marine Water Quality Criteria, and the nine 301(h) criteria. No significant increases or changes related to the applicant's discharge (i.e., flow, capacity, treatment capabilities, etc.) have come to light, or have been proposed, during this review. Therefore, the application of the initial dilution of 133:1 in this case is both consistent and appropriate.

2. EPA Water Quality Criteria and State Water Quality Standards. State standards for a variety of toxic materials are established in the COP. The receiving water standards for the protection of marine aquatic life and the protection of human health (noncarcinogens and carcinogens) are listed in Table B of the COP. In addition, it must be shown that the discharge will not result in exceedances of EPA water quality criteria for those pollutants where there is no corresponding state water quality standard.

EPA reviewed the results of effluent monitoring which occurred over the last two permit periods (1993-1998 and 1998-2003) or decade. The data reviewed, which was provided by the applicant, was collected as part of the NPDES monitoring requirements. Of the approximate 780 effluent samples collected and analyzed for Table B constituents over the last decade, results show that all but three samples complied with receiving-water standards. The pollutant concentrations which exceeded effluent limits (or narrative standards) were for: (1) gross-Beta radioactivity (January 1994), (2) DDT (July 1998), and (3) Dioxin (July 2002). Aside from these single instances, none of the other Table B pollutants measured from the effluent exceeded water quality standards during the last decade, and thus no pattern of concern has emerged or been brought to light. Given the over-riding trend of compliance for Table B constituents over the last decade, EPA expects that the subject discharge will likely continue to comply with Table B standards during the next permit period.

3. Dilution Water Recirculation. Under section 303(e) of the WQA, before a 301(h) permit may be issued for discharge of a pollutant into marine waters, such marine waters must exhibit characteristics assuring that the water providing dilution does not contain significant amounts of previously discharged effluent from the treatment works.

The applicant has claimed that under normal circumstances little, if any, previously discharged effluent would recirculate through the ZID and be re-entrained in the plume. The rationale for this is predicated on flow measurements taken by the discharger and the turbulent, open-ocean conditions in which the discharge occurs. The applicant submits that the only potential mechanism for recirculation would be under unusual tidally induced conditions, however given a 6.5-hour semidiurnal tidal cycle, wastewater contaminants normally disperse farfield before tide changes making re-entrainment highly unlikely.

EPA accepts this reasoning. In previous evaluations with large dischargers in Southern California, EPA found that the net effect of re-entrainment on reducing initial dilution in the open coastal environment is small (i.e., less than 10%). Such a reduction in initial dilution would not alter EPA's conclusions regarding the applicant's ability to comply with State standards or EPA water quality criteria.

4. Transport and Dispersion of Wastewater and Particulates. Accumulation of suspended (settleable) solids in and beyond the vicinity of the discharge can have adverse effects on biological communities. Following initial dilution, the diluted wastewater and particulate must be transported and dispersed so that water use areas and areas of biological sensitivity are not adversely affected [40 CFR 125.62(a)(2)].

In addition, the COP has narrative standards related to the deposition of outfall-related solids, the accumulation of organic material in sediments, and the concentrations of contaminants in sediments as these relate to biological communities around the outfall.

Solids Deposition. The COP states that "The rate of deposition of inert solids and the characteristics of inert solids in ocean sediments shall not be changed such that benthic communities are degraded."

Sediment, biological data, and annual outfall inspections (diver surveys) conducted by the discharger indicate that, over the last decade, there is no evidence of significant accumulation of effluent-related solids on the benthos in the area of the outfall. In addition, analyses of sediment samples collected from benthic monitoring stations over the last 15 years show that there is no evidence of buildup of fine particulate matter (silts and clay materials) in the vicinity of the outfall. Results show that the surrounding benthic environment is primarily dominated by medium grain-sized sands (see Section III.A.4, pages III-5 and III-6, of the applicant's Supplemental Report for further discussion). In EPA's view, the lack of effluent-related solids accumulation in the vicinity of the outfall is primarily related to two factors: (1) the applicant's SS removal rate is consistently above the 75% removal requirement, and (2) the discharge environment itself is an extremely well-flushed and dynamic open-ocean setting. Because the applicant is not projecting any changes to their discharge, relative to previous permit periods, EPA believes that the re-issuance of the applicant's permit will not lead to benthic impacts from solids build-up during the next permit cycle.

Deposition and Accumulation of Organic Matter. The COP states that "The concentration of organic materials in marine sediments shall not be increased to levels that would degrade marine life."

There is no evidence to suggest that the current discharge causes the rates of organic deposition and accumulation associated with the outfall are not likely to degrade benthic communities.

For this review, EPA evaluated the last 10-years worth of sediment data collected by MBCSD to determine if there were any patterns of organic accumulation in the sediments in the vicinity of the outfall. High concentrations of sediment BOD, total volatile solids (TVS) or total Kjeldahl nitrogen (TKN) around the outfall area would be indicative of an outfall-related effect. Such spatial patterns in the concentrations for these constituents are not evident from the applicant's monitoring results. In fact, patterns of concentrations for these constituents did not show any significant differences between the sediment areas adjacent to the outfall diffuser and the sediments collected/analyzed at the applicant's reference station. Based on these results, EPA concludes that organic material is not accumulating around the outfall and that organic concentrations in sediments around the MBCSD outfall are not degrading marine life.

Contaminant Concentrations in Sediments. Contaminants associated with effluent wastewater have the potential to accumulate in sediments. The COP states that "The concentration of toxics substances in marine sediments shall not be increased to levels that would degrade marine life."

Overall, organic pollutants such as pesticides, polychlorinated pesticides, polycyclic aromatic

hydrocarbons have not been detected in sediments associated with the outfall. On the other hand, metal contaminants (arsenic, chromium, copper, lead, nickel, zinc) have been consistently measured at detectable concentrations from sediments obtained by the applicant's benthic monitoring program. Benthic sediment data from 1986-2002 (collected by the applicant) were reviewed by EPA to determine if any of the metal contaminants occur in a pattern which would indicate that the source of the benthic metals is originating from the outfall itself. Results from this review indicate no discernable patterns (temporal or spatial) for metal contaminates in local benthic sediments that would indicate the outfall as a contributing source.

The concentrations of arsenic, chromium, copper, lead, and zinc were all below the NOAA toxicological "Effects-Range Low" (ERL) benchmark, for which contaminant concentrations are unlikely to cause adverse biological effects (Long and Morgan, 1991; Long *et al.*, 1995). Nickel concentrations, on the other hand, were consistently above the associated ERL, but below the NOAA Effects-Range Median (ERM) benchmark which is the concentration above which biological effects are thought to be likely. It is unlikely that the nickel concentrations in the local benthic sediments are related to the outfall since no outfall patterns are discernable and nickel concentrations measured from the effluent samples were consistently not detectable. In addition, nickel is reportedly a naturally occurring element in marine benthic sediments from this part of the California coastal region (Steinhauer *et al.*, 1994).

EPA finds no evidence of any outfall-related patterns with regard to the occurrence of contaminants in benthic sediments in the vicinity of the outfall, and that contaminant concentrations in the vicinity of the outfall are causing adverse degradation to local marine life. This is based on the applicant's marine monitoring data collected over the last two permit cycles.

B. Impact of Discharge on Public Water Supplies. The applicant's discharge, alone or in combination with other pollutant sources, must allow for the attainment or maintenance of water quality which assures protection of public water supplies and must not interfere with the use of planned or existing public water supplies.

The City of Morro Bay has a desalinization plant located near the MBCSD wastewater treatment plant. The intake structure for this facility draws brackish water from saltwater wells located onshore and 16 km from the MBCSD outfall. Given the distance between the wells and the diffuser ports, and the physical (land) and oceanographic barriers between the two, it is unlikely that the outfall would have any adverse affect on the quality of water at the desalinization intake wells should the facility go into operation.

C. Biological Impact of the Discharge. The proposed modified discharge must allow for attainment or maintenance of water quality to protect a balance indigenous population (BIP) of shellfish, fish, and wildlife. The applicant must demonstrate that a BIP of shellfish, fish, and wildlife will exist in all areas beyond the zone of initial dilution (ZID) that might be affected by the current and proposed modified discharge.

A BIP is generally defined in the section 301(h) regulations [40 CFR 125.58(f)] as an *ecological community* which exhibits characteristics similar to those of nearby, healthy communities existing under comparable but unpolluted environmental conditions. Consequently, for the purpose of 301(h), the term *population* should be interpreted to mean biological communities and the terms *shellfish, fish and wildlife* should be interpreted to include any or all biological communities that might be adversely affected by the discharge.

The COP states that "Marine communities, including vertebrate, invertebrate, and plant species shall not be degraded."

The applicant has provided a substantial and in-depth analysis of the infaunal community data collected from the benthic environment in association with applicant's discharge monitoring program over the last three permit cycles. This analysis is presented in Section III.D of the applicant's Supplemental Report, pages III-50 through III-63. EPA has reviewed this analysis and finds it to be scientifically sound. A variety of statistical methodologies were applied to the infaunal data by the applicant which, ultimately, resulted in the same conclusion: infaunal communities in the vicinity of the discharge are not being degraded.

1. Benthic community structure. Benthic infaunal data were evaluated relative to (1) number of species per unit area, (2) numbers of individuals per unit area, (3) measures of community structure such as diversity, evenness and dominance, and (4) species composition. As with sediment chemistry, the data from 1986 to 2002 were reviewed to determine if there were any outfall-related trends related to benthic community structure. Infaunal data from the ZID boundary stations (Stations 4 and 5), nearfield stations (Stations 3, 6, 8 and 9), and farfield stations (Stations 2 and 7) were also evaluated relative to the information collected at the designated reference station (Station 1). Some of the monitoring locations (i.e., stations) for the 1999 permit differ from those associated with the permit issued in 1993. Therefore, direct comparisons between the two permit periods (1993-1998 and 1998-2003) regarding local benthic community structure is not possible. However, general trends related to community structure in the discharge area over the entire period of data collection (15 years) can be assessed and are discussed below.

Species Richness. A decrease in the number of benthic species near an outfall relative to a reference station would generally indicate an outfall-related effect. The monitoring data collected by the applicant over the last two permit cycles indicates that there is no discernable outfall-related trend relative to the number of benthic species at each of the monitoring stations and the proximity of the stations to the outfall. The data indicates that spatial differences between stations are small for each sampling event and temporal differences between sampling events (i.e., seasons and/or years) proved variable. All stations tend to track this temporal variability as a group, indicating that such patterns are in response to natural variability in environmental conditions (such as periods of up-welling, El Nino, etc.). Moreover, there are no temporal trends in the data that indicate an increasingly degraded benthic environment in the entire sampling area, whether it be at, near or away from the outfall location.

Abundance. Empirical studies have shown that species abundances in marine benthic communities generally increase in response to organic enrichment from anthropogenic sources. Such enrichment is not generally considered adverse unless it is accompanied by a reduction in the number of total species (relative to adjacent, unperturbed areas) and the dominance of a few, opportunistic species. High abundances of a few species associated with reduced number of total expected species would be considered an indication of an adverse outfall-related effect. Where organic enrichment is extremely high, and results in anoxic conditions, abundances of all infaunal species would show a distinct decline or absence. Such a pattern in species abundances would be indicative of severely degraded conditions.

While total species abundance has proved variable over time, the differences between stations at any given time (i.e., sampling event) have generally been small. As with species richness, species abundances at each station have been generally similar between stations for each sampling event. The applicant's monitoring data does not indicate that species abundances at the ZID, nearfield, or farfield stations differ significantly. Such a pattern is indicative of a pollutant-free environment in the vicinity of the applicant's outfall.

Other Measures of Community Structure. Diversity, evenness, and dominance are three

common measures used to evaluate changes in the relative abundance of species.

Species diversity (H') combines species richness and the relative abundances of species. Low diversity near the outfall relative to the reference station would indicate an outfall related effect. Although diversity has been variable over time, there are no spatial or temporal trends which would indicate an outfall-related effect. Species diversity values at the ZID, nearfield, and farfield stations are similar to those found at the reference station.

Evenness is a measure of diversity which emphasizes regularity in the relative abundance of species in a sample. In theory, a stressed or impacted environment would have a more uneven or irregular distribution of species relative to areas not perturbed. The applicant's monitoring data indicates that there is no pattern of decreased evenness in the abundance of species monitored at the study area over the last two permit cycles.

Dominance is in essence the opposite of evenness. One simple measure of dominance is the number of species representing 75% of the total abundance in a given sample. Increased dominance by opportunistic or pollution-tolerant species (resulting in fewer species comprising 75% of the sample abundance) would be indicative of an outfall effect. Of the benthic organisms measured in relation to the subject discharge, the Pacific Sand Dollar (*Dendraster exentricus*) has shown to be a variable and sometimes dominant species in the sampling area over the seventeen years of monitoring. In fact, sand dollars have often comprised approximately 75% of the taxa identified from the benthic samples analyzed per sampling event. However, sand dollars are known to be transient species, have strong recruitment episodes, and respond to environmental conditions such as upwelling events and El Nino events. Moreover, the occurrence of sand dollars, although dominant at times, tended to occur equally at all stations sampled for each sampling event. Thus no pattern of species dominance showed a strong spatial association relative to the location of the outfall. This is not only true for the Pacific Sand Dollar but for all other infaunal species sampled from the monitoring area.

Species composition. Perhaps the most direct measure of infaunal community health is the abundance of individual species. Certain benthic species tend to be more sensitive to outfall effects while others are more tolerant. Patterns in the abundances of sensitive species verses tolerant species can be used to infer outfall-related effects.

Over the entire seventeen years of monitoring, species composition has proved variable not only between stations but also between sampling events. This is likely reflective of the way in which benthic samples are collected (Van-veen grabs), the variable number and locations for which samples are collected per sampling event, and the temporal environmental conditions which influence the seasonal and inter-annual occurrences of infaunal species in the sampling area. Having said this, however, it is possible to discern general spatial and temporal patterns of species occurrence and abundance from the applicant's monitoring data. Such patterns can provide an insight to the overall health, temporal and/or spatial degradation, of the discharge environment. For example, and as mentioned above, some infaunal species are more sensitive to contaminated sediments than others, and changes in the relative occurrence and abundance of such species, both over space and time, can be an indication of whether sediments in and around the outfall area are contaminated or polluted.

The applicant's monitoring data suggests that the types and abundances of organisms that inhabit the sediment around the outfall area are indigenous and are also represented by those species which typically live in clean or non-polluted sediments. Also, the applicant's monitoring data shows that the types and relative abundances of organisms occurring near the outfall are similar to those occurring farther away from the outfall. That is, there is no spatial gradient in the

general occurrence and abundance of sediment infauna radiating outward from the outfall area. Finally, the applicant's monitoring data shows that there is no significant change in the types and abundances of infauna around the outfall area over the course of the monitoring period (15 plus years). If the applicant's effluent was causing pollution to accumulate in the sediments around the outfall, clear spatial and temporal patterns in the types, occurrences, and abundances of infaunal species sampled from the monitoring area would reflect this. Such is not the case.

2. Fish. Commercial and recreational fish species are present in the area of the outfall and likely to be exposed to some degree, to the wastewater being discharged. Because the MBCSD facility qualifies as a small discharger with a limited potential for adverse biological impact, sampling of fish assemblages occurring in the vicinity of the discharge was not required as part of the applicant's monitoring program. Therefore, no biological data on local fish assemblage was provided by the applicant for permit renewal purposes.

Given the relatively small volume of discharge and small area of potential impact, EPA finds that potential for impacts to local fish populations to be unlikely. This is supported by the low concentrations and/or absence of toxics in the effluent which ensure that water quality standards are being met and the lack of impact to the benthic communities.

3. Southern Sea Otter. Public commenters identified concerns with the potential impacts of the proposed discharge on the southern sea otter, contending the proposed discharge could contribute to high levels of southern sea otter mortality in the region. Region IX has reviewed the data and analyses submitted by the commenters on this point carefully. Region IX's conclusions on this point are detailed in the response to comments accompanying this decision and in Region IX's determination that the proposed discharge is not likely to adversely affect the southern sea otter, both of which are incorporated herein by reference.

The gravamen of the comments, as it pertains to these regulatory criteria, is that the proposed discharge will function as a disease epicenter for infection of the southern sea otter. Region IX disagrees with this conclusion. As discussed in more detail in the documents discussed above, Region IX concludes there is no credible data to establish a link between the existing and proposed discharge and the southern sea otter infections that have been identified by researchers. Region IX acknowledges that some researchers have hypothesized that flushing of cat litter could provide a mechanism for transmission of infectious agents through the applicants' discharge. However, this hypothesis has not been verified empirically through field data and the data that exist appear to indicate there is no basis for concluding that the proposed discharge is a source for these infectious agents. Therefore, Region IX concludes there is no basis for determining the proposed discharge would be a disease epicenter for the infection of the southern sea otter.

As discussed further below, we have incorporated conditions in the NPDES permit to minimize the introduction of cat litter into the proposed discharge. These conditions are incorporated at the request of the U.S. Fish and Wildlife Service to address the possibility that cat litter might be a contributing factor in southern sea otter infection.

D. Impact of Discharge on Recreational Activities. Under section 125.62(d), the applicant's proposed modified discharge must allow for the attainment or maintenance of water quality which allows for recreational activities at and beyond the zone of initial dilution, including, without limitation, swimming, diving, boating, fishing, picnicking and sports activities along shorelines and beaches.

CWA sections 303(i) and 502(21) together require the adoption of water quality criteria for all coastal waters designated by States for use for swimming, bathing, surfing, or similar water contact activities. Consistent with this requirement, on November 16, 2004, EPA promulgated recreational water quality criteria for coastal waters in cases where States had failed to do so; these criteria apply where States have designated coastal waters for water contact recreation, but do not have in place EPA-approved bacteria criteria that are as protective as EPA's 1986 recommended 304(a)(1) criteria for bacteria. This promulgation applies the criteria at 40 CFR 131.41(c)(2) to waters designated marine coastal recreational waters in California, excluding the Los Angeles Regional Water Quality Control Board (69 Fed. Reg. 67243, November 16, 2004). In 2005, the State Water Resources Control Board adopted revised bacteria criteria for ocean waters of the State. Effective February 14, 2006, the revised COP specifies that within the zone bounded by the shoreline and 1,000 feet from the shoreline or the 30-foot depth contour (whichever is further) and in areas outside this zone used for water contact sports as determined by the Regional Water Board (i.e., waters designated as REC-1), including kelp beds, the following bacterial objectives shall be maintained throughout the water column. The State has excluded the initial dilution zone for wastewater outfalls. The bacterial water quality objectives in the California Ocean Plan for State waters designated REC-1 are as follows:

Indicator	30-day Geometric Mean (per 100 ml)	Single Sample Maximum (per 100 ml)
Total coliform	1,000	10,000
Fecal coliform	200	400
Total coliform when fecal coliform:total coliform ratio > 0.1	1,000	
Enterococcus	35	104

In shellfish harvest areas, total coliform shall not exceed a median value of 70 MPN per 100 ml and not more than 10% of the samples shall exceed 230 MPN per 100 ml.

The NPDES permit requires that total coliform concentrations measured from the effluent before discharge shall not exceed a 30-day median of 23 MPN per 100 ml and a maximum of 2400 MPN. The applicant chlorinates the effluent prior to discharge. Total coliform concentrations in the effluent are monitored five days a week. EPA's review of the applicant's data indicates that coliform densities in effluent samples are consistently low with the exception of a few occasions (specific dates in September and October 1996, August 1998, and February 1999) when the 30-day median extended above the permitted limit. Related to these episodes, specific malfunctions in facility operations have been linked to the causes of these exceedances.

The applicant does not currently monitor total and fecal coliform in the offshore waters. Instead, the applicant monitors the shoreline along Atascadero State Beach (located south and east of the outfall location) for both total coliforms and fecal coliforms as part of their NPDES permit. Eight surfzone sampling stations are positioned at gradient distances from Station C, which is the closest onshore station to the offshore location of the discharge. Samples are collected weekly at each station during summer months (May through October), and at least monthly during the winter months (November through April). Between 1998-2002 the applicant reports that of 200 samples collected there have been a 17 surfzone samples which have exceeded COP's most

stringent standard for bacterial limits (70 per 100 ml for shellfish harvesting). Of these 17, only one sample taken concomitantly from the effluent exceeded this COP limit, indicating that the other 16 samples were likely a result of sources other than the discharge.

In addition to the applicant's monitoring of the surfzone stations, the San Luis Obispo County Health Department has been monitoring shoreline stations since 1999 in the vicinity of the applicant's discharge along the southern portion of Atascadero State Beach, north of Morro Rock. To date, the County has reported no beach closures at Atascadero Beach due to unacceptable levels of bacterial contamination.

The overall results of the shoreline fecal coliform monitoring effort for the last permit period indicates that shoreline contamination by way of the applicant's discharge is not of reasonable concern. This is likely due to the fact that the applicant disinfects its effluent prior to discharge. In contrast, fecal coliform concentrations from non-point sources, such as Morro Creek, likely contribute more significantly to shoreline bacterial contamination. EPA concludes that the discharge will likely meet all applicable water quality objectives for bacteria.

E. Conclusions on Balanced Indigenous Population. EPA concludes that a balanced indigenous population is being maintained in the vicinity of the outfall and recreational activities are protected. This conclusion is based on the following considerations:

1. The discharge meets all COP standards and EPA water quality criteria. EPA models indicate that the outfall design and location result in a high degree of initial dilution. The applicant's discharge meets effluent limitations specified in the existing permit.

2. No substantial increase in solids deposition near the outfall is evident by the monitoring data, and there is no indication of organic accumulation in the vicinity of the outfall. Thus, benthic infaunal communities in the vicinity of the outfall are not degraded by the discharge.

3. Benthic infaunal communities in the vicinity of the outfall appear not to be degraded by sediment contamination. Organic pollutants and metal concentrations in sediments are not present at levels that would be considered potentially toxic to marine organisms.

4. Benthic monitoring data for infaunal communities does not indicate or suggest outfall-related perturbations based on species composition, number of species, abundance, diversity, evenness, or species dominance. Although not specifically sampled, local fish populations are not likely to be impacted by the quality and quantity of effluent being discharged.

5. Effluent coliform data indicates that, in general, the treatment works is discharging effluent which is not causing unacceptable levels of total and fecal coliform bacteria either in the receiving waters and along the nearby shoreline. This is primarily due to the requirement for the treatment works to disinfect its effluent prior to discharge. Periodic bacterial monitoring along the adjacent beaches indicates that, overall, water quality standards are being met.

6. Effluent monitoring results, for the most part, indicate that unacceptable levels of toxic constituents (metals, pesticides, organic pollutants, etc.) are not found in the applicant's effluent prior to discharge; see Section III-H of the applicant's Supplemental Report for a complete discussion. In fact, relative to the federal and state applicable water quality standards for the subject discharge, no significant and/or consistent occurrence of toxic constituents have been measured from the applicant's effluent during the last two permit cycles. Likewise, no

significant and/or consistent occurrence of toxic constituents have been measured from the applicant's benthic sediments and biosolids monitoring efforts over the last ten years.

7. Region IX recognizes that the southern sea otter (as well as other species in the region) remain endangered or threatened. However, the presence of endangered species in a region is not in and of itself a basis for determining that a balanced, indigenous population of fish, shellfish and wildlife is absent. As discussed above, Region IX's analysis of the ecological community as a whole indicates that the communities present at the boundary of the zone of initial dilution are not materially affected by the existing discharge and are not expected to be adversely affected by the proposed discharge. With respect to the southern sea otter, we find that there is no basis for determining that the regional population stresses of the southern sea otter are actually or potentially affected by the proposed discharge, and, specifically, that there is no basis for determining that the proposed discharge could function as a disease epicenter for the southern sea otter.

Since the subject application is not proposing modifications to the current, authorized discharge, continued maintenance of the BIP through the next permit cycle is likely assured. Current NPDES permit limits will be maintained, or new ones established where applicable, to ensure future and continued compliance with state standards and to protect marine resources.

3. Establishment of a Monitoring Program [Section 301(h)(3), 40 CFR 125.63].

Under 40 CFR 125.63, which implements section 301(h), the applicant must have a monitoring program designed to evaluate the impact of the modified discharge on the marine biota, demonstrate compliance with applicable water quality standards, measure toxic substances in the discharge, and have the capability to implement the program upon issuance of a 301(h) modified NPDES permit. The frequency and extent of the monitoring program are to be determined by taking into consideration the applicant's rate of discharge, quantities of toxic pollutants discharged, and potentially significant impacts on receiving water, marine biota, and designated water uses.

The Discharger's monitoring program is among the most comprehensive of all municipal ocean discharges of less than 5 MGD in California. This comprehensive monitoring program includes monitoring of the influent and the effluent, the receiving waters, the seafloor sediment, and the marine life in the vicinity of the discharge. The monitoring program details are contained in Attachment E of the permit, "Monitoring and Reporting Program."

The final and approved monitoring plan was incorporated into the final NPDES permit. In accordance with 40 CFR 125.63(a)(2), the applicant's monitoring programs are subject to revision as may be required by EPA.

4. Effect of Modified Discharge on Other Point and Nonpoint Sources [Section 301(h)(4), 40 CFR 125.64].

Under 40 CFR 125.64, which implements section 301(h)(4), the applicant's proposed modified discharge must not result in the imposition of additional treatment requirements on any other point or nonpoint source. The MBCSD outfall is isolated from any intake pipe which could potentially be affected by the discharge. Given the small amount of discharge (less that 1.2 MGD), and the significant dilution of the wastewater provided, by the time it approaches any pipe, there will be no imposition to any point or nonpoint source for additional treatment requirements.

5. Toxics Control Program [Section 301(h)(5), 40 CFR 125.66(a)-(c)].

The toxics control program is designed to identify and ensure control of toxic pollutants and pesticides discharged to the POTW. The Section 301(h) toxics control regulations require both industrial and nonindustrial source control programs. These regulations provide certain exemptions for small dischargers. Small dischargers are defined in the 301(h) regulations as having average dry weather flows less than 5.0 MGD and a service population less than 50,000. Morro Bay is a small discharger designed for an average dry weather flow of 2.06 MGD and a service population of approximately 13,800.

A. Chemical Analysis. Under 40 CFR 125.66(a), applicants are required to submit chemical analyses of the effluent discharge for specific toxic pollutants and pesticides. Small section 301(h) applicants, which certify that there are no known or suspected sources of toxic pollutants or pesticides and document the certification with an industrial user survey, are exempt from the chemical analyses specified under 125.66(a). EPA reviewed effluent data submitted by the applicant and found that concentrations of toxics and pesticides in the effluent have remained insignificant throughout the last ten years of sampling.

B. Toxic Pollutant Source Identification. Under 40 CFR 125.66(b), the applicant must submit an analysis of the sources of toxic pollutants identified in section 125.66(a) and to the extent practicable categorize the sources according to industrial and nonindustrial types. The results of industrial waste surveys performed by the City of Morro Bay and the Cayucos Sanitation District in 1994, 1999 and 2002 indicate that there were no significant sources of toxic pollutants from industrial waste entering the collection system that conveys the community's wastestream to the treatment plant.

C. Industrial Pretreatment Requirements. Under 40 CFR 125.66(c), applicants with known or suspected industrial sources of toxic pollutants must have an approved industrial pretreatment program. The control of industrial sources is also addressed by the pretreatment program regulations [40 CFR 403.8(d)]. Small discharges with no known or suspected sources of toxic pollutants are exempted from the 301(h) pretreatment requirements. The applicant originally provided such certification in the first renewal process in 1993. Based on this certification, EPA and the Central Coast Regional Water Quality Control Board exempted MBCSD from the pretreatment requirements. The applicant was required to implement a Pollution Prevention Plan to meet the requirements for a nonindustrial Source Control Program (See Section 7 below).

6. Urban Area Pretreatment Program [Section 301(h)(5), Section 303(c) of the Water Quality Act of 1987].

Large applicants for a modified NPDES permit under section 301(h) of the Act that receive one or more toxic pollutants from an industrial source are required to comply with the urban area pretreatment requirements. As a small discharger, MBCSD is exempt from the urban area pretreatment requirement.

7. Nonindustrial Source Control Program [Section 301(h)(7), 40 CFR 125.66(d)].

Under 40 CFR 125.66(d), which implements section 301(h)(7), the applicant must have a proposed public education program designed to minimize the entrance of nonindustrial toxic pollutants and pesticides into their water pollution control facility (40 CFR 125.66(d)(1)). In certain cases, applicants may be required to implement additional nonindustrial source control programs (40 CFR 125.66(d)(2)).

The applicant has reported that they maintain an on-going Pollution Prevention Program to minimize the introduction of pollutants and pesticides into the treatment plant process; see Section III.H.3 of the applicant's Supplemental Report for complete discussion. This program was required as a provision of the existing NPDES permit to meet the requirements for a nonindustrial source control program under 40 CFR 125.66(d)(1). The program, as described by the applicant, incorporates three major aspects toward pollution prevention: (1) public outreach/education, (2) industrial waste reduction, and (3) pollution source identification. As part of this program, the applicant has implemented a hazardous waste disposal and recycling program designed to allow local residents and businesses to properly dispose of unwanted and unused materials (such as organic solvents, pesticides, car batteries, etc.) which might otherwise be dumped into the facilities collection system and/or municipal storm drains. Other measures, such as grease-trap inspections and source identification efforts are being implemented by the applicant in an effort to minimize the introduction of pollutants and pesticides into the treatment plant process.

Implementation of additional nonindustrial source control programs is not required for small dischargers which certify that there are no known or suspected water quality sediment accumulation, or biological problems related to pollutants or pesticides in its discharge. The applicant has stated that "there are no known sources of priority pollutants or pesticides within the collection system that feeds the MBCSD WWTP" and that "the absence of significant nonindustrial input of toxins is supported by the lack of toxic pollutants in either the WWTP effluent or sludge over the past 4.5 years." Based on this information, EPA finds that no additional nonindustrial source control programs are required.

8. Increase in Effluent Volume or Amount of Pollutants Discharged [Section 301(h)(8), 40 CFR 125.67]

Under 40 CFR 125.67, which implements section 301(h)(8), the applicant's proposed modified pollutant discharge may not increase above the amount specified in the 301(h) modified NPDES permit. The NPDES permit establishes the following limits based on an average dry weather flow of 2.06 MGD:

Suspended Solids:
70 mg/L (30-day avg.); 105 mg/L (Instant. Max.); 199 MT/yr (Ann. avg.)

BOD:
120 mg/L (30-day avg.); 180 mg/L (Instant. Max.)

9. Compliance with Primary Treatment and Federal Water Quality Criteria [Section 301(h)(9), Section 303(d)(1) and (2) of the Water Quality Act of 1987].

A. Primary Treatment Standards.

Under Section 303(d)(1) of the Water Quality Act of 1987 (WQA), the applicant's wastewater effluent must be receiving at least primary treatment at the time their Section 301(h) permit becomes effective. Section 303(d)(2) of the WQA states that, "Primary or equivalent treatment means treatment by screening, sedimentation, and skimming adequate to remove at least 30 percent of the biological oxygen demanding material and other suspended solids in the treatment works influent, and disinfection, where appropriate." In addition, the COP requires 75% removal of suspended solids based on a 30-day average. To meet the 30-day average permit limit for BOD (100 mg/L) the plant must remover greater than 30% of BOD.

Over the time period between 1986 and 2002, on average, the applicant removed 88% of TSS and 79% of BOD on an annual basis. Monthly TSS removal efficiencies for 2001 and 2002 averaged 89% and 86%, respectively. Monthly BOD removal efficiencies for the same years averaged 83% and 82%, respectively. The applicant has demonstrated the ability to meet the 30% removal requirement of TSS and BOD and the COP requirement for 75% removal of TSS. Effluent limitations being established as part of the 301(h) modified NPDES permit will continue to ensure that this requirement is met throughout the permit term.

B. U.S. EPA Water Quality Criteria.

Under section 303(d)(1) of the WQA, a discharger must be in compliance with the criteria established under section 304(a)(1) of the Clean Water Act at the time their 301(h) permit becomes effective. These criteria include saltwater Water Quality Criteria, and 301(h) pesticides Water Quality Criteria.

Based on a review of the applicant's discharge data, EPA concludes that all federal criteria will be met after initial dilution (See Section 2A). NPDES permit limits have been established along with effluent monitoring requirements to ensure continued compliance with EPA criteria.

COMPLIANCE WITH OTHER APPLICABLE LAWS.

40 CFR 125.59(b)(3) provides that a 301(h) modified NPDES permit may not be issued if such issuance would conflict with applicable provisions of State, local, or other Federal laws or Executive Orders.

1. State Coastal Zone Management Program [40 CFR 125.59(b)(3)].

40 CFR 125.59(b)(3) provides that issuance of a 301(h) modified NPDES permit must comply with the Coastal Zone Management Act, 16 U.S.C. 1451 et seq. In accordance with 16 U.S.C. 1456(c)(3)(A), a 301(h) modified NPDES permit may not be issued unless the proposed discharge is certified by the State to comply with the applicable State coastal zone management program(s) approved under the Coastal Zone Management Act, or the State waives such certification. On January 9, 2009, the California Coastal Commission certified the applicants' determination that the proposed discharge is consistent with the Coastal Zone Management Act.

2. Marine Sanctuaries [40 CFR 125.59(b)(3)].

40 CFR 125.59(b)(3) provides that issuance of a 301(h) modified NPDES permit must comply with Title III of the Marine Protection, Research, and Sanctuaries Act, 16 U.S.C. 1431 et seq. In accordance with 16 U.S.C. 1432(f)(2), a 301(h) modified permit may not be issued for a discharge located in a marine sanctuary designated pursuant to Title III if the regulations applicable to the sanctuary prohibit issuance of such a permit.

The MBCSD discharge into Estero Bay is approximately 20 miles south of the southern border of the Monterey Bay National Marine Sanctuary, which was established by NOAA in 1992. In addition, the subject discharge is located within 1.5 miles of the mouth of Morro Bay, which has been designated as a National Estuary by the federal government. However, the applicant's discharge is too small and too far from the Sanctuary and Estuary to have any possible adverse impact to either waterbody.

The discharge is not near areas of special biological significance designated by the California State Water Resources Control Board.

3. Endangered or Threatened Species [40 CFR 125.59(b)(3)].

40 CFR 125.59(b)(3) provides that issuance of a 301(h) modified NPDES permit must comply with the Endangered Species Act, 16 U.S.C. 1531 et seq. In accordance with 16 U.S.C. 1536(a)(2), a 301(h) modified NPDES permit may not be issued if the proposed discharge will adversely impact threatened or endangered species or critical habitats listed pursuant to the Endangered Species Act.

In 1983, EPA designated MBCSD as their non-Federal representative to the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) to conduct informal consultation on the potential impact of the discharge on endangered species under section 7 of the Endangered Species Act.

In the original application in 1987, compliance with the Endangered Species Act was established based on the transitory nature of the gray whale and California sea otter, and a lack of toxic pollutants and pesticides to affect the California brown pelican and American peregrine falcon by the USFWS and NMFS. Since that time the gray whale populations recovered sufficiently to be removed from the list on June 16, 1994. There have been no significant changes in plant operations or effluent quality that would change the level of impacts to endangered species. Both federal agencies reaffirmed their approval of the last permit, as provided in correspondence by the USFWS in a letter dated September 18, 1998, and by the NMFS in a letter dated July 30, 1998.

Relative to the current application, the applicant obtained a compliance assurance letter from NMFS, dated August 12, 2003. USFWS requested that EPA work directly with USFWS on ESA issues. As a result of this process, EPA has incorporated permit conditions to address concerns related to possible impacts to the southern sea otter. These conditions are discussed in the fact sheet accompanying the NPDES permit. In a December 21, 2007, letter from Steve Henry, Deputy Field Supervisor, to Alexis Strauss, the United States Fish and Wildlife Service concurred on EPA's determination that the project may affect, but is not likely to adversely affect the brown pelican (*pelecanus occidentalis*) and the southern sea otter (*enhydra lutris nereis*). EPA understands that no new listing(s) (or de-listing) of endangered species, which potentially may be influenced by the applicant's discharge, took place during the last permit cycle.

In recent years, infections of southern sea otters along the Central Coast were occurring due to *Toxoplasma gondii*, a protozoan parasite known to originate primarily from felines. Scientists speculated that flushable cat litter may be a source of *T. gondii* from wastewater. Early studies detected *Toxoplasma* in lab-exposed mussels (Miller *et al.*, 2002). Therefore, the MBCSD voluntarily collaborated with U.C. Davis in conducting bioaccumulation studies in 2003 and 2004 using bagged mussels deployed at an outfall buoy. The mussels were analyzed for *Toxoplasma* RNA. *Toxoplasma* RNA was not detected in any of the 120 mussels from the outfall buoy site.

STATE CONCURRENCE IN VARIANCE.

Section 301(h) and 40 CFR 125.59(i)(2) provide that a 301(h) variance may not be granted until the appropriate State certification/concurrence is granted or waived pursuant to 40 CFR 124.54. In accordance with the procedures of 40 CFR 124.53(a), before EPA may issue the applicant a 301(h) modified NPDES permit, the State must either grant certification pursuant to section 401 of the Act or waive certification. Such action by the State will serve as State concurrence in the variance.

EPA Region IX and the California State Water Resources Control Board have developed a Memorandum of Understanding (MOU; May 1984) outlining the procedures that each agency will follow to coordinate the implementation of section 301(h) and State waste discharge requirements. The MOU specifies that the joint issuance of an NPDES permit which incorporates both 301(h) decision and State waste discharge requirements will serve as the State's concurrence. The final joint NPDES permit incorporating the 301(h) decision has been signed by the State and EPA. Therefore, EPA has received the State's concurrence on the 301(h) waiver.

REFERENCES

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Miller, M.A., I.A. Gardner, C. Kreuder, D.M. Paradies, K.R. Worcester, D.A. Jessup, E. Dodd, M.D. Harris, J.A. Ames, A.E. Packham, P.A. Conrad. 2002. Coastal freshwater runoff is a risk factor for *Toxoplasma gondii* infection of southern sea otters (*Enhydra lutris nereis*). International Journal for Parasitology 32:997-1006.

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Linda S. Adams
Secretary for Environmental Protection

California Regional Water Quality Control Board

Arnold Schwarzenegger
Governor

Central Coast Region

895 Aerovista Place, Suite 101, San Luis Obispo, California 93401
(805) 549-3147 • Fax (805) 543-0397
www.waterboards.ca.gov

ORDER NO. R3-2008-0065
NPDES NO. CA0047881

WASTE DISCHARGES REQUIREMENTS FOR THE MORRO BAY AND CAYUCOS WASTEWATER TREATMENT PLANT DISCHARGES TO THE PACIFIC OCEAN, MORRO BAY, SAN LUIS OBISPO COUNTY

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	City of Morro Bay and Cayucos Sanitary District
Name of Facility	Morro Bay/Cayucos Wastewater Treatment Plant (WWTP)
Facility Address	160 Atascadero Road Morro Bay, California San Luis Obispo County

The discharge by the City of Morro Bay and Cayucos Sanitary District from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Municipal Wastewater	35°, 23', 11" N	120°, 52', 29" W	Pacific Ocean

Table 3. Administrative Information

This Order was adopted by the Central Coast Water Board on:	December 4, 2008
This Order shall become effective on:	USEPA Issuance Date + 33 days
This Order shall expire on:	Effective Date + 5 years
The U.S. Environmental Protection Agency (USEPA) and the Central Coast Water Board have classified this discharge as a major discharge.	
The Discharger shall file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, by June 13, 2013, as application for issuance of new waste discharge requirements.	

IT IS HEREBY ORDERED, that Order No. 98-15 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the California Water Code (CWC) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA), and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

This certifies that the following is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on December 4, 2008, and of an NPDES permit issued by the U.S. Environmental Protection Agency, Region IX, on_____.

Roger W. Briggs
Executive Officer, Central Coast Region
California Regional Water Quality Control Board

Alexis Strauss
Director, Water Division, Region IX
U.S. Environmental Protection Agency

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

ORDER NO. R3-2008-0065
NPDES PERMIT NO. CA0047881

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I. FACILITY INFORMATION

The following Discharger is authorized to discharge in accordance with the conditions set forth in this Order:

Table 4. Facility Information

Discharger	City of Morro Bay and Cayucos Sanitary District
Name of Facility	Morro Bay/Cayucos WWTP
Facility Address	160 Atascadero Road
	Morro Bay, California 93442
	San Luis Obispo County
Facility Contact, Title, and Phone	Bruce Keogh, Wastewater Division Manager, (805) 772-6272
Mailing Address	595 Harbor Street, Morro Bay, California 93442
Type of Facility	Municipal WWTP
Facility Design Flow	Annual average of 2.06 million gallons per day (MGD), Peak seasonal dry weather flow of 2.36 MGD

II. FINDINGS

The California Regional Water Quality Control Board, Central Coast Region (hereinafter Central Coast Water Board), finds:

A. Background. The City of Morro Bay and Cayucos Sanitary District (hereinafter Discharger) are currently discharging under Order No. 98-15 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0047881. An NPDES permit modifying secondary treatment requirements was originally issued to the Discharger by USEPA and the Central Coast Water Board on March 29, 1985 (NPDES Permit No. CA0047881). The permit was reissued on March 8, 1993, and again on December 11, 1998. The permit expired March 1, 2004, but continues in force until the effective date of the new permit, in accordance with 40 CFR Part 122.6. The Discharger applied for reissuance of its 301(h)-modified permit on July 7, 2003. The Discharger's application requests renewal of the following effluent limitations:

Constituent	Monthly Average	Maximum
Biochemical Oxygen Demand (mg/L)	120	180
Suspended Solids (mg/L)	70	105

These effluent limitations are based on the Morro Bay/Cayucos WWTP design specifications for combined primary and secondary effluent quality under a peak seasonal dry weather flow of 2.36 million gallons per day (MGD).

USEPA summarized its evaluation of the Discharger's 301(h) application and drafted a tentative decision, which was signed on November 10, 2005, to grant the Discharger's request for reissuance of its 301(h) modified NPDES permit.

B. Facility Description. The Facility provides treatment by a split-stream process of physical and biological treatment. All wastewater flows through primary sedimentation basins. Up to 1.0 million gallons per day (MGD) is then diverted through secondary treatment facilities including trickling filter, solids-contact, and secondary clarification. Secondary-treated wastewater is then blended with primary-treated wastewater and disinfected by chlorination, then dechlorinated prior to discharge to the Pacific Ocean. Biosolids are anaerobically digested and dried, and then used as a soil conditioner. The treatment plant has the following design capacities:

Average Dry Weather Flow:	2.06 MGD
Peak Seasonal Dry Weather Flow:	2.36 MGD
Maximum Wet Weather Flow:	6.64 MGD

The Central Coast Water Board and USEPA classify the discharge as a major discharge (>1.0 MGD). According to 40 CFR 125.58(c), the Discharger is defined as a small applicant for 301(h) modified permit (<5 MGD). A diagram of the treatment process is depicted on Attachment C, included as part of this permit.

Treated municipal wastewater is discharged to the Pacific Ocean through a 4400-foot (1340 m) outfall/diffuser system. The outfall terminates in the Pacific Ocean (35°23'11"N Latitude, 120°52'29"W Longitude) in approximately 50 feet (15 m) of water. The outfall location is shown in Attachment A. The diffuser was modeled to achieve a minimum initial dilution of 133 parts seawater for every part effluent. Alternative locations and methods of disposal or recycling, including land-based alternatives, were considered during planning under the Clean Water Grants Program. The Discharger plans on upgrading the facility to tertiary treatment. Details of the upgrades are discussed in Finding No. I and Section II.A of the Fact Sheet.

C. **Legal Authorities.** This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this facility to surface waters. This Order also serves as waste discharge requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260). USEPA Water Quality Criteria (acute and chronic toxicity and consumption of marine fish) were calculated using a minimum dilution ratio of 133:1 (i.e., 133 parts seawater to one part effluent).

D. **Background and Rationale for Requirements.** The Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through F are also incorporated into this Order.

E. **California Environmental Quality Act (CEQA).** Pursuant to Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of the CEQA, Public Resources Code sections 21100-21177. This action regulates an existing facility and involves negligible or no expansion of use, and is also exempt from the provisions of the CEQA in accordance with Section 15301, Title 14 of the California Code of Regulations.

F. **Technology-Based Effluent Limitations.** CWA Section 301 (b) and USEPA's NPDES regulations at Title 40 of the Code of Federal Regulations (40 CFR) 122.44 require that permits include, at a minimum, conditions meeting applicable technology-based requirements and any more stringent effluent limitations necessary to meet applicable water quality standards. Discharges to surface waters must meet minimum federal technology-based requirements based on secondary treatment standards established at 40 CFR Part 133 and best professional judgment (BPJ) in accordance with 40 CFR 125.3. However, due to the provisions set forth in 40 CFR Part 125.57 discharges authorized by this Order are subject to modified secondary standards. A detailed discussion of development of technology-based effluent limitations is included in the Fact Sheet (Attachment F).

G. **Water Quality-Based Effluent Limitations.** CWA Section 301(b) and NPDES regulations at 40 CFR 122.44 (d) require that permits include limitations more stringent

than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

NPDES regulations at 40 CFR 122.44 (d)(1)(i) mandate that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential is established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section 304 (a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided at 40 CFR 122.44 (d)(1)(vi).

H. Water Quality Control Plans. The Central Coast Water Board adopted the *Water Quality Control Plan, Central Coast Basin* (the Basin Plan), which designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for receiving waters within the Region. To address ocean waters, the Basin Plan incorporates by reference the *Water Quality Control Plan for Ocean Waters of California* (the Ocean Plan). The Ocean Plan is discussed in further detail in Section I of this Order.

The Basin Plan implements State Water Board Resolution No. 88-63, which establishes State policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply (MUN). Because total dissolved solids (TDS) levels of marine waters exceed 3,000 mg/L, such waters are not considered suitable for municipal or domestic supply and therefore meet an exception to Resolution No. 88-63. Beneficial uses established by the Basin Plan for the Estero Bay coastal waters are presented in Table 5, below.

Table 5. Basin Plan Beneficial Uses for the Pacific Ocean

Discharge Point	Receiving Water	Beneficial Use(s)
001	Pacific Ocean	• Water Contact (REC-1), • Non-Contact Recreation (REC-2), • Navigation (NAV), • Industrial Water Supply (IND) • Shellfish Harvesting (SHELL) • Commercial and Sport Fishing (COMM), • Marine Habitat (MAR), • Rare, Threatened, or Endangered Species (RARE), and • Wildlife Habitat (WILD)

I. California Ocean Plan

The State Water Board adopted the Ocean Plan in 1972 and amended it in 1978, 1983, 1988, 1990, 1997, 2000, and 2005. The State Water Board adopted the latest amendment on April 21, 2005, and it became effective on February 14, 2006. The Ocean Plan is applicable, in its entirety, to point source discharges to the Ocean. The Ocean Plan identifies the following beneficial uses of ocean waters of the State.

Table 6. Ocean Plan Beneficial Uses

Discharge Point	Receiving Water	Beneficial Uses
001	Pacific Ocean	• Industrial Water Supply (IND) • Water Contact and Non-Contact Recreation, including Aesthetic Enjoyment (REC) • Navigation (NAV) • Commercial and Sport Fishing (COMM) • Mariculture (MARI) • Preservation and Enhancement of Designated Areas of Special Biological Significance (ASBS) • Rare and Endangered Species (RARE) • Marine Habitat (MAR) • Fish Migration (MIGR) • Fish Spawning and Shellfish Harvesting (SPWN)

In order to protect beneficial uses, the Ocean Plan establishes water quality objectives and programs of implementation to achieve and maintain those objectives. Requirements of this Order implement the Ocean Plan.

J. Alaska Rule. On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards become effective for CWA purposes. [65 Fed. Reg. 24641 (April 27, 2000), codified at 40 CFR 131.21] Under the revised regulation (also known as the Alaska Rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

K. Stringency of Requirements for Individual Pollutants. This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on biochemical oxygen demand (BOD_5), TSS, settleable solids, oil and grease, turbidity, and pH at Discharge Point M-001. These restrictions are discussed in Section III.C.2. of the Fact Sheet. This

Order's technology-based pollutant restrictions implement, at the minimum, applicable federal technology-based requirements.

Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. The scientific procedures for calculating the individual water quality-based effluent limitations are based on the Ocean Plan, which was approved by USEPA on February 14, 2006.

All beneficial uses and water quality objectives contained in the Basin Plan were approved under State law and submitted to and approved by the USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the [Clean Water] Act" pursuant to 40 CFR. 131.21 (c) (1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the technology-based requirements of the CWA and the applicable water quality standards for purposes of the CWA.

L. **Antidegradation Policy.** NPDES regulations at 40 CFR 131.12 require that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16, which incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that the existing quality of waters be maintained unless degradation is justified based on specific findings. The Central Coast Water Board's Basin Plan implements and incorporates by reference both the State and federal antidegradation policies. As discussed in detail in Section III.C.3 of the Fact Sheet, the permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

M. **Anti-Backsliding Requirements.** CWA Sections 402 (o)(2) and 303 (d)(4) and NPDES regulations at 40 CFR 122.44 (l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. As discussed in Section III.C.4. of the Fact Sheet, effluent limitations and other requirements established by this Order satisfy applicable anti-backsliding provisions of the CWA and NPDES regulations.

N. **Endangered Species Act.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the State. The Discharger is responsible for meeting all requirements of State and federal law regarding threatened and endangered species. Due to questions regarding potential impacts from continued discharges from the wastewater facility to endangered species in the area at the May 11, 2006 Water Board meeting, the USEPA developed

an Endangered Species Act Biological Evaluation finding that continued discharges would not likely have adverse affects on the southern sea otter and brown pelican. The USEPA requested concurrence from the U.S. Fish and Wildlife Service (USFWS) on September 6, 2006. The USFWS agreed with USEPA's findings that the continued discharge would not likely have adverse effects on endangered species in the area.

O. **Monitoring and Reporting.** NPDES regulations at 40 CFR 122.48 require that all NPDES permits specify requirements for recording and reporting monitoring results. California Water Code sections 13267 and 13383 authorize the Central Coast Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (Attachment E) establishes monitoring and reporting requirements to implement federal and State requirements.

P. **Standard and Special Provisions.** Standard Provisions that apply to all NPDES permits in accordance with NPDES regulations at 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The Central Coast Water Board has also included in this Order special provisions applicable to the Discharger. Rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.

Q. **Provisions and Requirements Implementing State Law.** The provisions/requirements in subsections IV and V. of this Order are included to implement State law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

R. **Notification of Interested Parties.** The Central Coast Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in Section VI.A. of the Fact Sheet accompanying this Order.

S. **Consideration of Public Comment.** The Central Coast Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the public hearing are provided in Section VI.B. of this Orders' Fact Sheet.

T. **Privilege to Discharge.** A permit and the privilege to discharge waste into waters of the State are conditional upon the discharge complying with provisions of division 7 of the CWC and of the CWA (as amended or as supplemented by implementing guidelines and regulations), and with any more stringent effluent limitations necessary to implement water quality control plans, to protect beneficial uses, and to prevent nuisances.

U **California Water Code Section 13241.** This Order contains restrictions on individual pollutants that are no more stringent than required by the federal CWA. Individual pollutant restrictions consist of technology-based restrictions and water quality-based effluent limitations. The technology-based effluent limitations are specified in federal regulations as discussed in Attachment F, Section IV.B, and the permit's technology-based pollutant restrictions are no more stringent than required by the CWA. Water

quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the California Toxics Rule, the California Toxics Rule is the applicable standard pursuant to 40 C.F.R. 131.38. The scientific procedures for calculating the individual water quality-based effluent limitations are based on the California Ocean Plan, which USEPA approved January 20, 2005. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to U S. EPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the [Clean Water] Act" pursuant to 40 C.F.R. 131.21(c)(1). As stated in Attachment F, certain water quality objectives and beneficial uses implemented by this Order are contained in the 2005 Ocean Plan which was approved by USEPA, and are applicable water quality standards pursuant to 40 C.F.R. 131.21(c)(2). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the technology-based requirements of the CWA and the applicable water quality standards for purposes of the CWA.

V. **Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (General WDRs).** The General WDRs, Order No. 2006-0003-DWQ, adopted May 2, 2006, apply to publicly owned sanitary sewer systems (collection systems) that are one mile or greater in length. The General WDRs require collection system entities to develop a Sanitary Sewer Management Plan (SSMP). SSMPs are required to include goals; organization; legal authority; operations and maintenance program; design and performance provisions; an overflow emergency response plan; fats, oils, and greases control program; systems evaluations and capacity assurance program; monitoring, measures, and program modifications; and an SSMP Program audit. Additionally, the General WDRs require the collection system entities to report sanitary sewer overflows (SSOs). Collection system entities are required to report SSOs that are greater than 1,000 gallons. Furthermore, some entities must also report SSOs less than 1,000 gallons discharging to surface waters or storm drains or that threaten public health. Reporting provisions are set forth in the General WDRs. Reporting shall occur through the Statewide Online SSO database. Reporting times vary depending on discharge amount and destination.

The Dischargers enrolled separately under the General WDR. The City of Morro Bay received formal enrollment status for General WDR coverage on January 8, 2007. Cayucos Sanitary District received formal enrollment status for General WDR coverage on January 9, 2007. Both entities are currently developing and implementing elements of a sanitary sewer management program as required by the General WDR.

W. **401 Certification.** Central Coast Water Board adoption of this Order constitutes certification and concurrence under 40 CFR 124.54, that the discharge, as described in the Discharger's 301(h) application, will comply with applicable state laws, including water quality standards, and will not result in additional treatment, pollution control, or other requirements on any other point or nonpoint source. Conversely, Central Coast

Water Board denial of this Order constitutes denial of certification. According to Clean Water Act Section 401(a)(1), USEPA may not issue the NPDES permit until the Central Coast Water Board grants certification.

X. **National Marine Fisheries Certification**. The Discharger provided certification in a letter from the National Marine Fisheries Service (NMFS) dated August 12, 2003, that the proposed 301(h) discharge is not expected to impact local critical habitats and/or endangered species under its jurisdiction.

Y. **Pretreatment**. The Discharger is exempt from applicable pretreatment requirements specified under 40 CFR 125.66(d). In accordance with requirements specified in this Order and Permit, the Discharger shall implement public education and waste minimization/source reduction programs to limit the introduction of toxic pollutants and pesticides into the treatment plant. Implementation of 'Pollution Prevention Program' will substitute for those requirements specified under 40 CFR 125.66 (d) (Nonindustrial Source Control Program).

Z. **Mandatory Penalties**. Section 13385(h) and Section 13385(i) of the California Water Code require the Central Coast Water Board to impose mandatory penalties for certain effluent limit violations. Section 13385(h) et seq. applies to effluent discharged to the ocean from the Discharger.

AA. **Facility Upgrade.** The Discharger intends to upgrade the Facility to provide tertiary treatment as set forth in a Settlement Agreement with the Central Coast Water Board. The Settlement Agreement provides for an eight and one-half year conversion schedule. Subject to the provisions of the Settlement Agreement regarding force majeure, the conversion schedule is as follows:

CONVERSION SCHEDULE

Task	Date of Completion [1]
Preliminary Activities:	
1. Issuance of Request for Consulting Engineering Proposals for Facilities Master Plan	November 11, 2005
2. Award of Consulting Engineering Contracts	April 27, 2006
Facilities Planning:	
1. Submit Final Draft Facilities Master Plan	November 30, 2007
2. Submit Final Facilities Master Plan	September 30, 2009
Environmental Review and Permitting:	
1. Complete and Circulate Draft CEQA Document	February 27, 2009
2. Obtain Coastal Development permits	May 31, 2011
Financing:	
1. Complete Draft Plan for Project Design and Construction Financing	December 31, 2007
2. Complete Final Plan for Project Financing	June 30, 2008
3. Submit proof that all necessary financing has been	October 30, 2009

Task	Date of Completion [1]
secured, including compliance with Proposition 218	
Design and Construction:	
1. Initiate Design	September 30, 2010
2. Issue Notice to Proceed with Construction	May 29, 2012
3. Construction Progress Reports	Quarterly (w/ SMRs)
4. Complete Construction and Commence Debugging and Startup	January 31, 2014
5. Achieve Full Compliance with federal Secondary Treatment Requirements	March 31, 2014

Any completion dates falling on a Saturday, Sunday or State holiday shall be extended until the next business day. The Discharge shall submit proof of completion or each task within 30 days after the due date for completion.

Attachment F includes additional information about the facility upgrade. The requirements of the Settlement Agreement are enforceable by the Water Board as set forth in the Settlement Agreement. The Central Coast Water Board and EPA have considered the Settlement Agreement in adopting this Order, but the upgrade requirements are not terms of the Permit. Subject to the provisions of the Agreement regarding Water Board Discretion and New Evidence, the Settlement Agreement contemplates that the Water Board will concur in the issuance of this modified discharge permit and issue an NPDES Permit in order to effect the Settlement Agreement and the Discharger's obligation to complete the upgrade of its treatment facility to treat least secondary treatment within a eight-and-one-half-year period. Based on the administrative record, including population growth projections through 2015, known environmental and cumulative impacts of the Discharger's existing wastewater treatment facilities, and evidence submitted by the Discharger of the time needed for upgrading the plant, the conversion schedule is reasonable, necessary and appropriate. The Central Coast Water Board has also considered the need to develop recycled water. A need to develop and use recycled water exists within the region. The eight and one-half year upgrade schedule includes the consideration of technical and funding options for installing tertiary treatment to address recycled water needs. The Clean Water Act requires publicly owned treatment works to achieve at least secondary treatment prior to discharge to waters of the United States, unless the facility obtains a variance from USEPA pursuant to Clean Water Act section 301(h) (301(h) waiver). The facility will not complete the upgrade to at least secondary treatment until after the five-year term of this permit, and, therefore a 301(h) waiver continues to be necessary for the discharge subject to this permit. The next permit will contain the final enforceable compliance dates to achieve at least secondary treatment. The Clean Water Act establishes secondary treatment as the technology based standard for discharges to surface water, but tertiary treatment that meets Title 22 California Code of Regulations requirements are required for certain reclaimed water uses. The Discharger intends to upgrade to tertiary treatment for purposes of reclaimed water use during the same eight and one-half year conversion schedule set forth in the settlement agreement. The Central Coast Water Board may require the discharger to comply with more stringent water quality based standards beyond secondary treatment

for discharges to surface water if necessary to protect the beneficial uses of waters of the state and the United States. With respect to the discharge to the ocean, the USFWS has concurred with USEPA's Biological Evaluation that the continued discharge from the Facility will have no likely adverse affects on the southern sea otter and the brown pelican supporting the continued 301(h) waiver.

If the Central Coast Water Board receives new information to support the need to impose more stringent water quality based requirements beyond secondary, it may consider imposing such requirements only after required public notice and comment and hearing.

BB.Right to Petition. Any person aggrieved by this action of the Regional Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of regulations, title 23, section 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filling petitions may be found on the internet at:

http://www.waterboards.ca.gov/public_noticies/petitions/water_quality

or will be provided upon request.

III. DISCHARGE PROHIBITIONS

A. The discharge of treated wastewater at a location other than 35°23'11"N Latitude, 120°52'29"W Longitude is prohibited.

B. Bypass of the treatment facility and discharge of any wastes not meeting the discharge specifications of this Order and Permit are prohibited.

C. Discharge of any wastes including overflow, bypass and seepage from transport, treatment or disposal systems is prohibited.

D. The discharge of chlorine or any other toxic substance used for disinfection and cleanup of sewage overflows to any surface water body is prohibited. This prohibition does not apply to the chlorine in the potable water used for final wash down and cleanup of overflows.

IV. EFFLUENT LIMITATIONS[1] AND DISCHARGE SPECIFICATIONS

A. Effluent peak seasonal dry weather flow shall not exceed a monthly average of 2.36 MGD.

B. The Discharger shall, as a 30-day average, remove at least 75% of suspended solids and 30% of BOD_5 from the influent stream before discharging wastewater to the ocean, except that the limit shall not be less than 60 mg/L. In addition, effluent shall not exceed the following limits:

Constituent	Unit of Measurement	Average Monthly	Instantaneous Maximum
BOD_5	mg/L	120	180
	lbs/day	2062	3092
	kg/day	936	1404
Suspended Solids	mg/L	70	105
	lbs/day	1203	1804
	kg/day	546	819

C. Effluent shall not exceed the following limits:

1.

Constituent	Units	Average Monthly	Average Weekly	Instantaneous Maximum
Grease and Oil	mg/L	25	40	75
	lbs/day	430	687	1288
	kg/day	195	312	585
Settleable Solids	mL/L	1.0	1.5	3.0
Turbidity	NTU	75	100	225
pH	--	Within limits of 6.0 to 9.0 at all times.		

2. FOR PROTECTION OF MARINE AQUATIC LIFE

Constituent	Units	Six-Month Median	Maximum Daily	Instantaneous Maximum
Arsenic	mg/L	0.67	3.89	10.3
Cadmium	mg/L	0.13	0.54	1.34
Chromium(Hex)[2]	mg/L	0.27	1.07	2.68
Copper	mg/L	0.14	1.34	3.75
Lead	mg/L	0.27	1.07	2.68
Mercury	µg/L	5.29	21.4	53.5
Nickel	mg/L	0.67	2.68	6.70
Selenium	mg/L	2.01	8.04	20.1

[1] Based on Ocean Plan criteria using a calculated minimum initial dilution of 133:1. If actual dilution is found to be less than 133:1, these values will be recalculated.
[2] The Discharger may at its option meet this limitation as a Total Chromium limitation.

Constituent	Units	Six-Month Median	Maximum Daily	Instantaneous Maximum
Silver	mg/L	0.07	0.35	0.92
Zinc	mg/L	1.62	9.66	25.7
Cyanide[3]	mg/L	0.13	0.54	1.34
Total Chlorine Residual	mg/L	0.27	1.07	8.04
Ammonia (as N)	mg/L	80.4	322	804
Acute Toxicity	TUa	--	4.3	--
Chronic Toxicity[4]	TUc	--	134	--
Phenolic Compounds (non-chlorinated)	mg/L	4.02	16.1	40.2
Chlorinated Phenolics	mg/L	0.13	0.54	1.34
Endosulfan[5]	µg/L	1.21	2.41	3.62
Endrin	µg/L	0.27	0.54	0.80
HCH[6]	µg/L	0.54	1.07	1.61
Radioactivity	Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30253 of the California Code of Regulations.			

3. FOR PROTECTION OF HUMAN HEALTH, NON-CARCINOGENS

Constituent	Units	Average Monthly
acrolein	mg/L	29.5
antimony	mg/L	160.8
bis(2-chloroethoxy) methane	mg/L	0.59
bis(2-chloroisopropyl) ether	mg/L	160.8
chlorobenzene	mg/L	76.4
chromium (III)[7]	g/L	25.5
di-n-butyl phthalate	mg/L	469
dichlorobenzenes[8]	mg/L	683
diethyl phthalate	mg/L	4420

[3] If a discharger can demonstrate to the satisfaction of the Regional Board (subject to EPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by the combined measurement of free cyanide, simple alkali metal cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR PART 136, as revised May 14, 1999

[4] Chronic Toxicity Units (TUc): TUc = 100/NOEL (No Observed Effect Level). NOEL is expressed as the maximum percent effluent or receiving water that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test listed in Appendix III of the 2001 California Ocean Plan.

[5] Endosulfan shall mean the sum of endosulfan-alpha and -beta and endosulfan sulfate.

[6] HCH means the sum of the alpha, beta, gamma (lindane), and delta isomers of hexachlorocyclohexane.

[7] Discharger may at their option meet this objective as a total chromium objective.

[8] Sum of 1,2- and 1,3-dichlorobenzene.

Constituent	Units	Average Monthly
dimethyl phthalate	g/L	109.9
4,6-dinitro-2-methylphenol	mg/L	29.5
2,4-dinitrophenol	mg/L	0.54
ethylbenzene	mg/L	549
fluoranthene	mg/L	2.0
hexachlorocyclopentadiene	mg/L	7.8
nitrobenzene	mg/L	0.66
thallium	mg/L	0.27
toluene	g/L	11.4
tributyltin	µg/L	0.188
1,1,1-trichloroethane	g/L	72.4

4. FOR PROTECTION OF HUMAN HEALTH, CARCINOGENS

Constituent	Units	Average Monthly
acrylonitrile	µg/L	13.4
aldrin	ng/L	2.95
benzene	µg/L	791
benzidine	ng/L	9.25
beryllium	µg/L	4.42
bis(2-chloroe-thyl) ether	µg/L	6.03
bis(2-ethylhexyl) phthalate	µg/L	469
carbon tetrachloride	µg/L	121
chlordane[9]	ng/L	3.08
chlorodibromomethane	µg/L	1152
chloroform	mg/L	17.4
DDT[10]	ng/L	22.8
1,4-dichlorobenzene	mg/L	2.41
3,3-dichlorobenzidine	µg/L	1.09
1,2-dichloroethane	mg/L	3.75
1,1-dichloroethylene	mg/L	0.12
dichlorobromomethane	mg/L	0.83
dichloromethane	mg/L	60.3
1,3-dichloropropene	mg/L	1.19
dieldrin	ng/L	5.36
2,4-dinitrotoluene	µg/L	348
1,2-diphenylhydrazine	µg/L	21.4
halomethanes[11]	mg/L	17.4

[9] Sum of chlorodane-alpha, chlorodane-gamma, chlorodene-alpha, chlorodene-gamma, nonachlor-alpha and oxychlorodane.
[10] Sum of 4,4'-DDT, 2,4'-DDT, 4,4'-DDE, 2,4'-DDE, 4,4'-DDD, and 2,4'-DDD.
[11] Sum of bromoform, bromoethane (methylbromide), chloro-methane (methyl chloride), chlorodibromomethane and dichlorobromo-methane.

Constituent	Units	Average Monthly
heptachlor	pg/L	6.7
heptachlor epoxide	pg/L	2.68
hexachlorobenzene	ng/L	28.1
hexachlorobutadiene	mg/L	1.88
hexachloroethane	µg/L	335
isophorone	mg/L	98
N-nitrosodimethylamine	µg/L	978
N-nitrosodi-N-propylamine	µg/L	50.9
N-nitrosodiphenylamine	µg/L	335
PAHs[12]	µg/L	1.18
PCBs[13]	ng/L	2.55
TCDD equivalents[14]	pg/L	0.52
1,1,2,2-tetrachloroethane	mg/L	0.31
tetrachloroethylene	µg/L	268
toxaphene	ng/L	28.1
trichloroethylene	mg/L	3.62
1,1,2-trichloroethane	mg/L	1.26
2,4,6-trichlorophenol	mg/L	0.039
vinyl chloride	mg/L	4.82

5. The effluent mass emission rate shall not exceed the *Maximum Allowable Mass Emission Rate*, as described in the Standard Provisions and Reporting Requirements[15].

6. Violations of the *Instantaneous Maximum* or *Maximum Allowable Daily Mass Emission Rate* must be reported to the Central Coast Water Board within 24 hours.

D. Total coliform bacteria in effluent shall not exceed a 30-day median of 23 MPN/100 mL and a maximum of 2400 MPN/100 mL.

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[12] Sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,1,2- benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]- anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenan-threne and pyrene.

[13] Sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260.

[14] TCDD equivalents shall mean the sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown below:

Isomer Group	Toxicity Equivalent Factor	Isomer Group	Toxicity Equivalent Factor
2,3,7,8-tetra CDD	1.0	1,2,3,7,8-penta CDF	0.05
2,3,7,8-penta CDD	0.5	2,3,4,7,8-penta CDF	0.5
2,3,7,8-hexa CDDs	0.1	2,3,7,8-hexa CDFs	0.1
2,3,7,8-hepta CDD	0.01	2,3,7,8-hepta CDFs	0.01
octa CDD	0.001	octa CDF	0.001
2,3,7,8-tetra CDF	0.1		

[15] Daily mass emission calculations shall be based on the average design flow rate of 2.06 million gallons per day (MGD).

E. Effluent must be essentially free of:

1. Material that is floatable or will become floatable upon discharge.

2. Settleable material or substances that may form sediments which will degrade benthic communities or other aquatic life.

3. Substances that will accumulate to toxic levels in marine waters, sediments or biota.

4. Substances that significantly decrease the natural light to benthic communities.

5. Materials that result in aesthetically undesirable discoloration of the ocean surface.

F. Reclamation Specifications

1. If the Discharger chooses to use treated wastewater, the Discharger shall comply with applicable requirements of CWC sections 13500 – 13577 (Water Reclamation) and of California Code of Regulations (CCR) title 22, sections 60301 – 60357 (Water Recycling Criteria).

2. Pursuant to CWC section 13523, the Discharger shall develop and submit to the Executive Officer for approval a Preconstruction Report to demonstrate compliance of the proposed reclamation project with applicable water reclamation and recycling criteria established in the CWC and CCR. The Preconstruction Report shall be equivalent to an Engineering Report as required by CCR title 22, section 60323. It shall be prepared by a properly qualified engineer registered in California and experienced in the field of wastewater treatment. The Preconstruction / Engineering Report shall contain a description of the design of the proposed reclamation system and shall demonstrate the means for compliance with applicable water reclamation and recycling criteria established in the CWC and CCR. It shall include a Contingency Plan to ensure that untreated or inadequately treated wastewater will not be delivered to the use area(s). The Discharger shall receive written notice of approval of the Preconstruction/Engineering Report from the Executive Officer prior to any reuse of treated wastewater.

V. RECEIVING WATER LIMITATIONS

Bacterial Characteristics

A. Within a zone bounded by the shoreline and a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, and in areas outside this zone designated for water contact recreation use by the Central Coast Water Board (i.e., waters designated as REC-1), but including all kelp beds, the following bacteriological objectives shall be maintained throughout the water column.

1. 30-Day Geometric Mean – The following standards are based on the geometric mean of the five most recent samples from each receiving water monitoring location.

   a. Total coliform density shall not exceed 1,000 per 100 mL;

   b. Fecal coliform density shall not exceed 200 per 100 mL; and

   c. Enterococcus density shall not exceed 35 per 100 mL.

2. Single Sample maximum[1];

   a. Total coliform density shall not exceed 10,000 per 100 mL;

   b. Fecal coliform density shall not exceed 400 per 100 mL; and

   c. Enterococcus density shall not exceed 104 per 100 mL.

   d. Total coliform density shall not exceed 1,000 per 100 mL when the fecal coliform to total coliform ratio exceeds 0.1

B. California Department of Public Health (DPH) Standards

DPH has established minimum protective bacteriological standards for coastal waters adjacent to public beaches and for public water-contact sports areas in ocean waters. These standards are found in the CCR, Title 17, Section 7958, and they are identical to the objectives contained in subsection a. above. When a public beach or public water-contact sports area fails to meet these standards, DPH or the local public health officer may post with warning signs or otherwise restrict use of the public beach or public water-contact sports area until the standards are met. The DPH regulations impose more frequent monitoring and more stringent posting and closure requirements on certain high-use public beaches that are located adjacent to a storm drain that flows in the summer.

For beaches not covered under AB 411 regulations, DPH imposes the same standards as contained in Title 17 and requires weekly sampling but allows the county health officer more discretion in making posting and closure decisions.

[1] See Section VI.C.4. of this Order (Receiving Water Monitoring for Bacteria) and Section VII.A of the Monitoring and Reporting Program (Surf-Zone Monitoring) for repeat sampling requirements for exceedance of single sample maximum bacterial surface water limitations.

C. Shellfish Harvesting Standards

1. At all areas where shellfish may be harvested for human consumption, as determined by the Central Coast Water Board, the following bacterial objectives shall be maintained throughout the water column:

   a. The median total coliform density shall not exceed 70 per 100 mL, and not more than 10 percent of the samples shall exceed 230 per 100 mL.

Physical Characteristics

E. Wastewater constituents within the discharge shall not cause floating particles or oil and grease to be visible on the ocean surface.

F. Wastewater constituents within the discharge shall not cause aesthetically undesirable discoloration of the ocean surface.

G. Wastewater constituents within the discharge shall not cause significant reduction in the transmittance of natural light at any point outside the initial dilution zone.

H. Wastewater constituents within the discharge shall not cause change in the rate of deposition and the characteristics of inert solids in ocean sediments such that benthic communities are degraded.

I. Wastewater constituents within the discharge shall not cause temperature of the receiving water to adversely affect beneficial uses.

Chemical Characteristics

J. Wastewater constituents within the discharge shall not cause the dissolved oxygen concentration outside the zone of initial dilution to fall below 5.0 mg/L or to be depressed more than 10 percent from that which occurs naturally.

K. Wastewater constituents within the discharge shall not cause the pH outside the zone of initial dilution to be depressed below 7.0, raised above 8.3, or changed more than 0.2 units from that which occurs naturally.

L. Wastewater constituents within the discharge shall not cause the dissolved sulfide concentration of waters in and near sediments to be significantly increased above that present under natural conditions.

M. Wastewater constituents within the discharge shall not cause the concentration in marine sediments of substances listed in Table B of the 2005 California Ocean Plan to be increased above levels which would degrade indigenous biota.

N. Wastewater constituents within the discharge shall not cause the concentration of organic materials in marine sediments to increase above levels which would degrade marine life.

O. Wastewater constituents within the discharge shall not cause objectionable aquatic growths or degradation of indigenous biota resulting from the discharge of nutrients.

Biological Characteristics

P. Wastewater constituents within the discharge shall not cause degradation of marine communities, including vertebrate, invertebrate, and plant species.

Q. Wastewater constituents within the discharge shall not cause alteration of the natural tastes, odor, and color of fish, shellfish, or other marine resources used for human consumption.

R. Wastewater constituents within the discharge shall not cause the concentrations of organic materials in fish, shellfish or other marine resources used for human consumption to bioaccumulate to levels that are harmful to human health.

Radioactivity

S. Wastewater constituents within the discharge shall not cause degradation of marine life due to radioactive waste.

VI. PROVISIONS

A. Standard Provisions

1. **Standard Provisions.** The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.

B. Monitoring and Reporting Program Requirements

The Discharger shall comply with the Monitoring and Reporting Program, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions

This permit may be reopened and modified in accordance with NPDES regulations at 40 CFR 122 and 124, as necessary, to include additional conditions or limitations based on newly available information or to implement any USEPA approved, new, federal or state water quality objective.

2. Pretreatment Specifications/Pollution Prevention Program

A Pretreatment Program or Pollution Prevention Program is a regulatory program administered by the Discharger to prevent the introduction of pollutants into the POTW (publicly owned treatment works) which will interfere with the operation of the treatment works, pass through the treatment facility, reduce opportunities to recycle and reuse municipal wastewater and sludge, or expose the POTW employees to hazardous chemicals. This permit implements pollution prevention requirements specified in 40 CFR Part 125.66(d) in lieu of the General Pretreatment Regulations specified in 40 CFR Part 403.

The Discharger shall implement an ongoing pollution prevention program (approved by the Central Coast Water Board) to prevent the introduction of incompatible pollutants into the treatment works. At a minimum, the program shall include:

a. Inventory all chemicals used for the operation and maintenance of the treatment plant that may enter the discharge and classify each according to its potential to cause toxicity to be present in the effluent. If toxicity data is not available for the chemicals used at the plant, and toxicity is found to be present in the effluent, the Discharger should conduct toxicity tests on the individual chemicals that potentially contribute to effluent toxicity.

b. Develop and implement a public educational program targeted at residential and commercial sources of toxic pollutants emphasizing the need to properly manage and minimize the disposal (i.e., source reduction) of potentially harmful pollutants (oil, antifreeze, pesticides, herbicides, paints, solvents, etc.).

c. Develop and implement program(s) which provide convenient means for people to properly dispose of (and/or recycle) oil, antifreeze, pesticides, herbicides, paints, solvents, and other potentially harmful chemicals.

d. Develop and implement waste minimization measures to reduce or eliminate incompatible pollutants discharged to the treatment plant. Waste minimization measures must address all significant controllable sources of pollutants including residential, industrial, and commercial sources.

e. On an annual basis, to be submitted with the annual report specified in the MRP, the Discharger shall submit a status report to USEPA and Central Coast Water Board detailing efforts of compliance with regard to the 'Pollution Prevention Program' requirements specified herein.

f. In order to provide adequate legal authority for the Discharger to protect its POTW and to evaluate sources of industrial discharges, the Discharger must perform the following activities:

   i. Develop and implement a sewer use ordinance to provide the legal authorities described in 40 CFR 403.8(f)(1).

   ii. Update annually (and summarized in the annual report) industrial waste survey as described in 40 CFR 403.8 (f)(2)(i)-(ii).

   iii. Update annually (and summarized in the annual report) potential impacts of industrial discharges, identified in Section VI.C.2.f.ii. above, upon the POTW. The report must address the need for regulation of industrial discharges to implement the objectives of the pollution prevention program.

   iv. If, in the evaluation of Section VI.C.2.f.ii and Section VI.C.2.f.ii. above, the Executive Officer determines that a formal pretreatment program is necessary to adequately meet program objectives, then the Discharger shall develop such a program in accordance with 40 CFR 403.9.

   v. The Discharger shall comply, and ensure affected indirect Dischargers comply, with the Reporting Requirements of the Standard Provisions.

3. Biosolids Requirements

Language in this section was provided by the USEPA Region IX Biosolids Coordinator as standard language for use in NPDES permits. "Biosolids" refers to non-hazardous sewage sludge as defined in 40 CFR 503.9. Sewage sludge that is hazardous as defined in 40 CFR 261 must be disposed in accordance with the Resource Conservation and Recovery Act (RCRA). Sludge with PCB levels greater than 50 mg/kg must be disposed in accordance with 40 CFR 761.

a. Management of all solids and sludge must comply with all requirements of 40 CFR Parts 257, 258, 501, and 503, including all monitoring, record-keeping, and reporting requirements. Since the State of California, hence the Regional and State Boards, has not been delegated the authority by the USEPA to implement the biosolids program, enforcement of biosolids requirements of CFR Part 503 will occur under USEPA's jurisdiction at this time.

b. All biosolids generated by the Discharger shall be used or disposed of in compliance with the applicable portions of:

   i. 40 CFR 503: for biosolids which are land applied (placed on the land for the purpose of providing nutrients or conditioning the soil for crops or vegetation), placed in surface disposal sites (placed on the land at dedicated land disposal sites or monofills for the purpose of disposal), stored, or incinerated;

   ii. 40 CFR 258: for biosolids disposed in municipal solid waste landfills; and,

   iii. 40 CFR 257: for all biosolids use and disposal practices not covered under 40 CFR 258 or 503.

c. 40 CFR 503 Subpart B (land application) applies to biosolids applied for the purpose of enhancing plant growth or for land reclamation. 40 CFR 503 Subpart C (surface disposal) applies to biosolids placed on the land for the purpose of disposal.

d. The Discharger is responsible for ensuring that all biosolids produced at its facility are used or disposed of in compliance with these regulations, whether the Discharger uses or disposes of the biosolids itself or transfers them to another party for further treatment, use, or disposal. The Discharger is responsible for informing subsequent preparers, appliers, and disposers of the requirements that they must meet under 40 CFR 257, 258, and 503.

e. Duty to mitigate: The Discharger shall take all reasonable steps to prevent or minimize any biosolids use or disposal in violation of applicable regulations and/or which has a likelihood of adversely affecting human health or the environment.

f. No biosolids shall be allowed to enter wetlands or other waters of the United States.

g. Biosolids treatment, storage, use, or disposal shall not contaminate groundwater.

h. Biosolids treatment, storage, use, or disposal shall not create a nuisance such as objectionable odors or flies.

i. The Discharger shall assure that haulers transporting biosolids off site for treatment, storage, use, or disposal take all necessary measures to keep the biosolids contained.

j. If biosolids are stored for over two years from the time they are generated, the Discharger must ensure compliance with all the requirements for surface disposal under 40 CFR 503 Subpart C, or must submit a written notification to USEPA with the information in Section 503.20(b), demonstrating the need for longer temporary storage.

k. Any biosolids treatment, disposal, or storage site shall have facilities adequate to divert surface runoff from adjacent areas, to protect the site boundaries from erosion, and to prevent any conditions that would cause drainage from the materials at the site to escape from the site. Adequate protection is defined as protection from at least a 100-year storm and from the highest tidal stage that may occur.

l. The discharge of biosolids shall not cause waste material to be in a position where it is, or can be, conveyed from the treatment and storage sites and deposited in the waters of the State.

m. The Discharger shall design its pretreatment program local discharge limitations to achieve the metals concentration limits in 40 CFR 503.13 Table 3.

n. Inspection and Entry: The USEPA, Central Coast Water Board, or an authorized representative thereof, upon the presentation of credentials, shall be allowed by the Discharger, directly or through contractual arrangements with their biosolids management contractors, to:

   i. Enter upon all premises where biosolids produced by the Discharger is treated, stored, used, or disposed, either by the Discharger or by another party to whom the Discharger transfers the biosolids for treatment, storage, use, or disposal;

   ii. Have access to and copy any records that must be kept under the conditions of this permit or of 40 CFR 503, by the Discharger or by another party to whom the Discharger transfers the biosolids for further treatment, storage, use, or disposal, and;

   iii. Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations used in the biosolids treatment, storage, use, or disposal by the Discharger or by another party to whom the Discharger transfers the biosolids for treatment, storage, use, or disposal.

o. Monitoring shall be conducted in accordance with the Monitoring and Reporting Program (MRP) of this Order (see Attachment E):

p. All the requirements of 40 CFR 503 and 23 CCR, Division 3, Chapter 15, and 27 CCR, Division 2 are enforceable by the USEPA and this Central Coast Water Board whether or not the requirements are stated in an NPDES permit or any other permit issued to the Discharger.

4. Receiving Water Monitoring for Bacteria

If/when a single sample exceeds total coliform density in the effluent of 2400 MPN/100ml, then the Discharger shall conduct surf zone monitoring for bacteria in accordance with Section VII.A. of the Monitoring and Reporting Program (Attachment E). When repeat sampling is required because of an exceedance of any one single sample density, values from all samples collected during that 30-day period will be used to calculate the geometric mean. Results of the increased monitoring for bacteria shall be summarized and submitted in a report to the Executive Officer.

5. Cat Litter Public Outreach Program

In accordance with its September 6, 2007 Biological Evaluation and letter to U.S. Fish and Wildlife, USEPA proposed that this permit include a public outreach program to minimize the input of cat litter-box waste into the municipal sewer system. This conservation measure, as proposed by USEPA, will reduce the likelihood of any possible adverse effects to brown pelican and southern sea otter. The Discharger shall develop and implement a cat litter public education program that includes, at a minimum, the following elements:

a. The Discharger will use existing public education efforts, such as periodic mailers accompanying utility bills, school visits, and distributing flyers at public forums involving wastewater issues, to communicate with the general public on the topic cat litter and waste disposal.

b. The Discharger will target specific commercial and professional establishments and to encourage them to estabish appropriate policies and procedures to properly dispose of cat waste. These establishments include, but are not limited to, veterinary clinics, animal hospitals, animal shelters, pet stores, and pet grooming companies. The Discharger will encourage the aforementioned establishments to develop and implement best management practices prohibiting the flushing of cat waste, post signage in appropriate working areas, as well as provide adequate training for all employees. The Discharger will periodically contact the known establishments to ensure cat waste disposal policies are in place.

c. The Discharger shall submit a work plan six (6) months after the effective date of this Order. The work plan shall contain implementation goals in order to achieve the aforementioned activities. These implementation goals should identify quantifiable measures that can be tracked. The Discharger shall reevaluate these implementation goals on an annual basis.

VII. Compliance Determination

Compliance with the effluent limitations contained in Section IV of this Order will be determined as specified below:

A. Average Monthly Effluent Limitation (AMEL).
If the average of daily discharges over a calendar month exceeds the AMEL for a given parameter, an alleged violation will be flagged and the discharger will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of non-compliance in a 31-day month). The average of daily discharges over the calendar month that exceeds the AMEL for a parameter will be considered out of compliance for that month only. If only a single sample is taken during the calendar month and the analytical result for that sample exceeds the AMEL, the discharger will be considered out of compliance for that calendar month. For any one calendar month during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar month.

B. Average Weekly Effluent Limitation (AWEL).
If the average of daily discharges over a calendar week exceeds the AWEL for a given parameter, an alleged violation will be flagged and the discharger will be considered out of compliance for each day of that week for that parameter, resulting in 7 days of non-compliance. The average of daily discharges over the calendar week that exceeds the AWEL for a parameter will be considered out of compliance for that week only. If only a single sample is taken during the calendar week and the analytical result for that sample exceeds the AWEL, the discharger will be considered out of compliance for that calendar week. For any one calendar week during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar week.

C. Maximum Daily Effluent Limitation (MDEL).
If a daily discharge exceeds the MDEL for a given parameter, an alleged violation will be flagged and the discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period. For any 1 day during which no sample is taken, no compliance determination can be made for that day.

ATTACHMENT A – DEFINITIONS

Average Monthly Effluent Limitation (AMEL): the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL): the highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Daily Discharge: Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

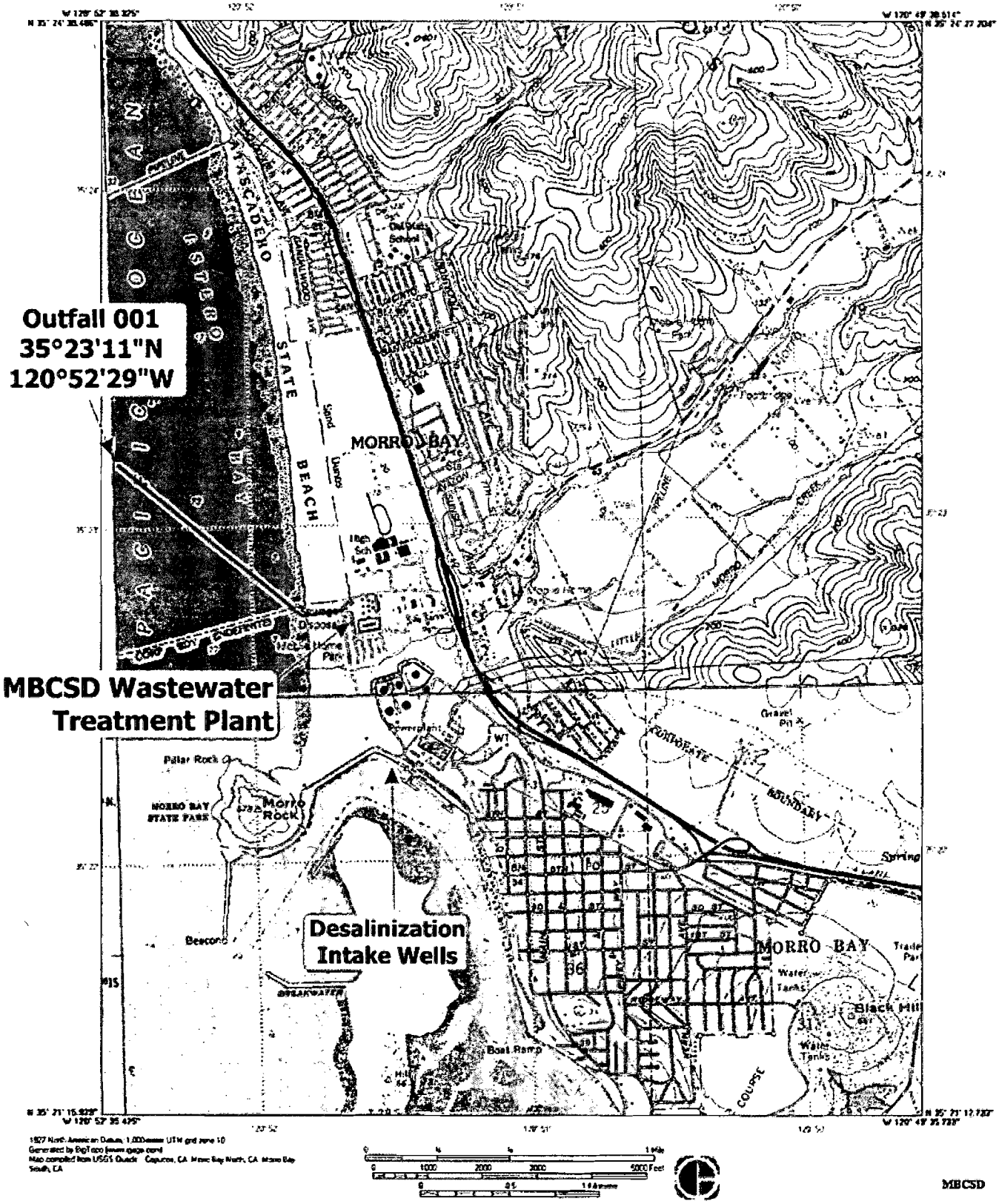
Instantaneous Maximum Effluent Limitation: the highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation: the lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

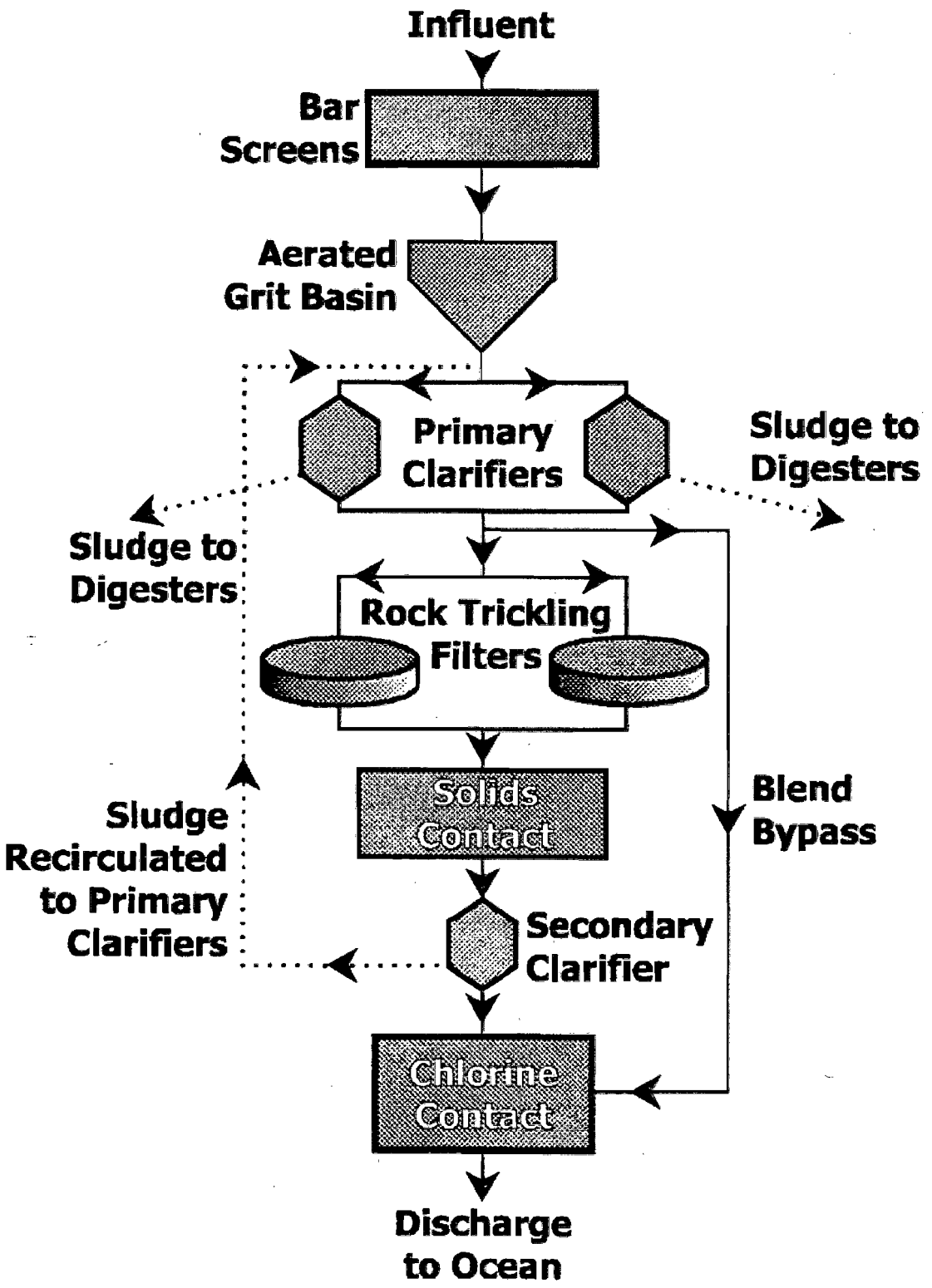
Maximum Daily Effluent Limitation (MDEL): the highest allowable daily discharge of a pollutant.

Six-month Median Effluent Limitation: the highest allowable moving median of all daily discharges for any 180-day period.

ATTACHMENT B – TOPOGRAPHIC MAP



ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – FEDERAL STANDARD PROVISIONS

I. FEDERAL STANDARD PROVISIONS

A. Federal Standard Provisions – Permit Compliance

1. Duty to Comply

a. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. [40 CFR §122.41(a)].

b. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. [40 CFR §122.41(a)(1)].

2. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. [40 CFR §122.41(c)].

3. **Duty to Mitigate.** The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. [40 CFR §122.41(d)]

4. **Proper Operation and Maintenance.** The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order [40 CFR §122.41(e)].

5. Property Rights

a. This Order does not convey any property rights of any sort or any exclusive privileges [40 CFR § 122.41(g)].

b. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations [40 CFR §122.5(c)].

6. **Inspection and Entry.** The Discharger shall allow the Central Coast Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to [40 CFR §122.41(i); Wat. Code, §13383]:

   a. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order [40 CFR §122.41(i)(1)];

   b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order [40 CFR §122.41(i)(2)];

   c. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order [40 CFR §122.41(i)(3)]; and

   d. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location [40 CFR §122.41(i)(4)].

7. Bypass

   a. Definitions

      i. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility [40 CFR §122.41(m)(1)(i)].

      ii. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production [40 CFR §122.41(m)(1)(ii)].

   b. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Federal Standard Provisions – Permit Compliance I.A.7.c, I.A.7.d, and I.A.7.e below [40 CFR §122.41(m)(2)].

   c. Prohibition of bypass. Bypass is prohibited, and the Central Coast Water Board may take enforcement action against a Discharger for bypass, unless [40 CFR §122.41(m)(4)(i)]:

      i. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage [40 CFR §122.41(m)(4)(i)(A)];

ii. There were no feasible alternatives to the bypass, such as use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance [40 CFR §122.41(m)(4)(i)(B)]; and

iii. The Discharger submitted notice to the Central Coast Water Board as required under Federal Standard Provisions – Permit Compliance I.A.7.e below [40 CFR §122.41(m)(4)(i)(C)].

d. The Central Coast Water Board may approve an anticipated bypass, after considering its adverse effects, if the Central Coast Water Board determines that it will meet the three conditions listed in Federal Standard Provisions – Permit Compliance I.A.7.c above [40 CFR §122.41(m)(4)(ii)].

e. Notice

i. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass [40 CFR §122.41(m)(3)(i)].

ii. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Federal Standard Provisions - Reporting I.E.5 below (24-hour notice) [40 CFR §122.41(m)(3)(ii)].

8. Upset. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation [40 CFR §122.41(n)(1)].

a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Federal Standard Provisions – Permit Compliance I.A.8.b below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review [40 CFR §122.41(n)(2)].

b. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that [40 CFR §122.41(n)(3)]:

i. An upset occurred and that the Discharger can identify the cause(s) of the upset [40 CFR §122.41(n)(3)(i)];

ii. The permitted facility was, at the time, being properly operated [40 CFR §122.41(n)(3)(ii)];

iii. The Discharger submitted notice of the upset as required in Federal Standard Provisions – Reporting I.E.5.b.ii below (24-hour notice) [40 CFR §122.41(n)(3)(iii)]; and

iv. The Discharger complied with any remedial measures required under Federal Standard Provisions – Permit Compliance I.A.3 above [40 CFR §122.41(n)(3)(iv)].

c. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof [40 CFR §122.41(n)(4)].

B. Federal Standard Provisions – Permit Action

1. **General.** This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition [40 CFR §122.41(f)].

2. **Duty to Reapply.** If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit [40 CFR §122.41(b)].

3. **Transfers.** This Order is not transferable to any person except after notice to the Central Coast Water Board. The Central Coast Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code [40 CFR §122.41(l)(3); §122.61].

C. Federal Standard Provisions – Monitoring

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity [40 CFR §122.41(j)(1)].

2. Monitoring results must be conducted according to test procedures under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503 unless other test procedures have been specified in this Order [40 CFR §122.41(j)(4); §122.44(i)(1)(iv)].

D. Federal Standard Provisions – Records

1. Records Retention.

Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Central Coast Water Board Executive Officer at any time. (40 CFR §122.41(j)(2).)

2. Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements [40 CFR §122.41(j)(3)(i)];

b. The individual(s) who performed the sampling or measurements [40 CFR §122.41(j)(3)(ii)];

c. The date(s) analyses were performed [40 CFR §122.41(j)(3)(iii)];

d. The individual(s) who performed the analyses [40 CFR §122.41(j)(3)(iv)];

e. The analytical techniques or methods used [40 CFR §122.41(j)(3)(v)]; and

f. The results of such analyses [40 CFR §122.41(j)(3)(vi)].

3. Claims of confidentiality for the following information will be denied [40 CFR §122.7(b)]:

a. The name and address of any permit applicant or Discharger [40 CFR §122.7(b)(1)]; and

b. Permit applications and attachments, permits and effluent data [40 CFR §122.7(b)(2)].

E. Federal Standard Provisions – Reporting

1. Duty to Provide Information. The Discharger shall furnish to the Central Coast Water Board, State Water Board, or USEPA within a reasonable time, any information which the Central Coast Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Central Coast Water Board, State Water Board, or USEPA copies of records required to be kept by this Order [40 CFR §122.41(h); Water Code, §13267].

2. Signatory and Certification Requirements

a. All applications, reports, or information submitted to the Central Coast Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Federal Standard Provisions – Reporting I.E.2.b, I.E.2.c, I.E.2.d and I.E.2.e below [40 CFR §122.41(k)].

b. All permit applications shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with

environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures [40 CFR §122.22(a)(1)].

c. All reports required by this Order and other information requested by the Central Coast Water Board, State Water Board, or USEPA shall be signed by a person described in Federal Standard Provisions – Reporting I.E.2.b above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   i. The authorization is made in writing by a person described in Federal Standard Provisions – Reporting I.E.2.b above [40 CFR §122.22(b)(1)];

   ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) [40 CFR §122.22(b)(2)]; and

   iii. The written authorization is submitted to the Central Coast Water Board and State Water Board [40 CFR §122.22(b)(3)].

d. If an authorization under Federal Standard Provisions – Reporting I.E.2.c above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Central Coast Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative [40 CFR §122.22(c)].

e. Any person signing a document under Federal Standard Provisions – Reporting I.E.2.b or I.E.2.c above shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." [40 CFR §122.22(d)].

3. Monitoring Reports

a. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order [40 CFR §122.41(l)(4)].

b. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Central Coast Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices [40 CFR §122.41(l)(4)(i)].

c. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Central Coast Water Board [40 CFR §122.41(l)(4)(ii)].

d. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order [40 CFR §122.41(l)(4)(iii)].

4. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date [40 CFR §122.41(l)(5)].

5. Twenty-Four Hour Reporting

a. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance [40 CFR §122.41(l)(6)(i)].

b. The following shall be included as information that must be reported within 24 hours under this paragraph [40 CFR §122.41(l)(6)(ii)]:

i. Any unanticipated bypass that exceeds any effluent limitation in this Order [40 CFR §122.41(l)(6)(ii)(A)].

ii. Any upset that exceeds any effluent limitation in this Order [40 CFR §122.41(l)(6)(ii)(B)].

c. The Central Coast Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours [40 CFR §122.41(l)(6)(iii)].

6. **Planned Changes.** The Discharger shall give notice to the Central Coast Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when [40 CFR §122.41(l)(1)]:

   a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) [40 CFR §122.41(l)(1)(i)]; or

   b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order [40 CFR §122.41(l)(1)(ii)].

   c. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan [40 CFR §122.41(l)(1)(iii)].

7. **Anticipated Noncompliance.** The Discharger shall give advance notice to the Central Coast Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. [40 CFR §122.41(l)(2)].

8. **Other Noncompliance.** The Discharger shall report all instances of noncompliance not reported under Federal Standard Provisions – Reporting I.E.3, I.E.4, and I.E.5 above at the time monitoring reports are submitted. The reports shall contain the information listed in Federal Standard Provisions – Reporting I.E.5 above. [40 CFR §122.41(l)(7)].

9. **Other Information.** When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Central Coast Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information [40 CFR §122.41(l)(8)]

F. Federal Standard Provisions – Enforcement

1. The Central Coast Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

G. Additional Federal Provisions – Notification Levels

1. **Non-Municipal Facilities.** Existing manufacturing, commercial, mining, and silvicultural Discharger shall notify the Central Coast Water Board as soon as they know or have reason to believe [40 CFR §122.42(a)]:

   a. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [40 CFR §122.42(a)(1)]:

      i. 100 micrograms per liter (µg/L) [40 CFR §122.42(a)(1)(i)];

      ii. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4, 6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony [40 CFR §122.42(a)(1)(ii)];

      iii. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [40 CFR §122.42(a)(1)(iii)]; or

      iv. The level established by the Central Coast Water Board in accordance with 40 CFR Section 122.44(f) [40 CFR §122.42(a)(1)(iv)].

   b. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [40 CFR §122.42(a)(2)]:

      i. 500 micrograms per liter (µg/L) [40 CFR §122.42(a)(2)(i)];

      ii. 1 milligram per liter (mg/L) for antimony [40 CFR §122.42(a)(2)(ii)];

      iii. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [40 CFR §122.42(a)(2)(iii)]; or

iv. The level established by the Central Coast Water Board in accordance with 40 CFR Section 122.44(f) [40 CFR §122.42(a)(2)(iv)].

2. **Publicly Owned Treatment Works (POTWs).** All POTWs shall provide adequate notice to the Central Coast Water Board of the following [40 CFR § 122.42(b)]:

a. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants [40 CFR § 122.42(b)(1)]; and
b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order. [40 CFR § 122.42(b)(2)]
c. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. [40 CFR § 122.42(b)(3)]

II. CENTRAL COAST REGION'S STANDARD PROVISIONS (JANUARY 1985)

A. Central Coast General Permit Conditions

1. Central Coast Standard Provisions – Prohibitions

a. Introduction of "incompatible wastes" to the treatment system is prohibited.

b. Discharge of high-level radiological waste and of radiological, chemical, and biological warfare agents is prohibited.

c. Discharge of "toxic pollutants" in violation of effluent standards and prohibitions established under Section 307(a) of the Clean Water Act is prohibited.

d. Discharge of sludge, sludge digester or thickener supernatant, and sludge drying bed leachate to drainageways, surface waters, or the ocean is prohibited.

e. Introduction of pollutants into the collection, treatment, or disposal system by an "indirect discharger" that:

i. Inhibit or disrupt the treatment process, system operation, or the eventual use or disposal of sludge; or,

ii. Flow through the system to the receiving water untreated; and,

iii. Cause or "significantly contribute" to a violation of any requirement of this Order, is prohibited.

f. Introduction of "pollutant free" wastewater to the collection, treatment, and disposal system in amounts that threaten compliance with this order is prohibited.

2. Central Coast Standard Provisions – Provisions

a. Collection, treatment, and discharge of waste shall not create a nuisance or pollution, as defined by Section 13050 of the California Water Code.

b. All facilities used for transport or treatment of wastes shall be adequately protected from inundation and washout as the result of a 100-year frequency flood.

c. Operation of collection, treatment, and disposal systems shall be in a manner that precludes public contact with wastewater.

d. Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed in a manner approved by the Executive Officer.

e. Publicly owned wastewater treatment plants shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to Title 23 of the California Administrative Code.

f. After notice and opportunity for a hearing, this order may be terminated for cause, including, but not limited to:

i. violation of any term or condition contained in this order;

ii. obtaining this order by misrepresentation, or by failure to disclose fully all relevant facts;

iii. a change in any condition or endangerment to human health or environment that requires a temporary or permanent reduction or elimination of the authorized discharge; and,

iv. a substantial change in character, location, or volume of the discharge.

g. Provisions of this permit are severable. If any provision of the permit is found invalid, the remainder of the permit shall not be affected.

h. After notice and opportunity for hearing, this order may be modified or revoked and reissued for cause, including:

i. Promulgation of a new or revised effluent standard or limitation;

ii. A material change in character, location, or volume of the discharge;

iii. Access to new information that affects the terms of the permit, including applicable schedules;

iv. Correction of technical mistakes or mistaken interpretations of law; and,

v. Other causes set forth under Sub-part D of 40 CFR Part 122.

i. Safeguards shall be provided to assure maximal compliance with all terms and conditions of this permit. Safeguards shall include preventative and contingency plans and may also include alternative power sources, stand-by generators, retention capacity, operating procedures, or other precautions. Preventative and contingency plans for controlling and minimizing the affect of accidental discharges shall:

i. identify possible situations that could cause "upset", "overflow" or "bypass", or other noncompliance. (Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.)

ii. evaluate the effectiveness of present facilities and procedures and describe procedures and steps to minimize or correct any adverse environmental impact resulting from noncompliance with the permit.

j. Physical Facilities shall be designed and constructed according to accepted engineering practice and shall be capable of full compliance with this order when properly operated and maintained. Proper operation and maintenance shall be described in an Operation and Maintenance Manual. Facilities shall be accessible during the wet-weather season.

k. Production and use of reclaimed water is subject to the approval of the Board. Production and use of reclaimed water shall be in conformance with reclamation criteria established in Chapter 3, Title 22, of the California Administrative Code and Chapter 7, Division 7, of the California Water Code. An engineering report pursuant to section 60323, Title 22, of the California Administrative Code is required and a waiver or water reclamation requirements from the Board is required before reclaimed water is supplied for any use, or to any user, not specifically identified and approved either in this Order or another order issued by this Board.

B. Central Coast Standard Provisions – General Monitoring Requirements

1. If results of monitoring a pollutant appear to violate effluent limitations based on a weekly, monthly, 30-day, or six-month period, but compliance or non-compliance cannot be validated because sampling is too infrequent, the frequency of sampling shall be increased to validate the test within the next monitoring period. The increased frequency shall be maintained until the Executive Officer agrees the original monitoring frequency may be resumed.

   For example, if copper is monitored annually and results exceed the six-month median numerical effluent limitation in the permit, monitoring of copper must be increased to a frequency of at least once every two months (Central Coast Standard Provisions – Definitions II.F.13.). If suspended solids are monitored weekly and

results exceed the weekly average numerical limit in the permit, monitoring of suspended solids must be increased to at least four (4) samples every week (Central Coast Standard Provisions – Definitions II.F.14.).

2. Water quality analyses performed in order to monitor compliance with this permit shall be by a laboratory certified by the State Department of Health Services for the constituent(s) being analyzed. Bioassay(s) performed in order to monitor compliance with this permit shall be in accord with guidelines approved by the State Water Resources Control Board and the State Department of Fish and Game. If the laboratory used or proposed for use by the discharger is not certified by the California Department of Health Services or, where appropriate, the Department of Fish and Game due to restrictions in the State's laboratory certification program, the discharger shall be considered in compliance with this provision provided:

   a. Data results remain consistent with results of samples analyzed by the Central Coast Water Board;

   b. A quality assurance program is used at the laboratory, including a manual containing steps followed in this program that is available for inspections by the staff of the Central Coast Water Board; and,

   c. Certification is pursued in good faith and obtained as soon as possible after the program is reinstated.

3. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Samples shall be taken during periods of peak loading conditions. Influent samples shall be samples collected from the combined flows of all incoming wastes, excluding recycled wastes. Effluent samples shall be samples collected downstream of the last treatment unit and tributary flow and upstream of any mixing with receiving waters.

4. All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy.

C. Central Coast Standard Provisions – General Reporting Requirements

1. Reports of marine monitoring surveys conducted to meet receiving water monitoring requirements of the Monitoring and Reporting Program shall include at least the following information:

   a. A description of climatic and receiving water characteristics at the time of sampling (weather observations, floating debris, discoloration, wind speed and direction, swell or wave action, time of sampling, tide height, etc.).

   b. A description of sampling stations, including differences unique to each station (e.g., station location, grain size, rocks, shell litter, calcareous worm tubes, evident life, etc.).

c. A description of the sampling procedures and preservation sequence used in the survey.

d. A description of the exact method used for laboratory analysis. In general, analysis shall be conducted according to (Central Coast Standard Provisions – Definitions II.B.1 above, and Federal Standard Provision – Monitoring I.C.1. However, variations in procedure are acceptable to accommodate the special requirements of sediment analysis. All such variations must be reported with the test results.

e. A brief discussion of the results of the survey. The discussion shall compare data from the control station with data from the outfall stations. All tabulations and computations shall be explained.

2. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule shall be submitted within 14 days following each scheduled date unless otherwise specified within the permit. If reporting noncompliance, the report shall include a description of the reason, a description and schedule of tasks necessary to achieve compliance, and an estimated date for achieving full compliance. A second report shall be submitted within 14 days of full compliance.

3. The "Discharger" shall file a report of waste discharge or secure a waiver from the Executive Officer at least 180 days before making any material change or proposed change in the character, location, or plume of the discharge.

4. Within 120 days after the discharger discovers, or is notified by the Central Coast Water Board, that monthly average daily flow will or may reach design capacity of waste treatment and/or disposal facilities within four (4) years, the discharger shall file a written report with the Central Coast Water Board. The report shall include:

   a. the best estimate of when the monthly average daily dry weather flow rate will equal or exceed design capacity; and,

   b. a schedule for studies, design, and other steps needed to provide additional capacity for waste treatment and/or disposal facilities before the waste flow rate equals the capacity of present units.

   In addition to complying with Federal Standard Provision – Reporting I.E.2, the required technical report shall be prepared with public participation and reviewed, approved and jointly submitted by all planning and building departments having jurisdiction in the area served by the waste collection, treatment, or disposal facilities.

5. All "Discharger" shall submit reports to the:

   California Regional Water Quality Control Board

Central Coast Region
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401-7906

In addition, "Discharger" with designated major discharges shall submit a copy of each document to:

Regional Administrator
US Environmental Protection Agency, Region 9
Attention: CWA Standards and Permits Office (WTR-5)
75 Hawthorne Street
San Francisco, California 94105

6. Transfer of control or ownership of a waste discharge facility must be preceded by a notice to the Central Coast Water Board at least 30 days in advance of the proposed transfer date. The notice must include a written agreement between the existing "Discharger" and proposed "Discharger" containing specific date for transfer of responsibility, coverage, and liability between them. Whether a permit may be transferred without modification or revocation and reissuance is at the discretion of the Board. If permit modification or revocation and reissuance is necessary, transfer may be delayed 180 days after the Central Coast Water Board's receipt of a complete permit application. Please also see Federal Standard Provision – Permit Action IB.3.

7. Except for data determined to be confidential under Section 308 of the Clean Water Act (excludes effluent data and permit applications), all reports prepared in accordance with this permit shall be available for public inspection at the office of the Central Coast Water Board or Regional Administrator of EPA. Please also see Federal Standard Provision – Records I.D.3.

8. By April 1st of each year, the discharger shall submit an annual report to the Central Coast Water Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year. The discharger shall discuss the compliance record and corrective actions taken, or which may be needed, to bring the discharge into full compliance. The report shall address operator certification and provide a list of current operating personnel and their grade of certification. The report shall inform the Board of the date of the Facility's Operation and Maintenance Manual (including contingency plans as described Central Coast Standard Provision – Provision II.A.2.i), of the date the manual was last reviewed, and whether the manual is complete and valid for the current facility. The report shall restate, for the record, the laboratories used by the discharger to monitor compliance with effluent limits and provide a summary of performance relative to Section B above, General Monitoring Requirements.

   If the facility treats industrial or domestic wastewater and there is no provision for periodic sludge monitoring in the Monitoring and Reporting Program, the report shall include a summary of sludge quantities, analyses of its chemical and moisture content, and its ultimate destination.

If applicable, the report shall also evaluate the effectiveness of the local source control or pretreatment program using the State Water Resources Control Board's "Guidelines for Determining the Effectiveness of Local Pretreatment Programs."

D. Central Coast Standard Provisions – General Pretreatment Provisions

1. Discharge of pollutants by "indirect dischargers" in specific industrial sub-categories (appendix C, 40 CFR Part 403), where categorical pretreatment standards have been established, or are to be established, (according to 40 CFR Chapter 1, Subchapter N), shall comply with the appropriate pretreatment standards:

   a. By the date specified therein;

   b. Within three (3) years of the effective date specified therein, but in no case later than July 1, 1984; or,

   c. If a new indirect discharger, upon commencement of discharge.

E. Central Coast Standard Provisions – Enforcement

1. Any person failing to file a report of waste discharge or other report as required by this permit shall be subject to a civil penalty not to exceed $5,000 per day.

2. Upon reduction, loss, or failure of the treatment facility, the "Discharger" shall, to the extent necessary to maintain compliance with this permit, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided.

F. Central Coast Standard Provisions – Definitions (Not otherwise included in Attachment A to this Order)

1. A "composite sample" is a combination of no fewer than eight (8) individual samples obtained at equal time intervals (usually hourly) over the specified sampling (composite) period. The volume of each individual sample is proportional to the flow rate at the time of sampling. The period shall be specified in the Monitoring and Reporting Program ordered by the Executive Officer.

2. "Daily Maximum" limit means the maximum acceptable concentration or mass emission rate of a pollutant measured during a calendar day or during any 24-hour period reasonably representative of the calendar day for purposes of sampling. It is normally compared with results based on "composite samples" except for ammonia, total chlorine, phenolic compounds, and toxicity concentration. For all exceptions, comparisons will be made with results from a "grab sample".

3. "Discharger", as used herein, means, as appropriate: (l) the Discharger, (2) the local sewering entity (when the collection system is not owned and operated by the Discharger), or (3) "indirect discharger" (where "Discharger" appears in the same paragraph as "indirect discharger", it refers to the discharger.)

4. "Duly Authorized Representative" is one where:

   a. the authorization is made in writing by a person described in the signatory paragraph of Federal Standard Provision I.E.2;

   b. the authorization specifies either an individual or the occupant of a position having either responsibility for the overall operation of the regulated facility, such as the plant manager, or overall responsibility for environmental matters of the company; and,

   c. the written authorization was submitted to the Central Coast Water Board.

5. A "grab sample" is defined as any individual sample collected in less than 15 minutes. "Grab samples" shall be collected during peak loading conditions, which may or may not be during hydraulic peaks. It is used primarily in determining compliance with the daily maximum limits identified in Central Coast Standard Provision – Provision II.F.2 and instantaneous maximum limits.

6. "Hazardous substance" means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the Clean Water Act.

7. "Incompatible wastes" are:

   a. Wastes which create a fire or explosion hazard in the treatment works;

   b. Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0 unless the works is specifically designed to accommodate such wastes;

   c. Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation of treatment works;

   d. Any waste, including oxygen demanding pollutants (BOD, etc), released in such volume or strength as to cause inhibition or disruption in the treatment works and subsequent treatment process upset and loss of treatment efficiency; and,

   e. Heat in amounts that inhibit or disrupt biological activity in the treatment works or that raise influent temperatures above 40°C (104°F) unless the treatment works is designed to accommodate such heat.

8. "Indirect Discharger" means a non-domestic discharger introducing pollutants into a publicly owned treatment and disposal system.

9. "Log Mean" is the geometric mean. Used for determining compliance of fecal or total coliform populations, it is calculated with the following equation:

   Log Mean = (C1 x C2 x...x Cn)1/n

   in which "n" is the number of days samples were analyzed during the period and any "C" is the concentration of bacteria (MPN/100 ml) found on each day of sampling. "n" should be five or more.

10. "Mass emission rate" is a daily rate defined by the following equations:

    mass emission rate (lbs/day) = 8.34 x Q x C; and,

    mass emission rate (kg/day) = 3.79 x Q x C,

    where "C" (in mg/l) is the measured daily constituent concentration or the average of measured daily constituent concentrations and "Q" (in MGD) is the measured daily flow rate or the average of measured daily flow rates over the period of interest.

11. The "Maximum Allowable Mass Emission Rate," whether for a month, week, day, or six-month period, is a daily rate determined with the formulas in paragraph F.10, above, using the effluent concentration limit specified in the permit for the period and the average of measured daily flows (up to the allowable flow) over the period.

12. "Maximum Allowable Six-Month Median Mass Emission Rate" is a daily rate determined with the formulas in Central Coast Standard Provision – Provision II.F.10, above, using the "six-month Median" effluent limit specified in the permit, and the average of measured daily flows (up to the allowable flow) over a 180-day period.

13. "Median" is the value below which half the samples (ranked progressively by increasing value) fall. It may be considered the middle value, or the average of two middle values.

14. "Monthly Average" (or "Weekly Average", as the case may be) is the arithmetic mean of daily concentrations or of daily mass emission rates over the specified 30-day (or 7-day) period

    Average = (Xl + X2 + ... + Xn) / n

    in which "n" is the number of days samples were analyzed during the period and "X" is either the constituent concentration (mg/l) or mass emission rate (kg/day or lbs/day) for each sampled day. "n" should be four or greater.

15. "Municipality" means a city, town, borough, county, district, association, or other public body created by or under state law and having jurisdiction over disposal of sewage, industrial waste, or other waste.

16. "Overflow" means the intentional or unintentional diversion of flow from the collection and transport systems, including pumping facilities.

17. "Pollutant-free wastewater" means inflow and infiltration, storm waters, and cooling waters and condensates which are essentially free of pollutants.

18. "Primary Industry Category" means any industry category listed in 40 CFR Part 122, Appendix A.

19. "Removal Efficiency" is the ratio of pollutants removed by the treatment unit to pollutants entering the treatment unit. Removal efficiencies of a treatment plant shall be determined using "Monthly averages" of pollutant concentrations (C, in mg/l) of influent and effluent samples collected about the same time and the following equation (or its equivalent):

    $C_{Effluent}$ Removal Efficiency (%) = 100 x ($1 - C_{effluent} / C_{influent}$)

20. "Severe property damage" means substantial physical damage to property, damage to treatment facilities which causes them to become inoperable, or substantial and permanent loss to natural resources which can reasonably be expected to occur in

the absence of a "bypass". It does not mean economic loss caused by delays in production.

21. "Sludge" means the solids, residues, and precipitates separated from, or created in, wastewater by the unit processes of a treatment system.

22. To "significantly contribute" to a permit violation means an "indirect discharger" must:

    a. Discharge a daily pollutant loading in excess of that allowed by contract with the "Discharger" or by Federal, State, or Local law;

    b. Discharge wastewater which substantially differs in nature or constituents from its average discharge;

    c. Discharge pollutants, either alone or in conjunction with discharges from other sources, which results in a permit violation or prevents sewage sludge use or disposal; or

    d. Discharge pollutants, either alone or in conjunction with pollutants from other sources, that increase the magnitude or duration of permit violations.

23. "Toxic Pollutant" means any pollutant listed as toxic under Section 307 (a) (1) of the Clean Water Act or under 40 CFR Part 122, Appendix D. Violation of maximum daily discharge limitations are subject to 24-hour reporting (Federal Standard Provisions I.E.5.).

24. "Zone of Initial Dilution" means the region surrounding or adjacent to the end of an outfall pipe or diffuser ports whose boundaries are defined through calculation of a plume model verified by the State Water Resources Control Board.

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations (CFR) at 40 CFR §122.48 requires that all NPDES permits specify monitoring and reporting requirements. CWC sections 13267 and 13383 also authorize the Central Coast Water Board to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements that implement the federal and California regulations.

The monitoring program for a discharger receiving a Clean Water Act Section 301(h) Modified National Pollutant Discharge Elimination System (NPDES) permit is intended to: a) document short and long-term effects of the discharge on receiving waters, sediments, biota, and on beneficial uses of the receiving water; b) determine compliance with NPDES permit requirements and conditions; and c) assess the effectiveness of industrial pretreatment and toxics control programs.

I. GENERAL MONITORING PROVISIONS

The Central Coast Water Board and U.S. Environmental Protection Agency, Region IX (USEPA) may revise the monitoring program presented herein, within the specified order and permit period. The program will be reviewed at annual intervals to assess its effectiveness at meeting the objectives stated above. If predictable relationships among effluent, water quality and biological monitoring variables can be clearly demonstrated, it may be appropriate to decrease certain elements of the monitoring program. Conversely, the monitoring program may be intensified if it appears that the above objectives cannot be achieved through the existing monitoring program.

A. Laboratories analyzing monitoring samples shall be certified by the Department of Public Health, in accordance with CWC section 13176, and must include quality assurance/quality control data with their reports.

B. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and approval of the Central Coast Water Board.

C. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ±10 percent from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration, and operation of acceptable flow measurement devices can be obtained from the following references.

1. A Guide to Methods and Standards for the Measurement of Water Flow, U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 96 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD Catalog No. C13.10:421.)

2. Water Measurement Manual, U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington D.C. 20402. Order by Catalog No. 172.19/2:W29/2, Stock No. S/N 24003-0027.)

3. Flow Measurement in Open Channels and Closed Conduits, U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Services (NTIS) Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST.)

4. NPDES Compliance Sampling Manual, U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, 140 pp. (Available from the General Services Administration (8FFS), Centralized Mailing Lists Services, Building 41, Denver Federal Center, CO 80225.)

D. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

E. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this MRP.

F. Unless otherwise specified by this MRP, all monitoring shall be conducted according to test procedures established at 40 CFR 136, *Guidelines Establishing Test Procedures for Analysis of Pollutants.* All analyses shall be conducted using the lowest practical quantitation limit achievable using the specified methodology. Where effluent limitations are set below the lowest achievable quantitation limits, pollutants not detected at the lowest practical quantitation limits will be considered in compliance with effluent limitations. Analysis for toxics listed by the California Toxics Rule shall also adhere to guidance and requirements contained in the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (2005). Analyses for toxics listed in Table B of the California Ocean Plan (2005) shall adhere to guidance and requirements contained in that document. The Minimum Levels identified in the 2005 Ocean Plan represent the lowest concentration of a pollutant that can be quantitatively measured in a sample given the current state of performance in analytical chemistry methods in California.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, receiving water limitations, and other requirements in this Order. Monitoring stations have been located to assess the short-term environmental impacts of the discharge on the receiving water, benthic sediment, and biota in the vicinity of the outfall.

Monitoring Location Name	Description	Latitude	Longitude	Distance from Reference
M-INF	Treatment Plant Headworks	--	--	--
M-001	Effluent, downstream of any inplant return flows or disinfection units (Discharge Point 001)	35° 22' 47" N	120° 51' 40" W	--
Surf Zone Monitoring Locations				**Along-Shore Distance and Direction from Location SZ-C**
SZ-A1	Upcoast Reference	35° 23'58" N	120° 52'07" W	1330 m (4363 ft) N
SZ-A	Upcoast Midfield	35° 23'45" N	120° 52'04" W	912 m (2992 ft) N
SZ-B	Upcoast Nearfield	35° 23'31" N	120° 52'00" W	488 m (1602 ft) N
SZ-C	Onshore of Diffuser	35° 23'15" N	120° 51'57" W	0
SZ-D	Downcoast Nearfield	35° 23'02" N	120° 51'55" W	426 m (1398 ft) S
SZ-E	Downcoast Midfield	35° 22'46" N	120° 51'54" W	922 m (3026 ft) S
SZ-F	Downcoast Reference	35° 22'24" N	120° 51'53" W	1602 m (5250 ft) S
SZ-G	Morro Creek immediately before flowing to the ocean	--	--	--
Receiving Water (Ocean) Monitoring Locations				**Distance from Diffuser Center (m)**
RW-1	Upcoast Midfield	35° 23.253' N	120° 52.504' W	100
RW-2	Upcoast Nearfield	35° 23.231' N	120° 52.504' W	60
RW-3	Upcoast ZID	35° 23.210' N	120° 52.504' W	20

Monitoring Location Name	Description	Latitude	Longitude	Distance from Reference
RW-4	Downcoast ZID	35° 23.188' N	120° 52.504' W	20
RW-5	Downcoast Nearfield	35° 23.167' N	120° 52.504' W	60
RW-6	Downcoast Midfield	35° 23.145' N	120° 52.504' W	100
Benthic Monitoring Locations				**Distance from Diffuser Center (m)**
B-2	Upcoast Reference	35° 23.280' N	120° 52.504' W	150
B-3	Upcoast Nearfield	35° 23.231' N	120° 52.504' W	60
B-4	Upcoast ZID	35° 23.210' N	120° 52.504' W	20
B-5	Downcoast ZID	35° 23.188' N	120° 52.504' W	20
B-6	Downcoast Nearfield	35° 23.167' N	120° 52.504' W	60
B-7	Downcoast Reference	35° 23.118' N	120° 52.504' W	150

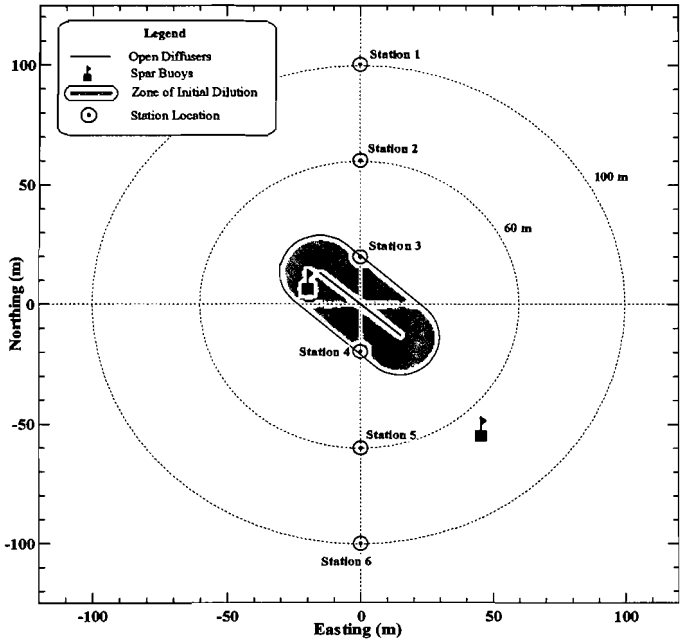

Figure 1: Vertical Receiving Water (Ocean) Monitoring Locations

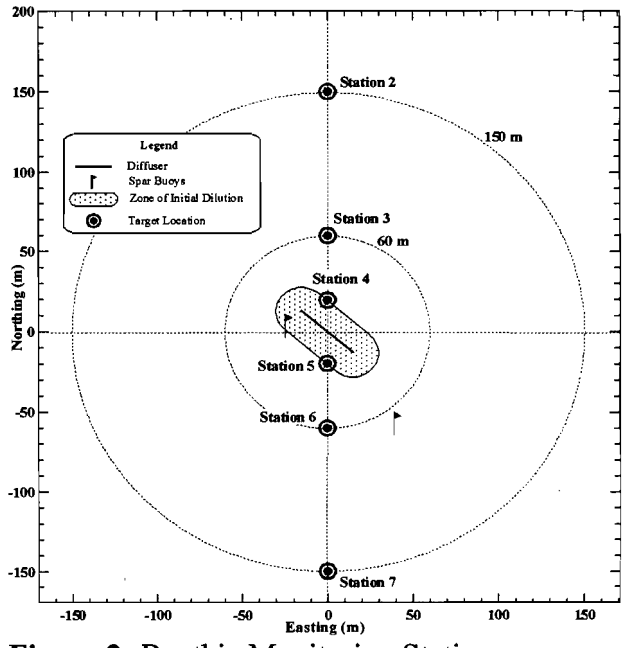

Figure 2: Benthic Monitoring Stations

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location M-INF

1. The Discharger shall monitor representative samples[1] of influent to the treatment plant at M-INF as follows:

Parameter	Units	Sample Type	Minimum Frequency of Sampling/Analysis
Daily Flow	MG	Metered	Daily
Maximum Daily Flow	MGD	Metered	Daily
Mean Daily Flow	MGD	Calculated	Monthly
BOD_5 (20°C)	mg/L	24-hr Composite	Weekly
Suspended Solids	mg/L	24-hr Composite	Weekly

2. Effluent flow metering shall be reported in place of influent flow metering when the flume is surcharged.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location M-001

The Discharger shall monitor representative effluent samples (downstream of any in-plant return flows or disinfection units) at M-001, as follows:

Parameter	Units	Sample Type	Minimum Frequency of Sampling/Analysis
Total Chlorine Residual	mg/L	Grab	Daily
Chlorine Usage	lbs/day	Recorded	Daily
Total Coliform	MPN	Grab	5 days/week[2]
Temperature	°C	Grab	5 days/week[1]
Turbidity	NTU	Grab	5 days/week[1]
BOD_5 (20°C)	mg/L	24-hr Composite	Weekly[1]
Suspended Solids	mg/L	24-hr Composite	Weekly[1]
pH	pH units	Grab	Weekly[1]
Settleable Solids	mL/L	Grab	Weekly
Grease and Oil	mg/L	Grab	Weekly
Chronic toxicity[3]	TUc	24-hr Composite	Semiannually (Jan/July)

[1] Influent samples shall be corrected to compensate for in-plant return flows.
[2] Sampling shall be arranged so that each day of the 7-day week is represented, at least once, each month, or every two months for weekly sampling. For samples collected five times per month, at least one sample shall be taken weekly, and sampling should be arranged so that each day of the 7-day week is represented, at least once, every two months.

Parameter	Units	Sample Type	Minimum Frequency of Sampling/Analysis
Ammonia (as N)	mg/L	Grab	Monthly
Nitrate (as N)	mg/L	Grab	Semiannually (Jan/July)
Urea (as N)	mg/L	Grab	Semiannually (Jan/July)
Ortho-Phosphate (as P)	mg/L	Grab	Semiannually (Jan/July)
Dissolved Silica (SiO_2)	mg/L	Grab	Semiannually (Jan/July)

PROTECTION OF MARINE AQUATIC LIFE

Parameter	Units	Type of Sample	Minimum Frequency of Sampling/Analysis	Minimum Levels[3] (µg/L)
Arsenic	mg/L	24-hr. Composite	Semi-annually	All methods contained in Table II-3 of 2005 Ocean Plan, with exception to the Direct Current Plasma method
Cadmium	mg/L	" "	" "	" "
Chromium(Hex)[4]	mg/L	" "	" "	" "
Copper	mg/L	" "	" "	" "
Lead	mg/L	" "	" "	" "
Mercury	µg/L	" "	" "	" "
Nickel	mg/L	" "	" "	" "
Selenium	mg/L	" "	" "	" "
Silver	mg/L	" "	" "	" "
Zinc	mg/L	" "	" "	" "
Cyanide	mg/L	" "	" "	" "
Phenolic Compounds	mg/L	Grab	Annually	See Table II-2 of 2005 Ocean Plan

[3] See MRP Section V, *Whole Effluent Toxicity Testing Requirements*, below.
[3] Minimum Levels (taken from Appendix II of the 2001 California Ocean Plan) represent the lowest quantifiable concentration in a sample based on the proper application of method-specific analytical procedures and the absence of matrix interferences.

The Discharger must instruct their laboratory to establish calibration standards so that the Minimum Level is the lowest calibration standard. At no time is the Discharger to use analytical date derived from extrapolation beyond the lowest point in the calibration curve.

The Discharger must report with each sample result the reported Minimum Level and the laboratory's current Method Detection Limit (MDL).

Discharger must report analytical results using the following protocols:

1. Sample results greater than or equal to the reported Minimum* Level must be reported "as measured" by the laboratory (i.e., the measured chemical concentration in the sample).
2. Sample results less than the reported Minimum Level, but greater than or equal to the laboratory's MDL, must be reported as "Detected, but Not Quantified", or DNQ. The laboratory must write the estimated chemical concentration of the sample next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc.").
3. Sample results less than the laboratory's MDL must be reported as "Not Detected", or ND.

[4] Discharger may at their option meet this limitation as total chromium limitation.

(non-chlorinated)				
Chlorinated Phenolics	mg/L	" "	" "	" "
Endosulfan[5]	µg/L	24-hr. Composite	" "	0.01
Endrin	µg/L	" "	" "	0.01
HCH[6]	µg/L	" "	" "	See Table II-4 of 2005 Ocean Plan
Radionuclide	pCi/L	" "	" "	--

[5] Endosulfan shall mean the sum of endosulfan-alpha and -beta and endosulfan sulfate.
[6] HCH shall mean the sum of the alpha, beta, gamma (lindane), and delta isomers of hexachlorocyclohexane.

PROTECTION OF HUMAN HEALTH – NONCARCINOGENS[7]

Parameter	Units	Type of Sample	Minimum Frequency of Analysis	Minimum Levels (µg/L)	
				Gas Chromatography Method	Gas Chromatograpy / Mass Spectrometry Method
Acrolein	mg/L	24-hr. Composite	Annually	2	5
Antimony	g/L	" "	" "	All methods contained in Table II-3 of 2005 Ocean Plan	
Bis(2-chloroethoxy) Methane	mg/L	" "	" "	--	5
Bis(2-chloroisopropyl) Ether	g/L	" "	" "	10	2
Chlorobenzene	mg/L	" "	" "	0.5	2
Chromium (III)	g/L	" "	" "	See Table II-3 of 2005 Ocean Plan	
Di-n-butyl Phthalate	g/L	" "	" "	--	10
Dichlorobenzenes[8]	g/L	" "	" "	See Table II-2 of 2005 Ocean Plan	
Diethyl Phthalate	g/L	" "	" "	10	2
Dimethyl Phthalate	g/L	" "	" "	10	2
4,6-dinitro-2-methylphenol	mg/L	" "	" "	10	5
2,4-dinitrophenol	mg/L	" "	" "	5	5
Ethylbenzene	g/L	" "	" "	0.5	2
Fluoranthene	mg/L	" "	" "	10	1
Hexachlorocyclopentadiene	mg/L	" "	" "	5	5
Isophorone	g/L	" "	" "	10	1
Nitrobenzene	mg/L	" "	" "	10	1

[7] After results are reported, the Discharger may request to the Regional Board and USEPA that only those parameters detected during the first year of sampling be analyzed during the remainder of the permit.
[8] Dichlorobenzenes shall mean the sum of 1,2- and 1,3-dichlorobenzene.

Parameter	Units	Type of Sample	Minimum Frequency of Analysis	Minimum Levels (µg/L)	
				Gas Chromatograph y Method	Gas Chromatograpy / Mass Spectrometry Method
Thallium	mg/L	" "	" "	See Table II-3 of 2005 Ocean Plan	
Toluene	g/L	" "	" "	0.5	2
Tributyltin	µg/L	" "	" "	--	--
1,1,1-trichloroethane	g/L	" "	" "	0.5	2
1,1,2-trichloroethane	mg/L	" "	" "	0.5	2

PROTECTION OF HUMAN HEALTH – CARCINOGENS[8]

Parameter	Units	Type of Sample	Minimum Frequency of Analysis	Minimum Levels (µg/L)	
				Gas Chromatography Method	Gas Chromatograpy / Mass Spectrometry Method
Acrylonitrile	µg/L	24-hr. Composite	Annually	2	2
Aldrin	ng/L	" "	" "	0.005	--
Benzene	mg/L	" "	" "	0.5	2
Benzidine	ng/L	" "	" "	--	5
Beryllium	µg/L	" "	" "	All methods contained in Table II-3 of 2005 Ocean Plan, with exception to the Direct Current Plasma and Flame Atomic Absorption methods	
Bis(2-chloroethyl) Ether	µg/L	" "	" "	--	1
Bis(2-ethylhexyl) Phthalate	mg/L	" "	" "	10	5

Parameter	Units	Type of Sample	Minimum Frequency of Analysis	Minimum Levels (µg/L)	
				Gas Chromatography Method	Gas Chromatograpy / Mass Spectrometry Method
Carbon tetrachloride	mg/L	"	" "	0.5	2
Chlordane[9]	ng/L	"	" "	0.1	--
Chlorodibromomethane	µg/L	"	" "	0.5	2
Chloroform	mg/L	"	" "	0.5	2
DDT[10]	ng/L	"	" "	See Table II-4 of 2005 Ocean Plan	
1,4-dichlorobenzene	mg/L	"	" "	See Table II-1 and II-2 of 2005 Ocean Plan	
3,3-dichlorobenzidine	µg/L	"	" "	--	5
1,2-dichloroethane	mg/L	"	" "	0.5	2
1,1-dichloroethylene	mg/L	"	" "	0.5	2
Dichlorobromomethane	µg/L	"	" "	0.5	2
Dichloromethane	mg/L	"	" "	0.5	2
1,3-dichloropropene	mg/L	"	" "	See Table II-1 and II-2 of 2005 Ocean Plan	
dieldrin	ng/L	"	" "	0.01	--
2,4-dinitrotoluene	mg/L	"	" "	10	5
1,2-diphenylhydrazine	µg/L	"	" "	--	1
Halomethanes[11]	mg/L	"	" "		
Heptachlor	µg/L	"	" "	0.01	--

[9] Chlordane shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.
[10] DDT shall mean the sum of 4,4-DDT, 2,4-DDT, 2,4-DDE, 4,4-DDD, and 2,4-DDD.
[11] Halomethanes shall mean the sum of bromoform, bromomethane (methyl bromide), chloromethane (methyl chloride), chlorodibromomethane, and dichlorobromomethane.

Parameter	Units	Type of Sample	Minimum Frequency of Analysis	Minimum Levels (µg/L)	
				Gas Chromatography Method	Gas Chromatograpy / Mass Spectrometry Method
Heptachlor epoxide	µg/L	" "	" "	0.01	--
Hexachlorobenzene	ng/L	" "	" "	--	1
Hexachlorobutadiene	mg/L	" "	" "	5	1
Hexachloroethane	mg/L	" "	" "	5	1
N-nitrosodimethylamine	mg/L	" "	" "	10	5
N-nitrosodi-N-propylamine	mg/L	" "	" "	10	5
N-nitrosodiphenylamine	mg/L	" "	" "	10	1
PAHs[12]	µg/L	" "	" "	See Appendix II of 2005 Ocean Plan	
PCBs[13]	ng/L	" "	" "	See Table II-4 of 2005 Ocean Plan	
TCDD equivalents[14]	pg/L	" "	" "	--	--
1,1,2,2-tetrachloroethane	g/L	" "	" "	0.5	2
Tetrachloroethylene	mg/L	" "	" "	0.5	2
Toxaphene	ng/L	" "	" "	0.5	--

[12] PAHs (polynuclear aromatic hydrocarbons) shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene.

[13] PCBs (polychlorinated biphenyls) shall mean the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.

[14] TCDD equivalents shall mean the sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown below:

Isomer Group	Toxicity Equivalent Factor	Isomer Group	Toxicity Equivalent Factor
2,3,7,8-tetra CDD	1.0	1,2,3,7,8-penta CDF	0.05
2,3,7,8-penta CDD	0.5	2,3,4,7,8-penta CDF	0.5
2,3,7,8-hexa CDDs	0.1	2,3,7,8-hexa CDFs	0.1
2,3,7,8-hepta CDD	0.01	2,3,7,8-hepta CDFs	0.01
octa CDD	0.001	octa CDF	0.001
2,3,7,8-tetra CDF	0.1		

Parameter	Units	Type of Sample	Minimum Frequency of Analysis	Minimum Levels (µg/L)	
				Gas Chromatography Method	Gas Chromatograpy / Mass Spectrometry Method
Trichloroethylene	mg/L	" "	" "	0.5	2
2,4,6-trichlorophenol	µg/L	" "	" "	10	10
Vinyl Chloride	mg/L	" "	" "	0.5	2

B. Mass Emission Goals

The Discharger shall report the mass emission rates for all constituents that have mass emission effluent goals listed below, and the flow used to calculate the mass emission rates for each constituent. Annual mass emissions will be compared to performance based mass emission goals. For compounds with detectable concentrations, exceedances of performance-based mass emission goals shall be considered indicative of a statistically significant increase in loading and will trigger an antidegradation analysis in the following permit cycle.

OBJECTIVES FOR THE PROTECTION OF MARINE LIFE

Constituent	Value	Units
Arsenic[15]	17	kg/yr
Cadmium	88	kg/yr
Chromium	93	kg/yr
Copper[16]	690	kg/yr
Lead	465	kg/yr
Mercury	1.4	kg/yr
Nickel	142	kg/yr
Selenium	65	kg/yr
Silver	28	kg/yr
Zinc[16]	244	kg/yr
Cyanide, Total[16]	71	kg/yr
Endosulfan	3	kg/yr
Endrin	1	kg/yr
HCH	228	kg/yr

[15] The performance-based mass emission goal was determined from the 99th percentile of historically detected effluent concentrations, and a flow of 2.06 MGD.

OBJECTIVES FOR THE PROTECTION OF HUMAN HEATH – NONCARCINOGENS

Constituent	Value	Units
Acrolein	--	--
Antimony	285	kg/yr
Bis(2-chloroethoxy) methane	142	kg/yr
Bis(2-chloroisopropyl)ether	--	--
chlorobenzene	--	--
Chromium III	--	--
Di-n-butyl phthalate	142	kg/yr
Dichlorobenzene	5.7	kg/yr
1,1-Dichloroethene	3	kg/yr
Diethyl phthalate	191	kg/yr
Dimethyl phthalate	142	kg/yr
2-Methyl-4,6-dinitrophenol	142	kg/yr
2,4-Dinitrophenol	342	kg/yr
Ethylbenzene	3	kg/yr
Fluoranthene	142	kg/yr
hexachlorocyclopentadiene	--	--
Isophorone	142	kg/yr
Nitrobenzene	142	kg/yr
Thallium	285	kg/yr
Toluene[16]	4	kg/yr
1,1,2,2-Tetrachloroethane	3	kg/yr
1,1,1-Trichloroethane (TCA)	3	kg/yr
1,1,2-Trichloroethane	3	kg/yr

OBJECTIVES FOR THE PROTECTION OF HUMAN HEALTH – CARCINOGENS

Constituent	Value	Units
Acrylonitrile	--	--
Aldrin	0.01	kg/yr
Benzene[16]	12	kg/yr
Benzidine	0.03	kg/yr
Beryllium	28	kg/yr
Bis (2-chloroethyl) Ether	17	kg/yr
Bis(2-ethylhexyl) Phthalate	320	kg/yr
Carbon Tetrachloride	3	kg/yr
Chlordane	8.8	g/yr
Chloroform[16]	5	kg/yr
DDT	60	g/yr
1,4-Dichlorobenzene	57	kg/yr
3,3-Dichlorobenzidine	3.1	kg/yr
1,2-Dichloroethane	3	kg/yr

Constituent	Value	Units
dichloromethane	--	--
1,3-dichloropropene	--	--
Dieldrin	0.02	kg/yr
2,4-Dinitrotoluene	142	kg/yr
1,2-Diphenylhydrizine	60	kg/yr
Halomethanes[16]	25	kg/yr
Heptachlor	0.27	kg/yr
Hexachlorobenzene	0.08	kg/yr
Hexachlorobutadiene	142	kg/yr
Hexachloroethane	142	kg/yr
N-Nitrosodimethylamine	342	kg/yr
N-Nitrosodiphenylamine	142	kg/yr
PAHs	3.4	kg/yr
PCBs	7.3	g/yr
Dibenzofuran	57	kg/yr
Dioxin (Total TCDD equivalents)	1.48	mg/yr
Tetrachloroethene[16]	4	kg/yr
Toxaphene	0.08	kg/yr
Trichloroethene (TCE)	3	kg/yr
2,4,6-Trichlorophenol	114	kg/yr
Vinyl Chloride	3	kg/yr

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Chronic Toxicity Testing

The presence of chronic toxicity shall be estimated as specified in Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA-821/600/R-95/136; Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, EPA-600-4-91-003; Procedures Manual for Conducting Toxicity Tests developed by the Marine Bioassay Project, SWRCB 1996, 96-1WQ; and/or Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, EPA/600/4-87-028 or subsequent editions.

Chronic toxicity measures a sublethal effect (e.g., reduced growth or reproduction) to experimental test organisms exposed to an effluent compared to that of the control organisms.

Chronic Toxicity (TUc) = 100/NOEL.

The no observed effect level (NOEL) is the maximum tested concentration in a medium which does not cause known adverse effects upon chronic exposure in the

species in question (i.e., the highest effluent concentration to which organisms are exposed in a chronic test that causes no observable adverse effects on the test organisms; e.g., the highest concentration of a toxicant to which the values for the observed responses are not statistically significantly different from the controls). Examples of chronic toxicity include but are not limited to measurements of toxicant effects on reproduction, growth, and sublethal effects that can include behavioral, physiological, and biochemical effects.

In accordance with the 2005 Ocean Plan, Appendix III, *Standard Monitoring Procedures*, the Discharger shall use the critical life stage toxicity tests specified in the table below to measure TUc. Other species or protocols will be added to the list after State Water Board review and approval.

A minimum of two test species with approved test protocols shall be used to measure compliance with the toxicity objective. If possible, the test species shall include a fish, an invertebrate, and an aquatic plant. After a screening period of no fewer than two tests, monitoring can be reduced to the most sensitive species. Dilution and control water should be obtained from an unaffected area of the receiving waters. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay test and reported with the test results.

Table E-4. Approved Tests—Chronic Toxicity

Species	Test	Tier[1]	Reference[2]
Giant kelp, *Macrocystis pyrifera*	percent germination; germ tube length	1	a, c
Red abalone, *Haliotis rufescens*	abnormal shell development	1	a, c
Oyster, *Crassostrea gigas*; mussels, *Mytilus spp.*	abnormal shell development; percent survival	1	a, c
Urchin, *Strongylocentrotus purpuratus*; sand dollar, *Dendraster excentricus*	percent normal development	1	a, c
Urchin, *Strongylocentrotus purpuratus*; sand dollar, *Dendraster excentricus*	percent fertilization	1	a, c
Shrimp, *Homesimysis costata*	percent survival; growth	1	a, c
Shrimp, *Mysidopsis bahia*	percent survival; fecundity	2	b, d
Topsmelt, *Atherinops affinis*	larval growth rate; percent survival	1	a, c
Silverside, *Menidia beryllina*	larval growth rate; percent survival	2	b, d

1 - First tier methods are preferred for compliance monitoring. If first tier organisms are not available, the Discharger can use a second tier test method following approval by the Regional Water Board.

2 - Protocol References:

a. Chapman, G.A., D.L. Denton, and J.M. Lazorchak. 1995. Short-term Methods for Estimating the Chronic

Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms. USEPA Report No. EPA/600/R-95/136.

b. Klemm, D.J., G.E. Morrison, T.J. Norberg-King, W.J. Peltier, and M.A. Heber. 1994. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms. USEPA Report No. EPA-600-4-91-003.

c. SWRCB 1996. Procedures Manual for Conducting Toxicity Tests Developed by the Marine Bioassay Project. 96-1WQ.

d. Weber, C.I., W.B. Horning, I.I., D.J. Klemm, T.W. Nieheisel, P.A. Lewis, E.L. Robinson, J. Menkedick and F. Kessler (eds). 1998. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms. EPA/600/4-87/028. National Information Service, Springfield, VA.

Dilution and control waters shall be obtained from an area of the receiving waters, typically upstream, which is unaffected by the discharge. Standard dilution water can be used, if the receiving water itself exhibits toxicity or if approved by the Central Coast Water Board. If the dilution water used in testing is different from the water in which the test organisms were cultured, a second control sample using culture water shall be tested.

A minimum of two test species with approved test protocols with approved test protocols shall be used to measure compliance with the toxicity objective. If possible, the test species shall include a vertebrate, an invertebrate, and an aquatic plant. The sensitivity of test organisms to a reference toxicant shall be determined concurrently with each bioassay and reported with the test results. After a screening period of no less than three tests, monitoring may be reduced to the most sensitive species.

The Discharger shall include a full report of toxicity test results with the regular monthly monitoring report and include the following information.

a. toxicity test results,

b. dates of sample collection and initiation of each toxicity test, and

c. acute and/or chronic toxicity discharge limitations (or value).

Toxicity test results shall be reported according to the appropriate guidance - Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, USEPA Office of Water, EPA-821-R-02-012 (2002) or the latest edition, or Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA-821-R-02-012 (2002) or subsequent editions.

If the initial investigation TRE workplan is used to determine that additional (accelerated) toxicity testing is unnecessary, these results shall be submitted with the monitoring report for the month in which investigations conducted under the TRE workplan occurred.

Within 14 days of receipt of test results exceeding a chronic toxicity discharge limitation, the Discharger shall provide written notification to the Executive Officer of:

a. Findings of the TRE or other investigation to identify the cause(s) of toxicity,

b. Actions the Discharger has taken/will take, to mitigate the impact of the discharge and to prevent the recurrence of toxicity.

When corrective actions, including a TRE, have not been completed, a schedule under which corrective actions will be implemented, or the reason for not taking corrective action, if no action has been taken.

B. Toxicity Identification / Reduction Evaluations

If the discharge consistently exceeds an effluent limitation for toxicity specified by Section IV of this Order, the Discharger shall conduct a Toxicity Reduction Evaluation (TRE) in accordance with the Discharger's TRE Workplan.

A TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A TOXICITY IDENTIFICATION EVALUATION (TIE) may be required as part of the TRE, if appropriate. A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases - characterization, identification, and confirmation using aquatic organism toxicity tests. The TRE shall include all reasonable steps to identify the source of toxicity. The Discharger shall take all reasonable steps to reduce toxicity to the required level once the source of toxicity is identified.

The Discharger shall maintain a TRE Workplan, which describes steps that the Discharger intends to follow in the event that a toxicity effluent limitation established by this Order is exceeded in the discharge. The workplan shall be prepared in accordance with current technical guidance and reference material, including EPA/600/2-88-070 (for industrial discharges) or EPA/600/2-88/062 (for municipal discharges), and shall include, at a minimum:

1. Actions that will be taken to investigate/identify the causes/sources of toxicity,

2. Actions that will be evaluated to mitigate the impact of the discharge, to correct the non-compliance, and/or to prevent the recurrence of acute or chronic toxicity (this list of action steps may be expanded, if a TRE is undertaken), and

3. A schedule under which these actions will be implemented.

When monitoring measures toxicity in the effluent above the limitation established by this Order, the Discharger shall resample immediately, if the discharge is continuing, and retest for whole effluent toxicity. Results of an initial failed test and results of subsequent monitoring shall be reported to the Executive Officer (EO) as soon as possible following receipt of monitoring results. The EO will determine whether to

initiate enforcement action, whether to require the Discharger to implement a TRE, or to implement other measures. The Discharger shall conduct a TRE giving due consideration to guidance provided by the *USEPA's Toxicity Reduction Evaluation Procedures, Phases 1, 2, and 3* (EPA document nos. EPA 600/3-88/034, 600/3-88/035, and 600/3-88/036, respectively). A TRE, if necessary, shall be conducted in accordance with the following schedule.

Table 11. Toxicity Reduction Evaluation—Schedule

Action Step	When Required
Take all reasonable measures necessary to immediately reduce toxicity, where the source is known.	Within 24 hours of identification of noncompliance.
Initiate the TRE in accordance to the Workplan.	Within 7 days of notification by the EO
Conduct the TRE following the procedures in the Workplan.	Within the period specified in the Workplan (not to exceed one year, without an approved Workplan)
Submit the results of the TRE, including summary of findings, required corrective action, and all results and data.	Within 60 days of completion of the TRE
Implement corrective actions to meet Permit limits and conditions.	To be determined by the EO

VI. RECLAMATION MONITORING REQUIREMENTS

If reclaimed water is used, the the Discharger shall comply with applicable State and local monitoring requirements regarding the production and use of reclaimed wastewater, including requirements established by the DHS at title 22, sections 60301 - 60357 of the CCR, Water Recycling Criteria.

VII. RECEIVING WATER MONITORING REQUIREMENTS

A. Surf-Zone Monitoring

Surf-zone monitoring locations are described in Section II, *Monitoring Locations*, above. Surf zone monitoring is conducted to assess bacteriological conditions in areas used for body-contact sports (e.g. surfing) and where shellfish may be harvested for human consumption and to assess aesthetic conditions for general recreational uses (e.g., picnicking, boating, etc.). Grab samples shall be taken at all surf-zone monitoring stations whenever effluent Total Coliform bacteria in effluent exceeds 2400 MPN/100 mL. Such monitoring shall continue daily for four consecutive days or until effluent returns to compliance with the 30-day median of 23 MPN/100 mL, whichever is longer. The Executive Officer or USEPA may require daily surf-zone monitoring to continue beyond four days if deemed necessary to determine compliance with receiving water limitations. Sampling shall be conducted during daylight hours, one to three hours prior

to peak high tide (i.e., incoming tide). The sample shall be collected as far seaward within the surf zone as possible. Samples shall be analyzed for Total and Fecal Coliform[16,17], and Enterococcus[18], and reported in units of MPN/100 mL.

Monitoring shall also include observations of wind (direction and speed), weather (e.g., cloudy, sunny, rainy), waves, longshore currents (e.g., direction), and tidal conditions (e.g., rising tide, slack). Observations of water discoloration, floating oil and grease, turbidity, odor and materials of sewage origin in the water or on the beach shall be recorded. The water temperature (Celsius) shall also be recorded.

B. Receiving Water (Ocean) Monitoring

Ocean monitoring locations are described in Section II, *Monitoring Locations*, above. Data may be obtained using multiple electronic probes (as appropriate) to measure parameters (i.e., dissolved oxygen, pH, salinity, temperature, and natural light) through the entire water column, or by measurement of discrete samples collected at 0.3 meters below the surface, 3 meter intervals within the water column, and 2 meters above the seabed.

In addition to the vertical profiling conducted at the six fixed stations, a receiving-water survey shall be conducted by continuously towing an electronic instrumentation package at two depths around and across the zone of initial dilution. One survey shall be conducted in the upper water column, near the base of the shallow thermocline. Another survey shall be conducted immediately above the benthic boundary layer, approximately 5 meters above the bottom. The towed instrumentation package shall pass over the zone of initial dilution at least five times during the survey. Vessel speed and sampling rates shall be sufficient to collect at least one sample for every meter traversed.

Water sampling shall be collected between the hours of 6 AM and 6 PM at all receiving water monitoring stations and analyzed as follows:

Constituent	Units	Sample Type	Minimum Frequency of Sampling/Analysis
Floating Particulates	Visual	Surface	Quarterly
Grease and Oil	Visual	Surface	Quarterly
Discoloration	Visual	Surface	Quarterly

[16] For all bacterial analyses, sample dilutions shall be performed so the range of values extends from 2 to 16,000 MPN/100mL. The detection methods used for each analysis shall be reported with the results of the analysis.

[17] Detection methods used for Total and Fecal Coliform shall be those presented in the most recent edition of Standard Methods for the Examination of Water and Wastewater or any improved method approved by USEPA and determined appropriate by the Executive Officer.

[18] Detection methods used for Enterococcus shall be those presented in EPA publication EPA 600/4-85/076, "Test Methods for Escherichia coli and Enterococci in Water by Membrane Filter Procedure", or any improved method approved by EPA and determined appropriate by the Executive Officer.

Natural light and/or total irradiance	Light transmissivity and/or total irradiance	Entire water column	Quarterly
Dissolved Oxygen	mg/L	Entire water column	Quarterly
pH	units	Entire water column	Quarterly
Salinity	ppt	Entire water column	Quarterly
Temperature	°C	Entire water column	Quarterly

VIII. BENTHIC MONITORING

A. Benthic Sediment Monitoring

Benthic monitoring locations are described in Section II, *Monitoring Locations*, above. Benthic monitoring shall assess the temporal and spatial occurrence of pollutants in local marine sediments and to evaluate the physical and chemical quality of the sediments in relation to the outfall. Sediment monitoring shall be conducted annually, in October. Three grab samples shall be collected using a 0.1 m2 Van Veen grab sampler at each benthic monitoring station. A composite of these three samples should be analyzed as follows:

Parameter	**Units**	**Minimum Frequency of Sampling/Analysis**
Sediment particle size	phi size (% volume)	Annually
Organic Matter	volatile solids or TOC (mg/kg)	Annually
Biochemical Oxygen Demand	mg/L	Annually
Total Kjeldahl Nitrogen	mg/L	Annually
Grease and oil	mg/L	Annually
Aluminum	µg/kg	Annually
Iron	µg/kg	Annually
Arsenic	µg/kg	Annually
Cadmium	µg/kg	Annually
Total Chromium	µg/kg	Annually
Copper	µg/kg	Annually
Lead	µg/kg	Annually
Mercury	µg/kg	Annually
Nickel	µg/kg	Annually
Silver	µg/kg	Annually
Zinc	µg/kg	Annually

Parameter	Units	Minimum Frequency of Sampling/Analysis
Nonchlorinated Phenolics	µg/kg	Once in the life of permit (2009)
Chlorinated Phenolics	µg/kg	Once in the life of permit (2009)
Aldrin	µg/kg	Once in the life of permit (2009)
Dieldrin	µg/kg	Once in the life of permit (2009)
Chlordane	µg/kg	Once in the life of permit (2009)
DDT, DDE, DDD	µg/kg	Once in the life of permit (2009)
Endrin	µg/kg	Once in the life of permit (2009)
PAHs	µg/kg	Once in the life of permit (2009)
PCBs	µg/kg	Once in the life of permit (2009)
Toxaphene	µg/kg	Once in the life of permit (2009)

When processing samples for analysis, macrofauna and large remnants greater than 0.25 inches (0.64 cm) should be removed, taking care to avoid contamination.

Sediment samples shall be analyzed according to Quality Assurance and Quality Control (QA/QC) for 301(h) Monitoring Programs: Guidance on Field and Laboratory Methods (EPA 430/9-86-004, 1987) and Analytical Methods for USEPA Priority Pollutants and 301(h) Pesticides in Estuarine and Marine Sediments (EPA 503-6-90-004), 1986).

All sediment metal chemistry results shall be reported in the raw form and expressed on a dry weight basis. For all non-detect results, parameter detection limits shall be reported. Dry weight concentration target detection levels are indicated for National Oceanic and Atmospheric Administration (NOAA) National Status and Trends Program analyses.

Benthic monitoring results shall be included in the annual report with a complete discussion of benthic sediment survey results and potential influence of the discharge on sediment conditions in the study area. The discussion should be based on graphical, tabular, and/or appropriate statistical analyses of spatial and temporal patterns observed for raw sediment parameters. The annual report should also present an analysis of natural variation in sediment conditions, etc., which could influence the validity of study results. The Discharger's sediment results may also be compared with the results of other applicable studies, numeric protective levels, etc., as appropriate.

Survey results shall be compared to pre-discharge and/or historical data using appropriate statistical methods.

B. Benthic Community Monitoring

Benthic infaunal organisms shall be monitored annually, in October, at the benthic monitoring stations described in Section II, *Monitoring Locations*, above. Benthic infaunal monitoring shall assess the temporal and spatial status of local benthic communities in relation to the outfall. Sampling shall be conducted as follows:

1. Collection: Five replicate samples shall be collected at each station using a 0.1 m^2 Van Veen grab sampler.

2. For benthic infauna analyses, each replicate sample shall be passed through a 1 mm screen, and the organisms retained and preserved as appropriate for subsequent identification. It is recommended that sample preservation, sample processing, and data analyses be conducted according to Quality Assurance and Quality Control (QA/QC) for 301(h) Monitoring Programs: Guidance on Field and Laboratory Methods (EPA 430/9-86-004, 1987).

3. Benthic infauna from each replicate sample shall be counted and identified to the lowest possible taxon. For each replicate sample, number of individuals, number of species, and number of individuals per species, and within each major taxonomic group (polychaetes, molluscs, crustaceans, echinoderms, and all other macroinvertebrates) shall be recorded.

4. The annual report shall include a complete discussion of benthic infaunal survey results and (possible) influence of the outfall on benthic infauna communities in the study area. The discussion should be based on graphical, tabular, and/or appropriate statistical analyses of spatial and temporal patterns. Temporal trends in the number of individuals, number of species, number of individuals per species, and community structure indices, species richness (S), Margalef index (d), Shannon-Wiener index (H'), Brillouin index (h), Simpson's Index (SI), Swartz's dominance, and Infaunal Trophic Index (ITI) shall be reported. The annual report should also present an analysis of natural community variation including the effects of different sediment conditions, oceanic seasons, and water temperatures, etc., that could influence the validity of study results. Survey results shall be compared to pre-discharge and/or historical data using appropriate statistical methods.

IX. BIOSOLIDS MONITORING

The following information shall be submitted with the Annual Report required by Standard Provision C.16. Adequate detail should be included to characterize biosolids in accordance with 40 CFR 503.

1. A representative sample of residual solids (biosolids) shall be obtained from the last point in the handling process (i.e., in the drying beds just prior to removal). All

constituents shall be analyzed annually for total concentrations for comparison with TTLC criteria. The Waste Extraction Test shall be performed on any constituent when the total concentration of the waste exceeds ten times the STLC limit for that substance. Twelve (12) discrete representative samples shall be collected at separate locations in the biosolids ready for disposal. These 12 samples shall be composited to form one (1) sample for constituent analysis. For accumulated, previously untested biosolids, the Discharger shall develop a representative sampling plan including number and location of sampling points, and collect representative samples. The analysis shall test for the metals required in 40 CFR 503.16 (for land application) or 503.26 (for surface disposal), using the methods in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (EPA Publication SW-846, all applicable editions and updates), as required in 503.8(b)(4), at the minimum frequencies established therein, provided in the table below.

Table E-6. Amount of Biosolids and Frequency for Analysis

Amount[1] (dry metric tons/ 365-day period)	**Frequency[2]**
Greater than zero, but less than 290	Once per year.
Equal to or greater than 290 but less than 1500	Once per quarter (four times per year)
Equal to or greater than 1500 but less than 15,000	Once per sixty days (six times per year)
Greater than 15,000	Once per month (twelve times per year)

1 - For land application, either the amount of bulk biosolids applied to the land or the amount prepared for sale or give-away in a bag or other container for application to the land (dry weight basis). If the Discharger's biosolids are directly land applied without further treatment by another preparer, biosolids shall also be tested for organic-N, ammonium-N, and nitrate-N at the frequencies required. For surface disposal, the amount of biosolids placed on an active sludge unit (dry weight basis).
2 - Test results shall be expressed in mg pollutant per kg biosolids on a 100% dry weight basis.

Biosolids shall be analyzed annually for the constituents in the following table.

Table E-7. Biosolids Monitoring

Constituent	**Units**	**Type of Sample**	**Sampling/Analysis Frequency**
Quantity Removed	Tons or yds^3	Measured	Continual
Pathogen Density			per 40 CFR 503
Location of Reuse/Disposal	General Public or Specific Site		
Moisture Content	%	Grab	Annually
pH	Standard Units	Grab	Annually
Total Kjedldahl Nitrogen	mg/kg (dry)[1]	Grab	Annually
Ammonia(N)	mg/kg	Grab	Annually

Nitrate(N)	mg/kg	Grab	Annually
Total Phosphorus	mg/kg	Grab	Annually
Grease and Oil	mg/kg	Grab	Annually
Arsenic	mg/kg	Grab	Annually
Boron	mg/kg	Grab	Annually
Cadmium	mg/kg	Grab	Annually
Copper	mg/kg	Grab	Annually
Chromium (Hexavalent)	mg/kg	Grab	Annually
Lead	mg/kg	Grab	Annually
Mercury	mg/kg	Grab	Annually
Molybdenum	mg/kg	GRab	Annually
Nickel	mg/kg	Grab	Annually
Selenium	mg/kg	Grab	Annually
Silver	mg/kg	Grab	Annually
Zinc	mg/kg	Grab	Annually
Priority Pollutants (excluding asbestos)	mg/kg	Grab	Annually

1 - Total sample (including solids and any liquid portion) to be analyzed and results reported as mg/kg based on the dry weight of the sample.

2. Prior to land application, the Discharger shall demonstrate that the biosolids meet Class A or Class B pathogen reduction levels by one of the methods listed in 40 CFR 503.32 (unless transferred to another preparer who demonstrates pathogen reduction.) Prior to disposal in a surface disposal site, the Discharger shall demonstrate that the biosolids meet Class B levels or shall ensure that the site is covered at the end of each operating day. If pathogen reduction is demonstrated using a "Process to Significantly/Further Reduce Pathogens "(PFRP), the Discharger shall maintain daily records of the operating parameters to achieve this reduction.

   The following applies when biosolids from the Discharger are directly land applied as Class B, without further treatment by a second preparer. If the Discharger demonstrates pathogen reduction by direct testing for fecal coliforms and/or pathogens, samples must be drawn at the frequency in the Amount/Frequency table above. If the Discharger demonstrates Class B pathogen reduction by testing for fecal coliform, at least seven grab samples must be drawn and analyzed during each monitoring event, and a geometric mean calculated from these seven samples. If the Discharger demonstrates Class A pathogen reduction by testing for fecal coliform and/or salmonella, plus one of the PFRP processes or testing for enteric viruses and helminth ova at least four samples of fecal coliform or salmonella must be drawn during each monitoring event. All four samples must meet the limits specified in 40 CFR 503.32(a).

3. For biosolids that are land applied or placed in a surface disposal site, the Discharger shall track and keep records of the operational parameters used to achieve Vector Attraction Reduction requirements in 40 CFR 503.33(b).

4. Class 1 facilities (facilities with pretreatment programs or others designated as Class1 by the regional Administrator) and Federal facilities with greater than five MGD influent flow shall sample biosolids for pollutants listed under Section 307(a) of the CWA (as required in the pretreatment section of the permit for POTWs with pretreatment programs). Class 1 facilities and Federal facilities greater than 5 MGD shall test dioxins/dibenzofurans using a detection limit of less than one pg/g at the time of their next priority pollutant scan if they have not done so within the past five years, and once per five years thereafter.

5. The biosolids shall be tested annually, or more frequently if necessary, to determine hazardousness. All constituents regulated under CCR Title 22, division 5, chapter 11, article 3 shall be analyzed for comparison with Total Threshold Limit Concentration (TTLC) criteria. The Waste Extraction Test shall be performed on any constituent when the total concentration of the waste exceeds ten times the Soluble Threshold Limit Concentration Limit Concentration (STLC) limit for that substance.

6. If biosolids are placed in a surface disposal site (dedicated land disposal site or monofill), a qualified groundwater scientist shall develop a groundwater monitoring program for the site, or shall certify that the placement of biosolids on the site will not contaminate an aquifer.

7. Biosolids placed in a municipal landfill shall be tested by the Paint Filter Liquids Test (EPA Method 9095) at the frequency determined by Table E-8, or more often if necessary to demonstrate that there are no free liquids.

8. The Discharger, either directly or through contractual agreements with their biosolids management contractors, shall comply with the following notification requirements:

    a. *Notification of non-compliance.* The Discharger shall notify EPA Region 9, the Central Coast Water Board, and the Regional Board located in the region where the biosolids are used or disposed, of any non-compliance within 24 hours if the non-compliance may seriously endanger health or the environment. For other instances of non-compliance, the Discharger shall notify EPA Region 9 and the affected Regional Water Quality Boards of any non-compliance in writing within five working days of becoming aware of the non-compliance. The Discharger shall require their biosolids management contractors to notify EPA Region 9 and the affected Regional Water Quality Boards of any non-compliance within the same time frames.

    b. If biosolids are shipped to another State or Indian lands, the Discharger must send notice at least 60 days prior to the shipment to the permitting authorities in the receiving State or Indian land (the EPA Regional Office for that area and the State/Indian authorities).

c. *For land application (in cases where Class B biosolids are directly applied without further treatment):* Prior to reuse of any biosolids from the Discharger's facility to a new or previously unreported site, the Discharger shall notify EPA, the Central Coast Water Board, and any other affected Regional Water Quality Board. The notification shall include description of the crops or vegetation to be grown, proposed loading rates and determination of agronomic rates.

If any biosolids within a given monitoring period do not meet 40 CFR 503.13 metals concentrations limits, the Discharger (or its contractor) must pre-notify EPA, and determine the cumulative metals loading to that site to date, as required in 40 CFR 503.12. The Discharger shall notify the applier of all the applier's requirements under 40 CFR 503, including the requirement that the applier certify that the management practices, site restrictions, and any applicable vector attraction reduction requirements have been met. The Discharger shall require the applier to certify at the end of 38 months following application of Class B biosolids that the harvesting restrictions in effect for up to 38 months have been met.

d. *For surface disposal:* Prior to disposal to a new or previously unreported site, the Discharger shall notify EPA and the Central Coast Water Board. The notice shall include a description and a topographic map of the proposed site, depth to groundwater, whether the site is lined or unlined, site operator, site owner, and any State or local permits. The notice shall describe procedures for ensuring public access and grazing restrictions for three years following site closure. The notice shall include a groundwater monitoring plan or description of why groundwater monitoring is not required.

9. The Discharger shall submit an annual biosolids report to the EPA Region 9 Biosolids Coordinator and Central Coast Water Board by February 19th of each year (per USEPA guidance and 40 C.F.R. 503) for the period covering the previous calendar year. This report shall include:

   a. Annual biosolids removed in dry tons and percent solids.

   b. If appropriate, a narrative description of biosolids dewatering and other treatment processes, including process parameters, including a schematic diagram showing biosolids handling facilities. For example, if drying beds are used, report depth of application and drying time. If composting is used, report the temperature achieved and duration.

   c. A description of disposal methods, including the following information as applicable related to the disposal methods used at the facility. If more than one method is used, include the percentage and tonnage of annual biosolids production disposed by each method.

      (1) For landfill disposal include: 1) the Central Coast Water Board WDR numbers that regulate the landfills used, 2) the present classifications of the landfills used, 3) the results of any groundwater monitoring, 4)

certifications of management practices, and 5) the names and locations of the facilities receiving biosolids.

(2) For land application include: 1) the location of the site(s), 2) the Central Coast Water Board's WDR numbers that regulate the site(s), 3) the application rate in lbs/acre/year (specify wet or dry), 4) certifications of management practices and site restrictions, and 5) subsequent uses of the land.

(3) For offsite application by a licensed hauler and composter include: 1) the name, address and USEPA license number of the hauler and composter.

d. Copies of analytical data required by other agencies (i.e. USEPA or County Health Department) and licensed disposal facilities (i.e. landfill, land application, or composting facility) for the previous year.

e. Descriptions of pathogen reduction methods and vector attraction reduction methods. Including supporting time and temperature data, and certifications, as required in 40 CFR 503.17 and 503.27.

f. Names, mailing address, and street addresses of persons who received biosolids for storage, further treatment, disposal in a municipal waste landfill, or for other use or disposal methods not covered above, and amounts delivered to each.

g. For all biosolids used or disposed at the Discharger's facility, the site and management practice information and certification required in 40 CFR 503.17 and 503.27.

h. For all biosolids temporarily stored, the information required in 40 CFR 503.20 is required to demonstrate temporary storage.

i. Reports shall be submitted to:

Regional Biosolids Coordinator
USEPA (WTR-7)
75 Hawthorne St.
San Francisco, CA 94105-3901

Executive Officer
Central Coast Regional Water Quality Control Board
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401-7906

X. OUTFALL AND DIFFUSER INSPECTION

The Discharger shall conduct an inspection of the outfall pipe/diffuser system annually to ensure the proper operation and structural integrity of the system. This inspection shall

include general observations and photographic records of the outfall pipe/diffuser system and the surrounding ocean bottom in the vicinity of the outfall/diffuser. The inspection shall be conducted along the outfall pipe/diffuser system from landfall to its ocean terminus. A report detailing inspection results shall be submitted to the Central Coast Water Board and USEPA with the annual report required in Standard Provision C.8.

XI. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

B. Self Monitoring Reports (SMRs)

1. The Discharger is not currently submitting Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). At any time during the term of this permit, the State Water Board or Central Coast Water Board will provide directions for SMR submittal when the CIWQS database is available to receive the discharger's monitoring data.

2. Monthly monitoring reports shall be submitted for all monitoring and sampling herein by the last day of the month following the sampling or monitoring event. An annual report shall be submitted by April 1st of each year, in accordance with Standard Provision C.8. In addition, monitoring data (effluent and ambient) shall be submitted in an electronic format to USEPA annually, in a form that is compatible with USEPA's STORET database.

3. If results of monitoring a constituent appear to violate effluent limitations based on a weekly, monthly, 30-day, or six-month period, but compliance or non-compliance cannot be validated because sampling is too infrequent, the frequency of sampling shall be increased to validate the test within the next monitoring period. The increased frequency shall be maintained until the Executive Officer agrees the original monitoring frequency may be resumed, as stated in B.2 of the Standard Provisions and Reporting Requirements.

4. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period	SMR Due Date
Continuous	Permit effective date	All	First day of second calendar month following month of sampling

X / day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	First day of second calendar month following month of sampling
X / week	Sunday following permit effective date or on permit effective date if on a Sunday	Sunday through Saturday	First day of second calendar month following month of sampling
X / month	First day of calendar month following permit effective date or on permit effective date if that date is first day of the month	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
X / quarter	Closest of January 1, April 1, July 1, or October 1 following (or on) permit effective date	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	May 1 August 1 November 1 February 1
X / semiannual period	Closest of January 1 or July 1 following (or on) permit effective date	January 1 through June 30 July 1 through December 31	August 1 February 1
X / year	January 1 following (or on) permit effective date	January 1 through December 31	April 1

4. Reporting Protocols. The Discharger shall report with each sample result the applicable reported Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR Part 136.

   The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

      For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such

information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (± a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

d. Discharger is to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve.

5. The Discharger shall submit SMRs in accordance with the following requirements:

a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger, if submitting electronically to CIWQS, is not required to duplicate the submittal of data that is developed in tabular format. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

c. According to Section XI.B.1 of the Monitoring and reporting Program, when available, SMRs must be submitted to the CIWQS Program Web Site and certified as required by the Standard Provisions (Attachment D), to the web address listed below:

http://www.waterboards.ca.gov/ciwqs/index.html

d. An Annual Self Monitoring Report Summary shall be due on April1 following each calendar year and shall include:

I. All data required by this MRP for the corresponding monitoring period, including appropriate calculations to verify compliance with effluent limitations.

II. A discussion of any incident of non-compliance and corrective actions taken.

C. Discharge Monitoring Reports (DMRs)

1. As described in Section XI.B.1 above, at any time during the term of this permit, the State Water Board or Central Coast Water Board may notify the Discharger to electronically submit self-monitoring reports. Until such notification is given, the Discharger shall submit discharge-monitoring reports (DMRs) in accordance with the requirements described below.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharge shall submit the original DMR and one copy of the DMR to the address listed below:

   State Water Resources Control Board
   Division of Water Quality
   Discharge Monitoring Report Processing Center
   Post Office Box 100
   Sacramento, CA 95812-1000

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated or modified cannot be accepted.

D. Other Reports and Notifications

1. Cat Litter Public Education Outreach Annual Report. The Discharger shall include, as part of the April 1 annual self-monitoring report, a description of actions taken within the reporting year to implement the cat waste disposal outreach program and any proposed changes to the outreach program in the coming reporting year. Any changes in level of effort identified in Section VI.C.5 and implementation goals as a result of annual reevaluations shall be included in the annual report with adequate justification.

2. Cat Litter Public Education Outreach Work Plan. The Discharger shall develop a work plan that describes the planned public education activities. The cat litter public education work plan shall be due six (6) months after the effective date of this order.

3. Sanitary sewer overflows associated with the Discharger's collection system are subject to the online reporting and notifications requirements set forth in the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems Order No. 2006-0003-DWQ. The Discharger has enrolled under the statewide waste discharge requirements for sanitary sewer systems on as stated in Finding V of this Order. Therefore, all prohibitions, provisions, and monitoring and reporting requirements apply to the Discharger. For any discharges of sewage to a drainage channel or surface water, the Discharger is required to notify the State Office of Emergency Services, the local; health officer of directors of environmental health with jurisdiction over affected water bodies, and the Central Coast Water Board, within two (2) hours after becoming aware of the discharge. Additionally, within 24-

hours the Discharger shall submit to the Central Coast Water Board certification that the appropriate agencies (i.e., Office of Emergency Services and Environmental Health) have been notified of the sewage discharge to surface water bodies.

Additionally, any sanitary sewer overflows or wastewater (either partially treated or untreated) that are released at the wastewater treatment plant are subject to the same notifications requirements as mentioned above for collections systems.

Attachment F – Fact Sheet – Table of Contents

ATTACHMENT F – FACT SHEET

As described in Section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility:

WDID:	3 400103001
Discharger:	City of Morro Bay and Cayucos Sanitary District
Name of Facility:	Morro Bay/Cayucos WWTP
Facility Address:	160 Atascadero Road Morro Bay, California 93442 San Luis Obispo County
Facility Contact, Title and Phone:	Bruce Keogh, Wastewater Division Manager, (805) 772-6272
Authorized Person to Sign and Submit Reports:	Bruce Keogh, Wastewater Division Manager, (805) 772-6272
Mailing Address:	595 Harbor Street, Morro Bay, California 93442
Billing Address:	595 Harbor Street, Morro Bay, California 93442
Type of Facility:	Municipal WWTP
Major or Minor Facility:	Major
Threat to Water Quality:	1
Complexity:	B
Pretreatment Program:	No
Reclamation Requirements:	None
Facility Permitted Flow:	Peak seasonal dry weather flow of 2.36 MGD
Facility Design Flow:	Annual average of 2.06 MGD, Peak seasonal dry weather flow of 2.36 MGD
Watershed:	Estero Bay
Receiving Water:	Pacific Ocean
Receiving Water Type	Ocean

A. The City of Morro Bay and Cayucos Sanitary District (hereinafter Discharger) are the owner and operator of the Morro Bay/Cayucos Wastewater Treatment Plant (hereinafter Facility), a municipal wastewater treatment plant.

B. The Facility discharges wastewater to the Pacific Ocean at Estero Bay, a water of the United States, and is currently regulated by Order No. 98-15 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0047881, which was adopted

by the Central Coast Water Board on December 11, 1998. The permit expired March 1, 2004, but continues in force until the effective date of the new permit, in accordance with 40 CFR Part 122.6.

C. The Discharger applied for reissuance of its 301(h)-modified permit on July 7, 2003.

II. FACILITY DESCRIPTION

A. Description of Wastewater and Biosolids Treatment. The treatment plant provides treatment by a split stream process of physical and biological treatment. All wastewater flows through primary sedimentation basins. Approximately 1 MGD flows through secondary treatment facilities, including trickling filters, solids-contact, and secondary clarification. Secondary treated wastewater is then blended with primary treated wastewater and disinfected by chlorination, and then dechlorinated prior to discharge to the Pacific Ocean. Historically, biosolids have been anaerobically digested and dried, composted, and then trucked to the San Joaquin Valley for use as a soil conditioner. However, in the past two years, the Discharger has successfully implemented a composting operation at the treatment plant that will allow beneficial reuse of biosolids locally.

The Discharger's final Facility Master Plan includes the alternatives for upgrades. The City proposes to upgrade the facility to provide tertiary treatment. Details of the upgrades are conceptual as the Discharger is required to circulate an California Environmental Quality Act document that considers facility upgrade alternatives. However, the September 2007 Facility Master Plan recommends rehabilitation of the existing headworks and aerated grit chamber, demolition of primary clarifiers and trickling filters, construction of oxidation ditches, rehabilitation of the existing secondary clarifier and construction of a new secondary clarifier, construction of a new tertiary cloth filter, and rehabilitation of the existing chlorine contact chamber.

B. Effluent characteristics. According to the most recent monitoring data (June 2008), effluent has the following characteristics.

Table F-1. Effluent Characteristics for Conventional Parameters

Parameter	Units	Average Daily Value	Maximum Daily Value
Average Daily Flow	MGD	1.102	1.304
BOD	mg/L	48.8	53
TSS	mg/L	25	46
Total Chlorine Residual	mg/L	0.05	0.05
Total Coliform	MPN/100 mL	<2	<2
Temperature	°C	20	23
Turbitity	NTU	35.7	52
pH	s.u.	7.6	7.7
Settleable Solids	mL/L	<0.10	<0.10
Grease and Oil	mg/L	3.7	9.2
Chronic Toxicity[1]	TUc	5.6	
Ammonia (as N)	mg/L	22	22

1 – Total coliform is to be sampled semi-annually (January and July). Therefore, results shown are reflective of the January 2008 semi-annual report.

The following table provides priority pollutants that were detected in the most recent semiannual report (January 2008).

Table F-2. Effluent Characteristics for Priority Pollutants

Parameter	Units	Detected Value	Violation
Chromium	µg/L	1.1	No
Copper	µg/L	16	No
Mercury	µg/L	0.025	No
Nickel	µg/L	4.7	No
Zinc	µg/L	60	No
Arsenic	µg/L	1.2	No
Lead	µg/L	2.1	No
Selenium	µg/L	0.91	No
Chloroform	µg/L	0.93	No
Dichlorobromomethane	µg/L	0.13	No
1,4 - Dichlorobenzene	µg/L	0.16	No
Methylene Chloride	µg/L	0.19	No
Toluene	µg/L	0.24	No
Total Xylenes	µg/L	0.79	No
m- Xylenes	µg/L	0.47	No
o- xylenes	µg/L	0.32	No
Bis (2-Ethylhexyl) phthalate	µg/L	12	No

C. **Discharge Points and Receiving Waters.** Effluent is discharged to the Pacific Ocean through a 27-inch diameter outfall that terminates with a 170-foot long diffuser in approximately 50 feet of water, 2900 feet from shore. The diffuser was modeled to achieve a minimum initial dilution of 133 parts seawater for every part effluent (133:1). The zone of initial dilution is approximately 103 feet wide 240 feet long.

D. **Regulatory History.** The treatment plant was originally constructed in 1954. It was upgraded in 1964 to a capacity of 1.0 MGD. In 1982, the outfall was extended further offshore to its current location. A new treatment plant was designed in 1981 to expand capacity and meet secondary treatment standards (discussed further below). Financial aid from state and federal agencies was not available. Consequently, the treatment plant's design was modified to provide biological treatment to a majority (~1 MGD), but not all, of the projected flow. In March 1983, Central Coast Water Board staff tentatively concurred that such a discharge would comply with applicable state laws, including water quality standards, and would not result in requirements for additional treatment, pollution control, or other requirements on any other point or non-point sources.

The treatment plant was upgraded from 1983 to 1985 to a peak seasonal dry weather flow of 2.36 MGD. In 1985, USEPA approved a Clean Water Act Section 301(h) Modified NPDES Permit that waived full secondary treatment requirements for Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS). The Permit required 75% removal of TSS and included a 30-day average TSS effluent limit of 70 mg/L. The Permit required 30% removal of BOD_5 and included a 30-day average BOD_5 effluent limit of 120 mg/L.

The permit also required an extensive monitoring program. The monitoring program is discussed on page F-12.

The Permit was first reissued in 1992. The second Permit reissuance process began in May 1997. Multiple discussions between the Discharger, Central Coast Water Board staff, and USEPA staff resulted in several revisions to the permit and monitoring program, including a slight reduction in allowed mass-emissions of BOD_5, TSS, and oil & grease; expanded biosolids reporting; revised benthic sampling locations; and a revised receiving water sampling program. In July 1998, staff again determined that the discharge would comply with applicable state laws, including water quality standards, and would not result in requirements for additional treatment, pollution control, or other requirements on any other pollutant sources. USEPA issued a tentative decision to grant another modification of secondary treatment requirements in September 1998. The Central Coast Water Board approved the NPDES Permit, waiving secondary treatment requirements, in December 1998. The California Coastal Commission determined the Permit was consistent with the Coastal Zone Management Act on January 13, 1998. USEPA issued the Permit on January 26, 1999, which finally became effective March 1, 1999 (33 days after issuance).

Morro Bay/Cayucos Wastewater Treatment Plant is now one of only three remaining in California that operates under a 301(h)-modified permit. Others include Goleta Sanitary District and San Diego. In 2004, Goleta Sanitary District and the Central Coast Water Board entered an agreement requiring an upgrade to full secondary treatment standards by November 2014. Orange County Sanitation District, the largest in the nation to operate under a 301(h)-modified permit, recently elected to upgrade its treatment facilities to meet secondary treatment standards and forgo its 301(h) modified permit.

In anticipation of this Permit reissuance process, staff met with and sent a letter to the Discharger in January 2003 that requested they consider upgrading the treatment plant to meet federal secondary treatment standards and forgo their 301(h)-modified permit. In a March 20, 2003 response, City of Morro Bay Manager Robert Hendrix wrote:

> "...we are using your correspondence as a catalyst for the formation of a long-term future policy on wastewater treatment. The [Morro Bay] City Council and [Cayucos] Sanitary District Board have selected members to serve on a subcommittee to work with your staff to consider a number of alternatives, formulate a draft policy or policies, and then return to the full legislative body in the late Spring of this year [2003] with a recommended course of action."

In mid-2003, the subcommittee commissioned a study as to whether an equalization basin could be added to improve treatment efficiency and allow the discharge to meet secondary treatment standards. The study concluded that an equalization basin would not accomplish this goal.

The Discharger submitted an application for reissuance of its Clean Water Act Section 301(h) Modified NPDES Permit on July 7, 2003. It also requested a determination ("401 Certification") as to whether the discharge will comply with applicable state laws, including water quality standards, and will not result in requirements for additional treatment, pollution control, or other requirements on any other pollutant sources. In an August 26, 2003 letter, Central Coast Water Board staff declined to make such a determination, instead deferring to the Central Coast Water Board to make such a determination through approval or disapproval of the NPDES Permit. This is more appropriate because of the complex legal issues, and it is a more comprehensive and publicly transparent process.

The existing permit expired on March 1, 2004, but continues in force until the effective date of reissuance, in accordance with 40 CFR Part 122.6.

In June 2004, after public opposition to the 301(h)-modified permit, the Discharger commenced a process to upgrade the treatment plant to meet secondary treatment standards. The Discharger hired Carollo Engineers to assist in development of a detailed timeline to implement the upgrade. Water Board staff and USEPA chose to delay the Permit reissuance process until the timeline was developed. In April 2005, Carollo Engineers presented a 15-year timeline at a public meeting of the Discharger. After considering many public comments in opposition to the 15-year timeline, the Discharger rejected the 15-year timeline and directed Carollo Engineers to return with a timeline that was as "quick as possible."

In May 2005, Carollo Engineers returned and presented a 9.5-year timeline to the Discharger. The 9.5-year timeline was based on the shortest reasonable time necessary to select an engineering consultant, coordinate between the Dischargers, develop a facility plan, obtain financing and permits, and design and construct the improvements. The 9.5-year timeline requires the Discharger to achieve full compliance with secondary treatment standards by June 23, 2015. The Discharger accepted the 9.5-year timeline and formally proposed it to Water Board staff on June 15, 2005. Water Board staff met with the Discharger July 15, 2005, and tentatively agreed to the 9.5-year timeline. Water Board staff and the Discharger drafted a tentative settlement agreement that enforces the 9.5 year timeline, and provides for one more 301(h)-modified permit. This 301(h)-modified permit is necessary because the timeline to achieve compliance with secondary treatment standards exceeds the five-year life of an NPDES permit. The next NPDES permit (September 2013, if the Water Board adopts a permit at this hearing) will contain secondary treatment requirements, and will be accompanied by a time schedule or other order to shield the Discharger from mandatory minimum penalties until the upgrade is completed. If State and federal law (see 40 CFR 122.47) allow a compliance schedule in the NPDES permit, the permit will include the compliance schedule and no time schedule or other order will be necessary. The tentative settlement agreement contains additional provisions regarding new evidence and Central Coast Water Board discretion.

Water Board staff presented the revised modified 301(h) Waiver NPDES Permit to the Central Coast Water Board on May 11, 2006. Prior to the May 11, 2006 meeting, Water Board staff and the Discharger entered into a revised settlement agreement that expedited the conversion schedule to 8.5 years. The Central Coast Water Board had questions regarding the potential affects of continued discharges from the Facility; more specifically, whether continued facility discharges would effect the southern sea otter and brown pelican. As a result, the Central Coast Water Board continued the hearing to allow USEPA to develop an Endangered Species Act Biological Evaluation (BE) on the potential effects. Furthermore, the BE would be required to receive concurrence of "no likely adverse effects" pursuant to Section 7 of the Federal Endangered Species Act from the USFWS.

The USEPA drafted the BE on September 6, 2007, and requested concurrence of "no likely adverse effects" on the brown pelican and southern sea otter from the USFWS. The BE recognizes no likely adverse effects on the southern sea otter and brown pelican provided that the Discharger implement conservation measures, which include:

- Public outreach program to minimize the input of cat litter-box wastes into the municipal sewer systems;
- Regular monitoring of nutrient loading from the facility's ocean outfall; and
- Facility upgrade to at least full secondary or tertiary treatment by 2014.

The USFWS formally responded to the USEPAs request for concurrence in a letter dated December 21, 2007. The USFWS letter concurred with the USEPA's findings indicating that continued discharges from the Facility would not likely have adverse effects to endangered species in the area. The USFWS letter states, "[w]e concur with your determination that the proposed project is not likely to adversely affect the brown pelican or southern sea otter." However, the USFWS letter recognized that there are material gaps in current data and that additional data gathering would optimize the understanding of potential effects from the continued discharge. The USFWS letter states, "[w]e recognize that the conservation measures proposed in the Biological Evaluation for this action will assist in gathering information useful in evaluating this issue, as will independent research being conducted by a number of interested parties."

As noted in Finding AA of this Order, the Discharger plans on converting the existing facility to tertiary treatment as part of the upgrades. Furthermore, the Discharger submitted to Water Board staff drafts for the development and implementation of a nutrient monitoring program and a Cat Litter Public Outreach program consistent with the conservation measures as proposed by USEPA. These conservation measures are incorporated into the revised Order. The May 11, 2006 settlement agreement has been updated to revise the conversion schedule and make other revisions to reflect new factual information available since the May 11, 2006 hearing. The Dischargers

will be presenting the updated settlement agreement to their governing boards for approval on November 19, 2008.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order is issued pursuant to section 402 of the Federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and Chapter 5.5, Division 7 of the California Water Code (CWC). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to Article 4, Chapter 4 of the CWC for discharges that are not subject to regulation under CWA section 402.

B. California Environmental Quality Act (CEQA)

This action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21100, et seq.) in accordance with Section 13389 of the CWC.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** The Central Coast Water Board adopted the *Water Quality Control Plan, Central Coast Basin* (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, State Water Resources Control Board Resolution No. 88-63 requires that, with certain exceptions, the Central Coast Water Board assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in the Basin Plan. Beneficial uses applicable to Pacific Ocean are as follows:

Discharge Point	Receiving Water	Beneficial Uses
001	Pacific Ocean	• Water contact recreation (REC-1); • Non-contact water recreation (REC-2); • Industrial service supply (IND); • Navigation (NAV); • Marine habitat (MAR); • Shellfish harvesting (SHELL) ; • Commercial and sport fishing (COMM); • Rare, threatened, or endangered species (RARE); • Wildlife habitat (WILD).

2. **Secondary Treatment Standards and Clean Water Act Section 301(h).** The 1972 Clean Water Act required publicly owned treatment works to meet treatment standards that were based on performance of wastewater treatment technology available at that time. Clean Water Act Section 301 established a required performance level, referred to as "secondary treatment," that publicly owned treatment works were required to meet by July 1, 1977. The secondary treatment standards, as found in 40 CFR Part 133, are:

Parameter	30-Day Average	7-Day Average
BOD_5 and TSS	30 mg/L	45 mg/L
BOD and TSS Removal	At least 85%	--
pH	6 – 9 at all times	

Due to the extensive volume of the ocean relative to inland water bodies, dilution of wastewater discharges to the ocean is generally much greater than discharges to inland water bodies. Most major ocean discharges in the Central Coast Region achieve initial dilution of greater than 100 parts seawater for every part effluent. On the contrary, most inland discharges in the Central Coast Region are to water bodies with little or no natural flow, therefore little or no dilution occurs. Although effluent BOD_5 and TSS values for a typical ocean discharge may exceed secondary treatment standards, the final concentration of these pollutants in the receiving water will be far less than a typical inland surface water discharge that meets secondary treatment standards. This dilution effect is the primary basis for the modification of secondary treatment standards provided in Clean Water Act Section 301(h). However, the direction of our laws, regulations, and policies is steadily toward reducing the discharge of pollution to the environment, not justifying pollutant loading with dilution. There are several additional factors that must be considered before approving a 301(h)-modified permit, as noted below.

Clean Water Act Section 301(h) provides for a modification of secondary treatment standards for publicly owned treatment works that discharge into marine waters if the modified requirements do not interfere with the attainment or maintenance of water quality. USEPA has promulgated specific regulations pertaining to Clean Water Act Section 301(h) in 40 CFR, Part 125, Subpart G.

In order to obtain a 301(h)-modified permit, an applicant must demonstrate that:

- There is an applicable water quality standard specific to the pollutant for which the modification is requested (usually BOD_5 and TSS);

- The discharge of pollutants in accordance with such modified requirements will not interfere, alone or in combination with pollutants from other sources, with the attainment or maintenance of that water quality which assures protection of public water supplies and protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife, and allows recreational activities, in and on the water;

- The applicant has established a system for monitoring the impact of such discharge on a representative sample of aquatic biota, to the extent practicable, and the scope of such monitoring is limited to include only those scientific investigations which are necessary to study the effects of the proposed discharge;

- Such modified requirements will not result in any additional requirements on any other point or nonpoint source;

- All applicable pretreatment requirements for sources introducing waste into such treatment works will be enforced;

- In the case of any treatment works serving a population of 50,000 or more, with respect to any toxic pollutant introduced into such works by an industrial discharger for which pollutant there is no applicable pretreatment requirement in effect, sources introducing waste into such works are in compliance with all applicable pretreatment requirements, the applicant will enforce such requirements, and the applicant has in effect a pretreatment program which, in combination with the treatment of discharges from such works, removes the same amount of such pollutant as would be removed if such works were to apply secondary treatment to discharges and if such works had no pretreatment program with respect to such pollutant;

- To the extent practicable, the applicant has established a schedule of activities designed to eliminate the entrance of toxic pollutants from nonindustrial sources into such treatment works;

- There will be no new or substantially increased discharges from the point source of the pollutant to which the modification applies above that volume of discharge specified in the permit;

- The applicant at the time such modification becomes effective will be discharging effluent which has received at least primary or equivalent treatment and which meets the criteria established under section 304(a)(1) [of the Clean Water Act] after initial mixing in the waters surrounding or adjacent to the point at which such effluent is discharged. (40 CFR Part 125.57)

USEPA's Tentative Decision Document dated November 10, 2005, evaluates the Discharger's compliance with each of these nine criteria. USEPA's tentative decision is that the Discharger meets each of the above criteria and the Permit is eligible for reissuance.

3. **Antidegradation Policy.** Section 131.12 of 40 CFR requires that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16, which incorporates the requirements of the federal antidegradation policy. Resolution 68-16 requires that existing water quality is maintained unless degradation is justified based on specific findings. As discussed in detail in this Fact Sheet, the permitted discharge is consistent with the antidegradation provision of 40 CFR §131.12 and State Water Board Resolution 68-16. The permit does not allow any new or increased discharges compared to the previous permit. Effluent limitations for several constituents are more stringent than the previous permit. In addition, the Permit does not permit any degradation of receiving waters.

4. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and 40 CFR §122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. All effluent limitations in the Order are at least as stringent as the effluent limitations in the previous Order.

5. **Monitoring and Reporting Requirements.** Section 122.48 of 40 CFR requires all NPDES permits to specify requirements for recording and reporting monitoring results. Sections 13267 and 13383 of the CWC authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (MRP) establishes monitoring and reporting requirements to implement federal and State requirements. This MRP is provided in Attachment E.

   The Discharger's monitoring program is among the most comprehensive of all municipal ocean discharges of less than 5 MGD in California. More importantly, the monitoring for this permit is thorough, covering the treatment process, receiving waters, seafloor sediment, and marine life. Influent and effluent quality and quantity are routinely monitored to evaluate treatment process efficiency.

Effluent is regularly monitored for conventional pollutants (e.g. TSS, pH), as well as whole effluent toxicity and priority pollutants (e.g. arsenic, benzene, halomethanes, etc.).

Receiving water monitoring includes both surf zone monitoring and ocean monitoring near the discharge. The discharge is approximately 2700 feet offshore. Surf zone monitoring includes grab samples taken on a weekly basis in the summer months and at least monthly during the winter months, at eight monitoring stations, ranging from 5600 feet upcoast of the outfall diffuser, to 5000 feet downcoast of the outfall diffuser. Samples are analyzed for total and fecal coliform organisms to assess conditions for water contact recreation and shellfish harvesting.

Ocean monitoring stations are located in a target-shaped grid around the outfall diffuser to assess the short- and long-term impacts of the discharge on the receiving water, benthic sediment, and biota in the vicinity of the discharge. Ocean monitoring data are collected quarterly by deploying electronic probes by boat at each monitoring station to measure dissolved oxygen, pH, salinity, temperature, density, and light transmittance at frequent intervals through the entire water column. The data are interpolated to create graphical cross sections of the discharge plume. The cross sections are used to approximate the geometry and behavior of the discharge plume under various oceanographic conditions.

Sediment monitoring is conducted annually in October at nine stations surrounding the discharge, to assess the temporal (i.e. changes over time) and spatial (i.e. changes in distance from the outfall) occurrence of pollutants in sediment, and physical and chemical quality of the sediments. Parameters that are measured include sediment particle size, BOD_5, sulfides, heavy metals, and persistent organic pollutants (e.g. DDT).

Bottom-dwelling (or "benthic") organisms are monitored annually in October at the same monitoring stations where sediment monitoring occurs. Benthic community health is represented by indices of density, diversity, trophic index, species, dominance, and richness. Statistical evaluations of these indices are used to assess any changes over time or in distance from the outfall.

Additionally, biosolids and the outfall/diffuser system are inspected annually.

IV. EVALUATION OF COMPLIANCE WITH PERMIT REQUIREMENTS

Whereas USEPA's evaluation is focused on compliance with the nine criteria discussed above, Water Board staff's evaluation is focused on compliance with the Permit's effluent and receiving water limitations, as well as relevant laws and regulations that are specific to California. Staff's evaluation is based on data generated by the Discharger's Monitoring and Reporting Program.

A. Effluent Limitations.

1. **Total Suspended Solids.** The Permit requires removal of at least 75% of TSS from the influent stream. Additionally, effluent shall not exceed the following limits:

Constituent	Unit	Monthly (30-Day) Average	Maximum At Any Time
TSS	mg/L	70	105
	lbs/day	1203	1804
	kg/day	546	819

The treatment plant was designed to comply with these limitations at an annual average flow of 2.06 MGD. Current influent flows are approximately 55% of the design capacity, thus the long-term average effluent TSS concentration is far below these limitations. However, these limitations were violated on three related occasions during a brief period in 2002. The TSS effluent maximum limit of 105 mg/L was violated on August 26, 2002 (reported value: 107 mg/L), and September 11, 2002 (147 mg/L). The TSS effluent monthly (30-day) average limit of 70 mg/L was exceeded in September 2002 (79 mg/L). The violations resulted from an upset of the biological treatment process, which was later attributed to a distinct alteration of influent characteristics by excessive loading of pH-neutralization chemicals from an industrial laundry facility. The industrial laundry facility discontinued use of the suspect chemicals. Biological treatment performance subsequently improved and the violations ceased. There have been no other violations of effluent TSS limits since 1998.

The Central Coast Water Board issued mandatory penalties totaling $15,000 for these and other effluent violations described below on July 14, 2000 (Mandatory Penalty Order No. 00-100), November 7, 2003 (Mandatory Penalty Order No. R3-2003-0052), and July 1, 2008 (Mandatory Penalty Order No. SWB-2008-3-0009).

2. **BOD_5.** The Permit requires removal of at least 30% of BOD_5 from the influent stream. Additionally, effluent shall not exceed the following limits:

Constituent	Unit	Monthly (30-Day) Average	Maximum At Any Time
BOD_5	mg/L	120	180
	lbs/day	2062	3092
	kg/day	936	1404

BOD_5 and TSS are closely correlated. Since the facility is designed to remove 75% of TSS, the facility necessarily removes far greater than 30% of BOD_5. Consequently, these limitations were never exceeded in the life of the existing Permit. The long-term average BOD_5 removal efficiency since 1986 is over 70%,

well above the 30% requirement. The long-term average effluent BOD_5 concentration since 1986 is 52 mg/L, well below the 120 and 180 mg/L limitations.

3. **pH.** The Permit requires effluent pH to remain within 6.0 and 9.0 at all times. Effluent pH has been monitored daily since 1993, amounting to over 4,000 measurements. No measurement was below 6.9 or greater than 8.2.

4. **Other Effluent Violations.** In addition to the three effluent TSS violations reported above, the Discharger violated effluent limitations on five occasions since 1998.

   The TCDD Equivalents (more commonly referred to as 'dioxin') effluent 30-day average limitation of 0.52 pg/L was violated July 10, 2002. The reported dioxin concentration was 0.56 pg/L, 8% greater than the effluent limit. This exceedance was much smaller than the 20% instrumentation calibration standard. The Discharger states that the particular dioxin congener that was responsible for the violation is ubiquitous in the environment. The Discharger also stated that the violation could be attributed to laboratory contamination, which is commonplace when measuring concentrations at sub-parts-per-quadrillion. Staff has requested the Discharger sample the influent if any TCDD Equivalents violations occur in the future to determine whether or not any dioxin is formed within the treatment plant.

   The total chlorine residual effluent daily maximum limitation of 1.07 mg/L was violated on April 21, 2000 (3.45 mg/L) and June 30, 2004 (6.3 mg/L). Violations of the effluent instantaneous maximum of 8.04 mg/L occurred December 29, 2002 (10+ mg/L), January 16, 2003 (10+ mg/L), and October 20, 2004 (10+ mg/L). The first two violations occurred when a system that removes solids from the bottom of the chlorine contact chamber broke down and required emergency repair. The chlorine contact chamber had to be drained to complete the repair, hence was unusable. Rather than discharging undisinfected effluent, the Discharger opted to utilize the outfall pipe as a makeshift chlorine contact chamber, which prevented dechlorination and resulted in the chlorine violation.

   The chlorine violations on December 29, 2002, and January 16, 2003, occurred when a sampling device that controls the chlorine dosing process became clogged with solids from the contact chamber. The clogged device delivered false feedback to the dosing process, which overdosed the contact chamber with chlorine and overwhelmed the dechlorination process. The October 20, 2004 violation occurred when the motor for this same sampling device failed. These problems are quite common in all similar wastewater treatment facilities. These latest chlorine violations are classified by USEPA as "Significant Non-compliance" (see www.epa.gov/echo), which resulted in temporary listing of the Discharger on USEPA's Watch List.

   The Central Coast Water Board issued mandatory penalties totaling $15,000 for most of these effluent violations on July 14, 2000 (Mandatory Penalty Order No. 00-100), November 7, 2003 (Mandatory Penalty Order No. R3-2003-0052), and July 1, 2008 (Mandatory Penalty Order No. SWB-2008-3-0009).

B. Receiving Water Limitations

1. **Bacteria.** The Permit specifies that the discharge shall not cause the following bacterial limits to be exceeded in the water column at all areas where shellfish may be harvested for human consumption:

Parameter Applicable to any 30-day period	Total Coliform Organisms (MPN/100 mL)
Median	70
90% of samples	230

According to staff's analysis of all surf zone total coliform monitoring data, the Discharger consistently complies with this requirement. Staff analyzed all surf zone total coliform monitoring data collected since 1993. The data set consisted of approximately 500 at each monitoring station. With exception to the monitoring station at the mouth of Morro Creek, the annual median at each monitoring station was well below 70 MPN/100 mL. With exception to the Morro Creek monitoring station, no less than 98% of samples from each monitoring station were below 230 MPN/100 mL.

The median value at the Morro Creek monitoring station was consistently greater than 70 MPN/100 mL and the "90% of samples" criteria was exceeded in six of the last 15 years. However, the Morro Bay/Cayucos wastewater discharge could not be causing these exceedances for two reasons: (1) samples at the Morro Creek monitoring station are taken of the creek prior to flowing into the ocean, where the discharge's influence is highly unlikely, and (2) if the discharge were causing the exceedances, then exceedances also would be expected at other monitoring stations in similar proximity to the discharge. As discussed above, this is not the case. This analysis demonstrates that the shoreline near the discharge, with exception to the mouth of Morro Creek, meets the shellfish harvesting receiving water limitation.

Since water contact recreation receiving water limitations are less stringent than shellfish harvesting limitations, this beach also meets water contact receiving water limitations. Independent monitoring supports this conclusion. County of San Luis Obispo Environmental Health Services (EHS) has been monitoring this beach at stations 75 feet north of the Morro Rock parking lot (near Station F), and at the projection of Atascadero Road (near Station E) weekly during summer months since November 2001, and weekly during winter months since February 2002. Heal the Bay's Beach Report Card (see www.healthebay.org/brc/annual/2007/counties/slo/grades.asp), which is based on EHS' monitoring results, gave both locations an A+ grade for wet weather conditions as of March 2008 and an A+ for dry weather conditions as of July 2008.

2. **Light Transmittance.** The Permit specifies that the discharge shall not cause significant reduction in the transmittance of natural light at any point outside the initial dilution zone.

   According to the Tetra Tech's March 1984 *Morro Bay 301(h) Application*, ambient TSS measured in Estero Bay ranges from 20 to 34 mg/L. Assuming the discharged concentration of TSS is 70 mg/L, the expected contribution of TSS to Estero Bay by effluent following dilution is approximately 0.5 mg/L. This would constitute a 1.4% to 2.5% increase in ambient TSS concentrations. Such a small increase is not expected to significantly reduce water clarity.

   The Discharger has monitored light transmittance at all 16 receiving water-monitoring stations on a quarterly basis since 1998. As a measure of monitoring program's resolution, the monitoring data show statistically significant decreases in light transmittance within the initial dilution zone (which is not a violation of the permit). The data also show occasional minor decreases in light transmittance outside the initial dilution zone. These minor decreases in light transmittance outside the initial dilution zone are caused by entrainment of the more turbid seafloor layer by the buoyant discharge. This phenomenon is not attributed to quality of the effluent and is not controllable, and is not considered a violation.

3. **Dissolved Oxygen.** The Permit specifies that the discharge shall not cause the dissolved oxygen (DO) concentration outside the zone of initial dilution to fall below 5.0 mg/L or to be depressed more than 10 percent from that which occurs naturally.

   So far over 2,015 DO measurements were collected at the sixteen regularly sampled receiving water stations during 2007. None were below 5.0 mg/L. The annual average DO concentration was 7.05 mg/L during 2007. The discharge has not caused the DO concentration outside the zone of initial dilution to fall below 5.0 mg/L or be depressed more than 10 percent from that which occurs naturally.

4. **pH.** The Permit specifies that the discharge shall not cause the pH outside the zone of initial dilution to be depressed below 7.0, raised above 8.3, or changed more than 0.2 units from that which occurs naturally.

   As discussed above, effluent pH has been measured daily since 1993, amounting to over 4,000 measurements. None were below 6.9 or above 8.2. The long term average effluent pH (7.5) is close to the mean pH of the receiving waters (7.66). The ocean is well-buffered system that is capable of assimilating such small differences in alkalinity. Recent data suggests that the discharge has not caused the pH outside the zone of initial dilution to be depressed below 7.0, raised above 8.3, or changed more than 0.2 units from that which occurs naturally.

5. **Sulfides in Sediment.** The Permit specifies that the discharge shall not cause the dissolved sulfide concentration of waters in and near sediments to be significantly increased above that present under natural conditions.

To evaluate compliance with this requirement, the Discharger performed statistical tests on the "null hypothesis," or expected situation, that the mean sulfide concentration within 60 meters of the diffuser structure (nearfield) is not significantly higher than the mean concentration among midfield and reference stations (distant). The test compares the magnitude of the difference in mean sulfide concentrations with the variability about those means. In October 2002, the mean sulfide concentration of nearfield stations was 116 mg/kg and the mean sulfide concentration of distant stations was 65 mg/kg, a 51 mg/kg difference. The p-value was 0.04. P-values less than 0.05 (95% confidence) indicate that the higher nearfield mean sulfide concentration is significant and the null hypothesis may be rejected. This suggests the discharge has caused the dissolved sulfide concentration of waters in and near sediments to be significantly increased above that present under natural conditions.

The Discharger contends that despite the apparently significant differences in mean sulfide concentrations, the statistical power to detect the observed differences between the means is relatively low. More specifically, the ability to detect a difference in mean sulfide concentrations of 51 mg/kg is only 54% (Power=0.54). According to the Discharger's Offshore Monitoring and Reporting Program 2002 Annual Report, "Differences with statistical powers below 0.7 are generally considered indeterminate with respect to the presence of impacts (p. 4-20)." Staff checked the basis for this statement, Jacob Cohen's 1988 Statistical Power Analysis for the Behavioral Sciences, and found it to be accurate.

Staff requested that the Discharger investigate ways to increase statistical power. In a January 8, 2004 letter, the Discharger explained that sediment sulfides concentrations around the outfall have historically been highly variable. Prior to 2001, the Discharger employed an antiquated technique to measure dissolved sulfides in sediment, which yielded highly variable results. In 2001, in an attempt to decrease variability, the Discharger switched to a more advanced total sulfide analysis, which uses acid and heat to strip sulfides out of sediment samples. Unfortunately, the total sulfide analysis also yielded highly variable results. In October 2002, the Discharger developed a technique to extract pore water from the sediment, in an attempt to obtain a sample that would most accurately measure compliance with the subject requirement. The pore water samples were analyzed for dissolved sulfides with a Method Detection Limit of 0.05 mg/L. No dissolved sulfides were detected in any samples.

The Discharger's new pore water extraction technique is the most appropriate technique employed thus far to measure compliance with the subject requirement. The technique measures sulfides that are actually available to benthic organisms. Staff recommends the Discharger be given the option to monitor dissolved sulfides in sediment pore water. The Discharger has analyzed at least 45 samples for sulfides in sediment. None of the 45 samples contained detectible concentrations of sulfides. Furthermore, the pore water extraction technique is relatively difficult and expensive, so the proposed Order does not require sulfides monitoring in sediment. .

6. **Organic Materials in Sediment.** The Permit establishes sediment quality standards for synthetic organic pollutants ("priority pollutants") by specifying that:

> "The discharge shall not cause the concentration of organic materials in marine sediments to increase above levels which would degrade marine life; and
>
> The discharge shall not cause the concentration in marine sediments of [priority pollutants] to be increased above levels which would degrade indigenous biota."

The Discharger measured organic materials in sediment by monitoring Total Kjeldahl Nitrogen (TKN), BOD_5, oil & grease, and volatile solids concentrations. For the sake of simplicity, the analysis provided here focuses on volatile solids. The Discharger has monitored volatile solids at all sediment monitoring stations at least annually since 1986. Figure 1 represents all volatile solids monitoring results. The background sediment monitoring station (Station 1, located 1016 meters upcoast of the discharge) is represented by a deep bold line. If the discharge were causing organic matter in marine sediment to increase, then volatile solids at monitoring stations near the discharge would increase more rapidly than the background monitoring station. Such a condition would be represented by a visible departure of the near-discharge monitoring results from the background monitoring results. As can be seen, this is not the case. All of the near-discharge monitoring results with exception to one (Station 4 in October 2000) fall within the 95% confidence interval of the background monitoring station. This suggests the discharge is not causing organic materials in sediments to increase.

These receiving water limitations are intended to protect marine life. Compliance

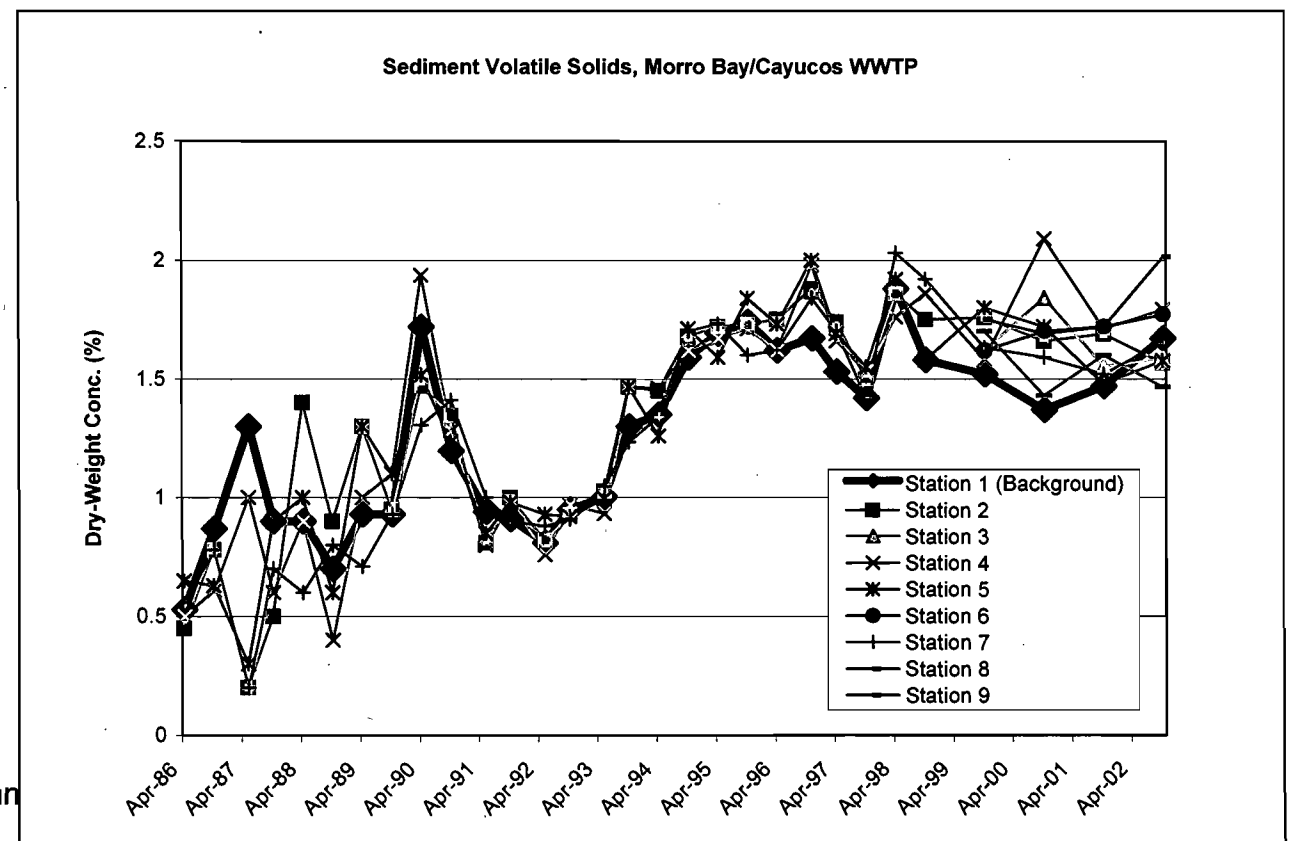

Figure 1: Benthic Sediment Volatile Solids

Attachn

with these requirements is not based solely on concentrations of organic-loading parameters in sediment. Compliance determinations must take into account the health of marine communities in the vicinity of the discharge.

7. **Marine Life.** The Permit states "the concentration of organic materials in marine sediments shall not be increase to levels that would degrade marine life."

   According to the 2005 California Ocean Plan:

   > "Degradation shall be determined by a comparison of the waste field and reference site(s) for characteristic species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species. Degradation occurs if there are significant differences in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected."

   The Discharger has measured the health of the benthic (bottom-dwelling) community of marine life in the vicinity of the discharge since 1986. Benthic community samples collected at each monitoring station are represented by indices of abundance, diversity, richness, and trophic (feeding) structure. Figure 2 provides a succinct record of all these indices since 1986.

   In simple terms, benthic community degradation would be characterized by:

   - Greater fluctuations in organism density at stations closer to the discharge,
   - Decreased number of species and diversity over time and in closer proximity to the discharge,
   - Increased dominance over time and at stations in closer proximity to the discharge, and
   - A trophic index less than 58.

   Significant differences between areas near and distant from the discharge would be illustrated as a visible departure of the indices at stations near the outfall (shown in red (lighter), Stations 4 and 5) from the indices at distant stations (shown in black (darker), Stations 1, 2, and 7) in Figure 2.

Figure 2a shows that although density has fluctuated over time, density at all the monitoring stations tended to fluctuate together. The density at stations near the outfall is not consistently higher or lower than density at distant stations. Prior to 1999, benthic community structure was measured both post-summer, as it is currently, and post-winter, when the area of the discharge has been scoured by rough oceanographic conditions. The fluctuations in density data decrease after 1999 when post-winter monitoring was discontinued. This suggests the fluctuations observed prior to 1999 were caused by natural seasonal fluctuations, not degradation of sediment by the discharge.

Figures 2b and 2c show no downward trends in the number or diversity of species

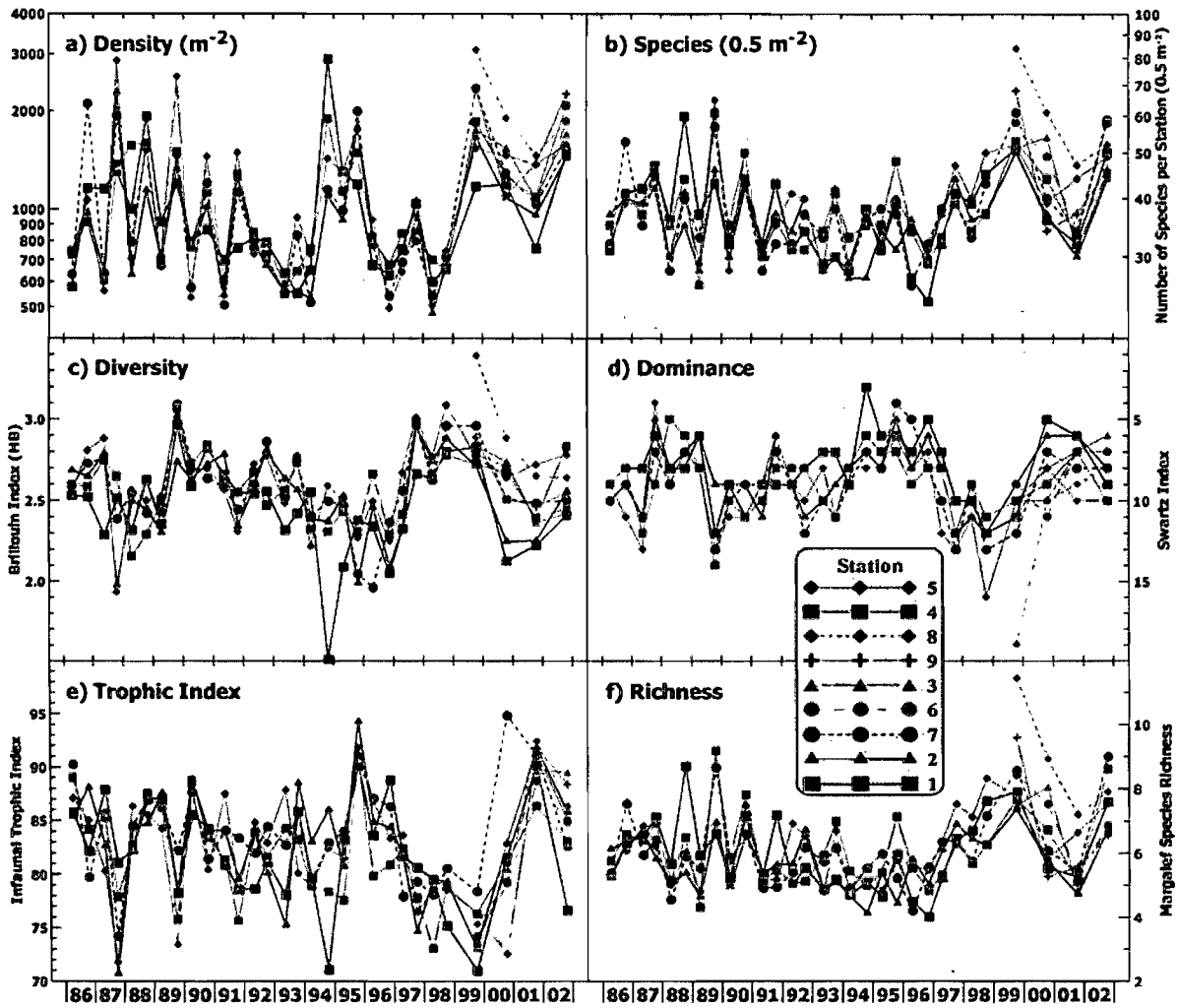

Figure 2: Benthic Community Indices

that would suggest degradation of the benthic community near the discharge. The numbers and diversity of species in samples collected near the discharge consistently coincides with samples collected distant from the discharge.

Interestingly, the numbers and diversity of species were often greatest in samples collected closest to the discharge.

Figure 2d is a record of the Swartz Index of species dominance. The Swartz Index is defined as the number of species accounting for 75% of the individual organisms collected. Consequently, Swartz Index and dominance are inversely related. Degradation of the benthic community would be characterized by decreasing Swartz Index over time and in closer proximity to the discharge. Figure 2d (note the inverted vertical scale) shows no trends that would suggest the benthic community near the discharge has been degraded. Dominance in samples collected near the discharge consistently coincides with samples collected distant from the discharge.

Figure 2e is a record of the Infaunal Trophic Index (ITI). ITI is a measure of the relative dominance of benthic organisms with different feeding behaviors. Benthic organisms are divided into four groups according to their feeding behavior; Group I (suspension feeders), Group II (surface-detritus feeders), Group III (surface deposit feeders), and Group IV (sub-surface detritus feeders). When species in Group I and Group II dominate, ITI values are above 58 and sediments are considered relatively clean. Degradation of the benthic community would appear as a gradual decrease in the ITI at monitoring stations near the discharge relative to stations distant from the discharge. As shown in Figure 8e, the ITI of samples collected near the discharge consistently coincides with samples collected distant from the discharge. The ITI has never been below the critical value of 58 at any station. In fact, the ITI has never dipped below 70. These observations suggest the benthic community has not been degraded by the discharge.

In many of the above instances, the nearfield (60 meters or less from the discharge point) benthic monitoring stations yielded more favorable results than the "reference" Station No. 1 (1016 meters upcoast of the discharge point). This is contrary to what is expected by such a monitoring design. This suggests Benthic Monitoring Station No. 1 is located in a much different environment than the discharge, and does not accurately represent background conditions. USEPA staff, the Discharger, and Central Coast Water Board staff met to discuss this issue in April 2004, and all agreed that Station No. 1 detracted from the power of the monitoring program to detect spatial and temporal trends in benthic sediment measurements and community health. Station Nos. 2 and 7, which are 150 meters upcoast and downcoast of the discharge point, respectively, are close enough to the discharge to ensure they are in a comparable environment, yet far enough from the discharge to be considered representative of background conditions. Staff therefore recommends Station Nos. 2 and 7 replace Station No. 1 as the reference stations.

8. **Toxoplasma and Sea Otters.** In April 2002, an association of scientists, including those from UC Davis School of Veterinary Medicine, California Department of Fish and Game, and Central Coast Water Board staff Karen Worcester and Dave Paradies, published "*Coastal Freshwater Runoff Is A Risk Factor For Toxoplasma Gondii Infection Of Southern Sea Otters*" in the International Journal for Parasitology. The study documented extensive infection of southern sea otters along the Central

Coast by Toxoplasma gondii, a protozoan parasite known to originate in land-based mammals, primarily felines. The scientists theorize that sea otters become infected by T. gondii by consuming shellfish, which are filter feeders and accumulate microorganisms such as T. gondii in their tissue. More than 220 live and dead sea otters were examined between 1997 and 2001, with the goal of identifying spatial clusters and risk factors for T. gondii infection. The study found:

> "Spatial analysis of pooled live and dead otter serological data revealed a large cluster of *T. gondii*-seropositive [i.e., infected] otters (20/23, or 87% seropositive) within a 20 km coastal region centered on the towns of Morro Bay and Cayucos, California. Otters sampled from the area were nearly twice as likely to be seropositive to *T. gondii* as expected, and this difference was statistically significant (P = 0.082)."

The study evaluated the cluster of high infection rates around Morro Bay and Cayucos to determine whether other risk factors could explain the cluster. The study found:

> "...significantly increased odds of *T. gondii* seropositivity were detected for otters sampled near maximal (heavy) freshwater outfalls. Based on our analysis, the odds of *T. gondii* seropositivity were highest for adult male sea otters samples from areas of central California with maximal freshwater outflow, especially those sampled near Morro Bay/Cayucos. No significant associations with *T. gondii* seropositivity were found in relation to sewage flow, either by univariate analysis or by logistic regression analysis. However, 96% of our otter samples (214/223) were obtained from coastal areas with minimal values for municipal sewage exposure."

Although the study suggests the high rate of infections are most closely associated with heavy freshwater outflow (the second highest rate of infection was centered around Elkhorn Slough, a freshwater outflow similar in magnitude to Morro Bay), staff is concerned that the highest infection rates are centered around the only discharge with a 301(h)-modified permit in the studied area. Scientists have speculated that flushable cat litter may be a source of *T. gondii* in domestic wastewater. In March 2003, staff requested that the Discharger evaluate its discharge as a potential source of *T. gondii*. The Discharger collaborated with the UC Davis School of Veterinary Medicine to monitor the discharge by hanging clusters of mussels from buoys at each end of the outfall diffuser. Any *T. gondii* present in the discharge will accumulate in the mussels over time. According to a December 13, 2004 letter from Dr. Patricia Conrad of the UC Davis School of Veterinary Medicine:

> "We were able to complete testing of 120 mussels that had been outplanted at the Morro Bay outfall buoy (30 mussels each in the early dry season, late dry season, early wet season, and late wet season). *Toxoplasma* RNA was not detected in any of the 120 mussels from the outfall buoy that have been tested thus far."

These results suggest that the subject discharge is not a source of *T. gondii* loading to Estero Bay.

C. Sewage Spills.

Since 1998, the following sewage spills from the Discharger's respective collection systems were reported:

City of Morro Bay:

Date	Volume (gal)	Cause	Reach Surface Waters?
Sept. 24, 1998	<100	Failure of bypass during sewer line repair	Yes, Morro Bay
Feb. 19, 1999	Unknown	Blockage in main	No
July 16, 1999	1,000	Blockage in main	Yes, Morro Bay
Nov. 23, 1999	150	Rocks and concrete blockage in main	No
Feb. 7, 2001	Unknown	Pipe failure due to corrosion	Yes, Morro Bay
July 4, 2000	100	Cause unknown	No
Oct. 7, 2000	300	Blockage in main	Yes, Morro Bay
Oct. 15, 2000	1,000	Blockage in main	No
Nov. 2, 2000	750	Blockage in main	Yes (50 gal.), Morro Bay
Feb. 14, 2002	500-800	Line failure during pump station repair	Yes, Pacific Ocean
Dec. 22, 2002	300	Blockage in main	Unknown
Jan. 20, 2003	200	Root blockage in main	No
Jan. 22, 2003	250	Grease blockage in main	No
Oct. 22, 2003	300-350	Blockage in main	No
April 30, 2004	100-200	Unknown	Unknown
July 6, 2004	70	Flushmeter in Group Camp restroom stuck on	Yes, Morro Bay
December 31, 2004	8,400	Morro Creek overflowed banks; flooded wet well and sludge drying beds	Yes, Pacific Ocean
February 18, 2005	135	Surcharged manhole due to excessive inflow from heavy rainfall	No
January 1, 2007	100	Debris blocked private lateral	Yes, Morro Bay
October 21, 2007	300	Pipe/Infrastructure failure	No
December 31, 2007	35	Debris/root blockage	No

Date	Volume (gal)	Cause	Reach Surface Waters?
January 12, 2008	30	Root blockage from private lateral	No
January 16, 2008	100	Unknown backup from private lateral	Yes, Morro Bay
June 12, 2008	10	Root blockage	Yes, Morro Bay
July 24, 2008	5	Root Blockage	No

Cayucos Sanitary District:

Date	Volume (gal)	Cause	Reach Surface Waters?
Feb. 13, 2000	760	System surcharged due to heavy rains	Yes, Pacific Ocean
Dec. 23, 2003	200	Blockage in main	Yes, Cayucos Creek
April 18, 2005	300-400	Power generator failure	Yes, Pacific Ocean
May 17, 2008	120	Debris blockage	No
June 9, 2008	5	Backup from private lateral	No
June 16, 2008	5	Root blockage	No

In general, the Discharger responded to each sewage spill appropriately; the spill was quickly contained, the cause of the spill was eliminated, the affected area was cleaned up and disinfected, proper authorities were notified, creeks and/or beaches were posted if necessary, and maintenance/replacement schedules were adjusted if necessary to prevent future problems.

The Dischargers have enrolled separately under the General Waste Discharge Requirements for Sanitary Sewer Systems, Order No. 2006-0003-DWQ, adopted May 2, 2006, by the State Board. The City of Morro Bay received formal enrollment status for General WDR coverage on January 8, 2007. Cayucos Sanitary District received formal enrollment status for coverage on January 9, 2007. The General WDRs require collection system entities to develop a Sanitary Sewer Management Plan (SSMP). SSMPs are required to include goals; organization; legal authority; operations and maintenance program; design and performance provisions; overflow emergency response plan; fats, oils, and greases control program; systems evaluations and capacity assurance program; monitoring, measures, and program modifications; and SSMP Program audit. Additionally, the General WDRs require the collection system entities to report sanitary sewer overflows (SSOs). Collection system entities are required to report SSOs that are greater than 1,000 gallons. Furthermore, some entities must also report SSOs less than 1,000 gallons discharging to surface waters or storm drains or that threaten public health. Reporting provisions are set forth in the General WDRs. Reporting shall occur through the Statewide Online SSO database. Reporting times vary depending on discharge amount and destination. The Discharger is currently complaint with the regulations of the General WDRs for Sanitary Sewer Systems.

V. SUMMARY AND RATIONALE OF PROPOSED CHANGES TO PERMIT REQUIREMENTS

This Order is consistent with the Statewide Standard California Ocean Plan NPDES Permit template (most recent template is dated on July 23, 2007). Therefore, changes in this Order are consistent with the 2005 California Ocean Plan. The following table indicates specific changes from Existing Order No. 98-15 to Proposed Order No. R3-2008-0065.

Change	Section	Reason
1. The following prohibition is added: "The discharge of chlorine or any other toxic substance used for disinfection and cleanup of sewage overflows, to any surface water body is prohibited. This prohibition does not apply to the chlorine in the potable water used for final wash down and clean up of overflows."	Permit, Section III.D	To minimize impacts to water quality resulting from cleanup of sewage spills.
2. Effluent limitations for the following constituents are lower than the existing Permit: thallium, chlorodibromomethane, 1,2-dichloroethane, 1,1-dichloroethylene, dichlorobromomethane, isophorone, N-nitrosodi-N-propylamine, 1,1,2,2-tetrachloroethane, tetrachloroethylene, 1,1,2-trichloroethane, 2,4,6-trichlorophenol.	Permit, Section IV.C	Water Quality Objectives for these constituents have decreased in the 2005 Ocean Plan.
3. The existing Acute Toxicity limitations (1.5 TUa 30-Day Average, 2.0 TUa 7-Day Average, and TUa 2.5 Daily Maximum) are replaced with a 4.3 TUa Daily Maximum.	Permit, Section IV.C	The 2005 Ocean Plan specifies a Daily Maximum Acute Toxicity Water Quality Objective of 0.3 TUa, to which a dilution credit of 10% of the minimum initial dilution ration is applied.
4. Biosolids requirements are added.	Permit, Section VI.C.2	40 CFR 122.44(b)(2) requires each NPDES permit to include standards for sewage sludge use or disposal. Biosolids requirements language was provided by USEPA Region IX's Biosolids Coordinator.
5. Cat Litter Public Outreach Program	Permit, Section VI.C.5	In accordance with USEPA's proposed conservation

Change	Section	Reason
		measures, the Discharger will be required to develop and implement a outreach program to address cat litter disposal to facilitate source reductions of T. gondii
6. Influent flow metering is required, rather than effluent flow metering.	Monitoring and Reporting Program, Section III	Due to the configuration of the treatment plant equipment, the existing effluent flow meter is not sufficiently accurate for compliance purposes. A comparison of actual effluent flow data to influent flow data suggests the effluent flow meter overestimates actual flow by approximately 25%. The newer influent flow meter is more accurate and reliable than the effluent flow meter, therefore is more appropriate for compliance purposes.
7. Effluent Acute Toxicity monitoring is removed.	Monitoring and Reporting Program, Section IV	In accordance with the 2005 California Ocean Plan, "The RWQCBs may require that acute toxicity testing be conducted in addition to chronic as necessary for the protection of beneficial uses of ocean waters." Staff will retain the effluent limitation of 4.3 TUa.
8. Effluent monitoring frequency for several priority pollutants is decreased from semiannually to annually.	Monitoring and Reporting Program, Section IV	Quantitative statistical analysis of a large number of historical contaminant measurements demonstrates that there is a low potential for non-compliance, and that the proposed effluent-monitoring reductions are warranted. This historical performance, and the cost of the monitoring justify the monitoring frequency reductions.
9. Surf zone samples are now required to be analyzed for Enterococcus in addition to Total and Fecal Coliform.	Monitoring and Reporting Program,	The 2005 Ocean Plan specifies that Enterococcus shall be monitored at all

Change	Section	Reason
	Section VI.A	stations where Total and Fecal Coliform is required for repeat sampling.
10. Vertical profiling of receiving water for light transmissivity, dissolved oxygen, pH, salinity, and temperature is reduced from 17 individual stations to 6 stations along an along-shore transect. A tow survey is now required. More specifically: "In addition to the vertical profiling conducted at the six fixed stations, a receiving-water survey shall be conducted by continuously towing an electronic instrumentation package at two depths around and across the zone of initial dilution. One survey shall be conducted in the upper water column, near the base of the shallow thermocline. Another survey shall be conducted immediately above the benthic boundary layer, approximately 5 meters above the bottom. The towed instrumentation package shall pass over the zone of initial dilution at least five times during the survey. Vessel speed and sampling rates shall be sufficient to collect at least one sample for every meter traversed."	Monitoring and Reporting Program, Section VI.A	Vertical profiles are not capable of defining the limited lateral extent of the effluent plume. Surveys with towed instrumentation will better assess compliance and effectiveness of the diffuser structure.
11. The Discharger is given the option to monitor dissolved sulfides in sediment pore water, rather than dissolved sulfides in an acid/heat digested sample. The pore water extraction technique is difficult and expensive, so this monitoring requirement may be discontinued by written approval of the Executive Officer if dissolved sulfides are not detected in any pore water sample from any benthic sediment monitoring station for one additional monitoring event (in addition to the October 2003 event). The proposed Order does not require sulfide sampling.	Monitoring and Reporting Program, Section VII	Please see "Sulfides in Sediment" above.
12. Benthic Monitoring Station Nos. 2 and 7	Monitoring and	Please see "Marine Life"

Change	Section	Reason
replace Station No. 1 as the reference station.	Reporting Program, Section VII	above.
13. The frequency of benthic sediment monitoring for Nonchlorinated Phenolics, Chlorinated Phenolics, Aldrin, Dieldrin, Chlordane, DDT, DDE, DDD, Endrin, PAHs, PCBs, and Toxaphene is reduced from annually to once in the life of the Permit (2006).	Monitoring and Reporting Program, Section VII.A	These compounds have never been detected in benthic sediment samples and are rarely if ever detected in effluent samples. When detected in effluent samples, they are detected at extremely low concentrations, which are not likely to accumulate in benthic sediments.
14. Annual monitoring reports are required to be submitted by April 1st of each year, rather than March 1st.	Monitoring and Reporting Program, Section X.B	The Discharger is currently required to submit several different monitoring reports simultaneously by March 1, therefore have requested an additional month to prepare and submit the annual report.
15. Cat litter Public Outreach Program annual reporting	Monitoring and Reporting Program, Section XI.D.1	As noted above, the Discharger is responsible for developing and implementing a cat litter disposal program. This reporting requirement obligates the Discharger to report activities conduction within the reporting year as well and propose changes to the program on an annual basis.
16. Sanitary Sewer Overflows Reporting and Notification	Monitoring and Reporting Program, Section XI.D.2	The Discharger is responsible for notifying and reporting sanitary sewer overflows in accordance with General Waste Discharge Requirements for Sanitary Sewer System, Order No. 2006-0003-DWQ.

Note that staff may propose additional changes as a result of public comments. Such changes will be discussed in the Comments and Responses section of the Staff Report for this item.

VI. PUBLIC PARTICIPATION

The Central Coast Water Board and USEPA are considering reissuance of a National Pollutant Discharge Elimination System (NPDES) permit for Morro Bay/Cayucos Wastewater Treatment Plant. As a step in the NPDES permit reissuance process, the Central Coast Water Board staff has developed a Draft NPDES Permit. The Central Coast Water Board and USEPA encourage public participation in the NPDES Permit reissuance process.

A. Notification of Interested Parties

The Central Coast Water Board and USEPA notified the Discharger and interested parties of its intent to reissue this NPDES Permit and provided them with an opportunity to submit their written comments and recommendations. Notification was provided through publication in the San Luis Obispo County Tribune on December 19, 2005, and through direct mailing of the Draft NPDES permit to the following known interested parties. Written comments were due February 3, 2006.

- Bruce Keogh and Bruce Ambo, City of Morro Bay
- Bill Callahan, Cayucos Sanitary District
- Mark Delaplane, California Coastal Commission
- Doug Coats, Marine Research Specialists
- Anjali Jaiswal, Natural Resources Defense Council
- ECOSLO
- Babak Naficy, Coastal Alliance
- Joshua Borger, Environmental Law Foundation
- Hillary Hauser, Heal the Ocean
- Peter Hernandez
- Rebecca Barclay

B. Written Comments and Responses

The following comments and responses are taken verbatim from the 2006 draft Permit staff report. The Central Coast Water Board considered these comments and responses at its hearing on May 11, 2006. Since the continued hearing on December 4-5, 2008, will be to discuss new evidence only, the Central Coast Water Board is not required to again review these comments and responses. They are included here to maintain a record of the 2006 proceedings.

Comment 1: **Erin Stetzer** of Pacific Grove, **Stephanie Sayler** of Salinas, **Glenn Wolfson** of Pacific Grove, **Lynn Harkins** of Cambria, and **Elissa Wagner** of Aptos, each sent the following identical email to Central Coast Water Board staff on January 5, 2006:

> "I am writing to express my dissatisfaction with the proposed timeline and the lack of protective measures for marine life in the Morro Bay/Cayucos Wastewater Treatment Plant upgrade plan. While I am encouraged by the plan to upgrade the

plant to full secondary treatment standards, the proposed timeline of nine and a half years is unnecessarily long. The plan should also contain innovative disinfection measures to protect the marine life in Morro Bay.

"These upgrades are long overdue. The Clean Water Act was passed back in 1972, and this sewage treatment plant is one of the last in California to be upgraded to national standards. Additionally, since the plant discharges wastewater less than a mile from shore and directly in the habitat of sea otters, it is critical that these upgrades occur as quickly as possible.

"Wastewater treatment plants across California, and of varying sizes, have been able to upgrade their facilities on shorter timelines. I urge you to reject the proposed timeline and demand the upgrades be done as fast as possible. The plan should also promote human health and a healthy marine environment by including technologies to eliminate harmful bacteria and pathogens from the wastewater. While secondary treatment is a step above current operations, I urge you to adopt a plan that includes advanced technology to prevent pollutants from entering the ocean.

"Thank you for considering my comments."

Staff Response 1: For several reasons discussed under *Settlement Agreement* above, staff disagrees that the proposed timeline is unnecessarily long. The facts that the Facility discharges less than a mile from shore and into the habitat of sea otters, and that other plants have upgraded faster, standing alone, do not necessitate that the Facility be upgraded "as quickly as possible." Rather, we must consider applicable law and the effects of the discharge on the marine environment and specific regulations. As discussed above and in staff's Evaluation of Compliance with Permit Requirements, there is no evidence that the discharge has adversely affected marine life or impaired beach water quality. There is little justification to require the Facility to be upgraded any faster than proposed.

Disinfection technologies will be determined through facilities planning, environmental review and permitting, and design, which are required tasks of the Settlement Agreement. Disinfection technologies must be carefully considered in conjunction with other treatment processes, which is not possible at this time, because those treatment processes are not known. If bacteria and pathogens are ever found to be harming marine life, the Central Coast Water Board will require appropriate treatment. Specification of disinfection technology in the Settlement Agreement is inappropriate. Staff recommends adoption of the Permit as proposed.

Comment 2: Central Coast Water Board staff received the following identical email from **2200+ people from across the nation** throughout January 2006, in response to a **Natural Resource Defense Council (NRDC)** Action Alert:

"Dear Water Quality Board Members:

"I urge you to improve the 9.5-year upgrade timeline now proposed by the Morro Bay/Cayucos sewage treatment plant. The Clean Water Act and state law require that this sewage plant shorten the proposed upgrade timeline so that it is as rapid as possible. Moreover, it is critical that specific measures be included in the sewage plant's permit assuring that it will protect the California sea otter.

"There is no reason that the Morro Bay community cannot meet the standard established by many similar small cities around California that have accomplished a similar upgrade in a fraction of the time. Adopting a shorter timeframe for the plant upgrade and requiring measures to protect the sea otter and other marine life are the only ways to preserve local waters, including Morro Bay's extraordinary estuary, for future generations. I am counting on you to take the necessary steps to protect these valuable coastal resources."

Staff Response 2: The Clean Water Act and state law do not require the upgrade timeline to be as "rapid as possible," as this email suggests. The Clean Water Act requires that the discharge meet the requirements for a 301(h) modification, and upgrade to full secondary treatment as quickly as possible if the discharge fails to meet the 301(h) requirements. USEPA has tentatively decided that the discharge meets those requirements. State and federal law require the discharge to comply with the Permit. As discussed in staff's Evaluation of Compliance with Permit Requirements, the discharge complies with the Permit.

There is no evidence that the discharge has adversely impacted the California sea otter. The existing Permit already includes multiple requirements to protect marine life. Staff disagrees that it is "critical that specific measures be included in the sewage plant's permit assuring that it will protect the California sea otter."

Simply comparing the Conversion Schedule of the proposed Settlement Agreement to upgrades of other small cities' facilities around California (or elsewhere) is inappropriate. No upgrade is the same. The circumstances and prior planning leading to those upgrades are different. In this case, the Discharger agreed to upgrade in order to avoid litigation regarding the 301(h) waiver and permit delays. Considering the time required to retain engineering consultants, plan the facilities, go through environmental review and permitting, obtain financing, design, and construct the project, the proposed Conversion Schedule is reasonable. The City of Morro Bay is interested in upgrading to tertiary treatment in order to institute water recycling. City representatives have indicated that they expect environmental review of tertiary treatment and recycling options will delay the environmental review. Staff agrees. Although some consideration of tertiary treatment as a project alternative will be required in any case, more extensive review will be necessary if tertiary treatment will be included in the proposed project. It is important to note that the proposed Conversion Schedule is the maximum time allowed to upgrade, and that any delay by the Discharger's results in stipulated penalties. There is plenty of incentive for the Discharger to complete the upgrade in less than 9.5 years. We understand that the Discharger is currently a year ahead of the schedule in the settlement agreement, so a shorter completion time is possible.

Comment 3: Central Coast Water Board staff received the following identical email from **110+ people from across the nation** throughout January and February 2006, in response to a **Defenders of Wildlife** member action alert:

"As a supporter of Defenders of Wildlife and the California sea otter, I urge you to shorten the proposed Morro Bay sewage treatment plant upgrade timeline so that it is as rapid as possible. The proposed 9.5 years to upgrade this plant is too long. Moreover, it is critical that specific measures be included in the sewage plant's permit assuring that it will protect the nearshore marine ecosystem, one of whose key inhabitants is the California sea otter.

"There is no reason that the Morro Bay community cannot meet the standard established by many similar small cities around California that have completed a similar upgrade in a fraction of the time. Adopting a shorter timeframe for the plant upgrade and requiring measures to protect the sea otter and other marine life is the only way to preserve local waters, including Morro Bay's extraordinary estuary, for future generations. I am counting on you to take the necessary steps to protect these valuable coastal resources."

Staff Response 3: Please see staff's previous responses.

Comment 4: Ruth Boysen of San Pedro, California, submitted the following email on January 9, 2006:

"As the owner of property in Pismo Beach and a frequent visitor to the Central Coast I want to urge you to lessen the requested 9.5 year timeline by the Morro Bay/Cayucos sewage treatment plant. It is my understanding that state law and The Clean Water Act require that this sewage plant be upgraded as rapidly as possible!

"There is no reason that the community of Morro Bay cannot meet the standard established by other small cities around California that have managed to complete a similar upgrade in a fraction of the time.

"Specific measures should also be included in the sewage plant's permit specifically protecting the California sea otter. Completing the upgrade in a much shorter time and requiring measures to protect the sea otter and other marine life will preserve local waters for our grandchildren and all future generations.

"If you don't want to do this for the future generations then consider that tourism is one of the major industries on the Central Coast. Tourists come to see the creatures they aren't able to see near their homes. It was [sic] seem economically unwise to put off the upgrade and therefore protecting the wildlife thereby destroying one of the major attractions to the beautiful Central Coast.

"I hope I can count on you to take the necessary steps to protect these valuable coastal resources."

Staff Response 4: Please see staff's previous responses.

Comment 5: Matthew Haskett of Turlock, California, submitted the following email on January 9, 2005:

"Please do not allow the sewage plan that threatens the sea otters to take 10 years to ugrade its facilities. Water quality needs to be improved as soon as possible; 10 years is too long."

Staff Response 5: Please see staff's previous responses.

The **City of Morro Bay** submitted extensive written comments on behalf of the Discharger on January 11, 2006. These comments are included here verbatim (without footnotes, for the sake of readability). Staff responses follow each specific comment.

Introductory (General) Comments:

"Despite our extensive detailed comments on the permit itself, we are immensely gratified by the cooperative effort between the staffs of Morro Bay, Cayucos, RWQCB, and the EPA throughout the permit process. Because of our mutual interest in a future upgrade of the treatment plant, development of the permit was an unusually long and involved process. The staffs of the four agencies should be applauded for promptly and effectively negotiating a mutually acceptable settlement agreement that identifies a reasonable conversion schedule for plant upgrades capable of meeting full secondary treatment requirements. All agency staffs worked cooperatively to establish the conversion schedule based on facility needs identification and analysis for the two respective communities, extensive public input and dialogue, as well as the best professional judgment of a respected environmental engineering firm. MBCSD is strongly committed to the schedule outlined in the settlement agreement and feels that it accurately reflects a continued commitment to protecting the receiving waters and local ecology. MBCSD looks forward to working with RWQCB and EPA staff during the implementation of the settlement agreement, and to RWQCB assistance in procuring funding for the upgrade project that will be the largest expenditure in the history of either Cayucos or Morro Bay. It is our hope that we can continue to work cooperatively by redirecting much of the monitoring and reporting costs toward our mutually agreed upon solution. MBCSD thanks both RWQCB and EPA staff for their cooperation and patience during this process.

"During the upgrade process, re-issuing a 301(h)-modified discharge permits to MBCSD is an environmentally sound decision supported by two decades of intensive monitoring. During that time, there have been no perceptible impacts from the MBCSD discharge. There are four major aspects of the MBCSD discharge that account for the lack of impacts.

1) Discharge volumes are small, only about 1 MGD;
2) Effluent solids concentrations are low, and close to secondary treatment standards;
3) The discharge is far removed (2700 ft) from the shoreline where the high-energy open-ocean environment rapidly disperses effluent beyond recognition within 50 ft of the diffuser structure; and
4) Effluent contaminant levels are low because domestic wastewater sources dominate in a service area devoid of heavy industry.

"During the upgrade of the MBCSD plant, the Regional Board and EPA decisionmakers can take comfort in the fact that there will be no tangible impact on the marine environment, or its beneficial uses, by allowing the MBCSD to continue operating under a 301(h)-modified permit. The principal reason for this is that this partial-secondary treatment plant is far below capacity, so nearly all of the effluent is already treated to secondary levels. In addition, the discharge will not materially change during the upgrade period because population growth in the service area is restricted by legislation. Consequently, the discharge volume will remain far below plant capacity and nearly all of the wastewater will continue to be treated to secondary levels. In addition, the intensive monitoring required as part of the 301(h) section of the Clean Water Act is "...among the most comprehensive of all municipal ocean discharges of less than 5 MGD in California." Consequently, the monitoring program will continue to be capable of quickly identifying any potential future impacts so that corrective action can be implemented in a timely fashion. Because of all these considerations, the Regional Board and EPA can rest assured that their decision to re-issue the 301(h)-modified permit to the MBCSD is based on sound reasoning and solid scientific data.

"Your consideration and reasoned response to the MBCSD's concerns [below] are greatly appreciated."

Staff Response: Comment noted.

Note: Dr. Douglas Coats or Marine Research Specialists, consultant to the Discharger, provides the following recommended technical revisions (Comments 6-25).

Comment 6: "...recommended revisions are listed in order of importance, with the highest priority changes listed first. References to pertinent page numbers and sections in the proposed NPDES permit are italicized.

> **"Remove the requirement for Acute Toxicity Testing [*Page E-10, Section E.A*].** There is no technical or regulatory justification for requiring acute toxicity testing of MBCSD effluent. As stated in the fact sheet [*Page F-22, Section F.V.7*], the California Ocean Plan (COP) does not require acute toxicity tests for dischargers that achieve the dilutions achieved by the MBCSD discharge. The COP cites the need for acute toxicity testing only "...*as necessary for the protection of beneficial uses of ocean waters*." There is no nexus between the

protection of beneficial uses and the requirement for acute bioassays on MBCSD effluent samples. There are four reasons for this:

a) Acute testing is unnecessarily redundant with the chronic testing that is already required as part of the NPDES Permit. Chronic tests provide far more accurate and sensitive measures of effluent toxicity.

b) Acute tests conducted on MBCSD effluent result in erroneous measures of toxicity that provide no insight into the actual toxicity of the discharge. Over two decades of acute testing have demonstrated that the presence of ammonia in the MBCSD effluent samples severely compromises the accurate determination of acute toxicity.

c) Although ammonia interference causes the measurements to be significantly inflated, the acute toxicity levels of the MBCSD discharge reported over the last two decades have been less than half of the effluent limitation cited in the NPDES Permit. Consequently, even based on artificially inflated bioassay results, the discharge cannot be considered an acutely toxic threat to beneficial uses of receiving waters.

d) The acute toxicity limit is intended to prevent lethality to organisms passing through the acute mixing zone. For the MBCSD discharge, the prescribed mixing zone is highly localized around the outfall, extending only 1.5 m (4.9 ft) from the point of discharge. At that location, the effluent is diluted more than 100-fold, and is 25 times more dilute than the effluent tested in the bioassays. The only conceivable beneficial use that could be impacted would be fishing. However, finfish are likely to avoid the turbulent discharge jet. Additionally, acute bioassays continuously expose organisms to high effluent concentrations over a four-day period. Clearly, they do not reflect the brief duration of any potential finfish exposure to dilute concentrations of MBCSD effluent."

Staff Response 6: Staff agrees that chronic toxicity testing is a more sensitive and accurate measure of whole effluent toxicity than acute toxicity. Acute toxicity testing is fraught with problems, including interference by ammonia. The 2001 California Ocean Plan recognizes this, in stating:

"Dischargers shall conduct chronic toxicity testing for ocean waste discharges with minimum initial dilution factors ranging from 100:1 to 350:1. The RWQCBs may require that acute toxicity testing be conducted in addition to chronic as necessary for the protection of beneficial uses of ocean waters."

In this case, with an initial dilution of 133:1, chronic toxicity testing provides adequate protection of beneficial uses. Acute toxicity testing is unnecessary. Staff recommends removal of the acute toxicity-testing requirement from the Monitoring and Reporting Program. The daily maximum Acute Toxicity effluent limitation of 3.9 TUa remains in the Permit.

Comment 7: "Require surfzone sampling only when effluent coliform densities are elevated [*Page E-13, Section E.VI.A*]. The proposed NPDES Permit requires the collection and analysis of surfzone samples on a periodic basis. Instead, surfzone sampling should only be required when effluent total coliform bacteria tests exceed 2,400 MPN/100 mL. Once triggered, surfzone sampling should continue on a daily basis until the effluent total coliform concentration returns to compliance. The rationale often proposed for periodic surfzone sampling in other NPDES permits is that "*Surf-zone monitoring provides a public service....*" However, this rationale does not apply to the MBCSD discharge because it is in direct conflict with the Clean Water Act (40 CFR 125.63a), which requires that the scope of 301(h) monitoring programs be "*...limited to include only those scientific investigations which are necessary to study the effects of the proposed discharge.*" Triggered surfzone monitoring satisfies this requirement; regular periodic monitoring, as currently specified in the proposed NPDES Permit, does not. Two decades of monitoring data demonstrate that periodic surfzone monitoring does not lend insight into the MBCSD discharge for the following reasons:

a) Disinfection of effluent prior to discharge is highly effective at reducing bacterial densities to levels below the limits established for beneficial use. Thus, at the end of the treatment process, the effluent already typically meets the bacterial standards for ocean waters. Because of this, the EPA Tentative Decision Document states that "*...shoreline contamination by way of the applicant's discharge is not of reasonable concern.*"

b) Rapid dilution of effluent by more than 133-fold shortly after discharge reduces even moderately high bacterial densities to non-detectable levels within a few meters of the discharge point. Clearly, surfzone samples are too distant from the discharge to lend any insight into potential discharge-related impacts from anything but the very highest bacterial densities in the effluent.

c) In contrast to bacterial densities in effluent samples, surfzone samples are often elevated due to onshore runoff. This and other non-point source contamination severely compromises any determination of the potential influence from the effluent discharge.

d) The periodic surfzone monitoring effort specified in the NPDES Permit duplicates sampling already conducted by the San Luis Obispo County Department of Health."

Staff Response 7: The Discharger's reasons for reducing surfzone monitoring are valid. The Discharger consistently complies with its effluent and receiving water bacteria requirements. The Permit specifies that the discharge shall not cause the following bacterial limits to be exceeded in the water column:

Parameter	Applicable to any 30-day period
Total Coliform Organisms (MPN/100 mL)	

Median	70
90% of samples	230

Staff analyzed all surf zone total coliform monitoring data collected since 1993. The data set consisted of 385 to 390 samples at each monitoring station. With the exception of the monitoring station at the mouth of Morro Creek, the annual median at each monitoring station was well below 70 MPN/100 mL. The greatest median value was 17 MPN at Station F (nearest to Morro Rock) in 1995. With the exception of the Morro Creek monitoring station, no less than 98% of samples from each monitoring station were below 230 MPN/100 mL. County of San Luis Obispo Environmental Health Services has been monitoring this beach at stations 75 feet north of the Morro Rock parking lot (near Station F), and at the projection of Atascadero Road (near Station E) weekly during summer months since November 2001, and weekly during winter months since February 2002. Heal the Bay's Beach Report Card (see www.healthebay.org/brc/annual/2003/counties/slo/grades.asp), which is based on EHS' monitoring results, gave both locations an A grade for Summer 2002, an A+ for Winter 2002-2003, and an A+ for Summer 2003. The Discharger's periodic surfzone monitoring is redundant with EHS' beach monitoring program. Reductions in surfzone monitoring are justified.

Since the original purpose of the surfzone monitoring requirement is to ensure that the discharge is not causing exceedances of receiving water bacteria requirements, and periodic monitoring demonstrates that the normal discharge is not causing exceedances, staff believes that triggered surf-zone monitoring, based on exceedances of the Total Coliform effluent limitation, is appropriate. Staff proposes the following change to the surfzone monitoring section of the Monitoring and Reporting Program:

> "Grab samples shall be taken at all surf-zone monitoring stations ~~weekly during summer months (May-October) and at least monthly during winter months (November-April)~~ <u>whenever effluent Total Coliform bacteria in effluent exceeds 2400 MPN/100 mL. Such monitoring shall continue daily for four consecutive days or until effluent returns to compliance with the 30-day median of 23 MPN/100 mL, whichever is longer. The Executive Officer or USEPA may require daily surf-zone monitoring to continue beyond 4 days if deemed necessary to determine compliance with receiving water limitations."</u>

This triggered surfzone monitoring requirement is more protective of beneficial uses than periodic monitoring because it is more focused on determining compliance when receiving water exceedances are likely to occur. This triggered monitoring requirement is consistent with other similar discharges in the Central Coast Region (e.g., Carmel Area Wastewater District). San Luis Obispo County Environmental Health Department will fulfill the role of periodic monitoring by monitoring this beach weekly during summer months and monthly during winter months

Comment 8: "Remove all statements that imply past exceedances of permit limits are somehow related to less-than-secondary treatment standards. [*Page*

F-11 and F-12, Section F.IV.A.4]. None of the specious relationships between treatment levels and violations outlined in the Fact Sheet of the NPDES Permit are based on fact.

a) The record of violations associated with other treatment plants within the region shows that there is no relationship between permit violations and treatment level. In fact, plants that attain full secondary or even tertiary treatment levels have more than ten-times the number of violations of the MBCSD plant in the past five years.

b) The MBCSD effluent often meets or exceeds secondary treatment standards, so it is misleading to suggest that the limited reduction in the suspended solids concentration achieved by conversion to full secondary treatment would suddenly eliminate all future exceedances of permit limits. Instead, the exceedances largely occur because of unavoidable mechanical malfunctions of equipment. In place of these specious arguments, it is reasonable to suggest that many years from now, when the major components of the treatment process approach the end of their useful life, an increase in permit exceedances might be expected.

c) The discussions associated with the exceedances erroneously imply that occasional non-compliance with the effluent limitations in the NPDES Permit is the only consideration for the permit renewal. In fact, the ability to routinely meet water-quality standards promulgated in the California Ocean Plan (COP) is the primary consideration. The intensive monitoring associated with the MBCSD discharge has consistently demonstrated that the discharge regularly achieves the required receiving-water standards, yet, there is no mention of this fact in the Fact Sheet.

d) The following erroneous statements concerning the exceedances require correction for the reasons indicated:
i) [***Page F-11, Section F.IV.A.4***] "*The reported dioxin concentration ~~value~~ was 0.56 pg/L, 8% greater than the effluent limit. This exceedance was much smaller than the 20% instrumentation calibration standard. The Dischargers state the particular dioxin congener that was responsible for the violation is ubiquitous in the environment ~~and was present in the influent to the treatment plant~~. The Dischargers also stated that the violation could be attributed to laboratory contamination, which is commonplace when measuring concentrations at sub-parts-per-quadrillion. ~~Staff suspects the dioxin could have been formed in the disinfection process of the treatment plant, where a relatively high concentration of organic matter is combined with a high dose of chlorine.~~*" The last statement is incorrect because neither the solids concentration nor the chlorine dose at the time of the dioxin measurement was particularly high relative to other effluent samples, when dioxin measurements were well below the permit limit. The Fact Sheet fails to point out the fact that the excess 8% is well below the 20% resolution of the chemical assay. Finally, the MBCSD never stated that the dioxin was present in the influent, although this is a plausible assumption given that drinking water is also often chlorinated.
ii) [***Page F-11, Section F.IV.A.4***] "*~~Notably, this violation might not have occurred had the facility been designed to meet secondary treatment standards, because a solids removal system in the chlorine contact chamber would not likely be necessary.~~*"

This statement is incorrect because the solids removal system in the chlorine contact chamber has nothing to do with secondary treatment. Instead, it has to do with the fundamental redesign of facility in 1985. Certainly, a new facility could be designed so that solids would not accumulate in a tank that was originally designed as a clarifier, but that could be accomplished without achieving secondary treatment. Even so, solids would accumulate somewhere in the process. Conversely, even if the suspended solids concentrations were to meet full secondary treatment standards, which the effluent has for 17 of the last 23 months, solids would continue to settle in the contact tank.

iii) [***Page F-12, Section F.IV.A.4***] "~~*Again, these violations might not have occurred had the facility been designed to meet secondary treatment standards, because solids would not be present in the chlorine contact chamber at levels that would alter the chlorine dosing process. (Similar problems have not occurred at facility's that meet secondary treatment standards.)*~~ Again, this statement is blatantly incorrect. The violation was caused by the design of the sampling device that controlled the chlorination/dechlorination process, and had nothing to do with the suspended-solids load. The sample-supply line was subsequently redesigned to improve flow and filter screens are now cleaned more often. These changes eliminated the sampling problem and chlorine violations have not occurred since. According to representatives from other treatment plants, identical sampling devices at full-secondary and tertiary facilities require the same type of maintenance regimen."

Staff Response 8: Upon reviewing the Fact Sheet again, staff believes the subject statements were somewhat speculative and unnecessary, and agrees to the recommended changes.

Comment 9: "Remove cross-shore benthic monitoring stations B-8 and B-9 [*Page E-3, Section E.II*] and add replicate sampling for composite chemical analyses at the remaining stations [*Page E-14, Section E.VII.A*]. The locations of cross-shore Stations B-8 and B-9 are shown in the figure on the next page, [but not included here]. These stations were added in the last permit but were subsequently found to be heavily influenced by natural depth gradients. The depth-related differences at these stations mask potential discharge-related impacts and render the data at these stations of little use. In exchange for the reduced monitoring effort at these cross-shore stations, the grab sample replication should be increased at the remaining (along-shore) stations. Variability in trace-metal concentrations significantly increased after replicate grab sampling was dropped in the current permit's monitoring program. Consequently, chemical analysis of a composite of three replicate grab samples at Stations B-2 through B-7 should be reinstated to stabilize the determination of chemical concentrations. To implement this requirement, the last sentence in the last paragraph on page E-14 should read: "~~*A grab sample*~~ Three grab samples *shall be collected using a 0.1 m^2 Van Veen grab sampler* ~~*at all benthic monitoring stations, and analyzed*~~ at each benthic monitoring station. A composite of these three samples should be analyzed *as follows:*"

Staff Response 9: Staff agrees that the cross-shore configuration of benthic monitoring stations B-8 and B-9 masks potential discharge-related impacts. B-8 and

B-9 are clearly influenced more by depth differences than by the discharge. (If B-8 and B-9 were impacted more by the discharge than depth, then the along-shore stations that are the same distance from the outfall as B-8 and B-9 would exhibit a similar spatial gradient, which is not the case.) Replicate grab-sampling at the along-shore benthic monitoring stations is a fair tradeoff for removal of B-8 and B-9. Staff proposes to include the requested change.

Comment 10: "Footnote the annual minimum frequency of analysis in the effluent monitoring requirements for the protection of human health to state that "*After results are reported, the Discharger may request to the Regional Board and EPA that only those parameters detected during the first year of sampling be analyzed during the remainder of the permit*" [*Pages E-6, E-7, and E-8, Section E.IV.A*]. Adding this footnote is consistent with other 301(h) NPDES discharge permits in the region. Moreover, quantitative analyses of a decade of effluent measurements has definitively demonstrated that the MBCSD discharge has a high compliance potential for the chemical constituents currently monitored on a semi-annual basis. The results from this reasonable potential analysis should be included in the rationale for changes to the effluent monitoring frequency [*Page F-22, Section F.V.8*] as follows: "~~*None of these priority pollutants were detected in effluent by the several sampling events during the life of the existing*~~ Quantitative statistical analysis of a large number of historical contaminant measurements demonstrates that there is a low potential for non-compliance, and that the proposed effluent-monitoring reductions are warranted. *This* historical *performance, and the cost of* ~~*this*~~the *monitoring justifies* the ~~*this monitoring frequency*~~ *reductions*. ~~*Effluent monitoring for those priority pollutants which were detected during the life of the existing Permit remains the same.*~~"

Staff Response 10: Dischargers always have the right to request monitoring reductions, so the requested footnote is unnecessary. However, for the sake of consistency with other permits, staff agrees to add the footnote as requested. The Discharger should note that staff is not authorized to grant monitoring reductions. The Central Coast Water Board, in addition to USEPA, must approve reductions. Staff also agrees to include the additional rationale for the proposed monitoring frequency reductions.

Comment 11: "Change the minimum sampling frequency for effluent metals from semi-annually to annually [*Page E-5, Section E.IV.A*]. Analysis for effluent metals should conform to the annual sampling frequency required of other priority pollutants. The fact that metals have been detected in past effluent samples does not provide an adequate rationale for the semi-annual sampling frequency. The statement concerning the reductions in monitoring, "*Effluent monitoring for those priority pollutants which were detected during the life of the existing Permit remains the same.*" [*Page F-22, Section F.V.8*] suggests that because a compound has been detected historically, it has a potential for non-compliance. However, such an approach provides no comparison between a concentration that is environmentally significant and the detectable concentration, which is largely a measure of a laboratory's analytical ability. In fact, trace metals differ from other priority pollutants

because they occur naturally in the environment at detectable levels. Some are even required by organisms as nutrients. The fact that they occur naturally in the environment should not be a reason to intensify monitoring. On the contrary, the reasonable-potential analyses of historical effluent measurements has definitively demonstrated that the potential for future compliance for metals concentrations is high, and that annual sampling is sufficient to demonstrate continued compliance with the COP."

Staff Response 11: Staff does not accept the Discharger's rationale for reducing effluent monitoring frequency for metals. The metals are occasionally detected in effluent, which justifies more frequent monitoring than the other priority pollutants. The Discharger suggests that staff is intensifying monitoring. This is not the case. The proposed semi-annual effluent monitoring frequency for metals remains the same as the existing permit.

Comment 12: "Reduce the number of initial chronic screening tests from "*...no fewer than three tests*" to "*...no fewer than two tests*" [*Page E-11, Section E.V.B*]. Ostensibly, multiple screening tests are conducted to account for potential effluent variability. However, MBCSD effluent varies semiannually, and requiring more than two semiannual tests is redundant. There is no regulatory basis for the three-test requirement because the COP does not specify the length of an initial screening period for chronic tests. The proposed duration of two tests is reasonable and conforms to the intent of the COP."

Staff Response 12: Staff agrees that an initial screening period of two tests is appropriate. Most similar dischargers in the Central Coast Region are only required to determine the most sensitive species through one screening. Two tests should adequately account for any effluent variability. Staff proposes to accept the change as requested.

Comment 13: "Replace the seventeen instances of the statement "*The discharge shall not cause...*" with "*Wastewater constituents within the discharge shall not cause:*" [*Pages 15 and 16, Sections V.A, V.B, V.D, V.E, V.F, V.G, V.H, V.I, V.J, V.K, V.L, V.M, V.N, V.O, V.P, V.Q, and V.R*]. This change is consistent with the intent of the COP and is particularly important for the MBCSD discharge because, on occasion, the naturally occurring bottom seawater that is entrained in the buoyant effluent plume has different properties from shallower receiving waters. Receiving-water changes in suspended solids, dissolved oxygen, and other constituents that result from the movement of ambient seawater should be distinguished from those caused by the presence of effluent constituents."

Staff Response 13: The subject discharge is unique in that the offshore monitoring program is powerful enough to distinguish entrainment of a naturally-occurring turbid bottom seawater layer by the buoyant effluent plume from changes resulting from effluent constituents. Staff agrees that movement of seawater should be distinguished from changes caused by the presence of effluent constituents. Staff proposes to accept the change as requested.

Comment 14: "Remove the requirement for testing dissolved-sulfide concentrations in benthic porewater samples [*Page E-15, Section E.VII.A, Line 3 of Sampling-Frequency Table and Footnote 18; Page F-15, Section F.IV.B.5, Last Sentence of the 1st full Paragraph; Page F-22, Section F.V.11*]. The additional year of sampling required in the footnote for elimination of sulfide sampling has already been conducted, and the stated requirement has been met. The MBCSD has performed the high-resolution sulfide analysis on porewater samples on three separate sampling occasions, in 2003, 2004, and 2005. None of the 27 samples contained detectable sulfide concentrations. Moreover, elevated sulfide concentrations in porewater are usually restricted to quiescent marine and estuarine environments, where there are high concentrations of organic constituents. Often these benthic environments are also hypoxic. This is not the case for the coarse sand sediments surrounding the MBCSD outfall, which are intensively reworked by waves and currents."

Staff Response 14: When originally drafting the proposed permit in 2003, staff proposed to give the Discharger the option to monitor Dissolved Sulfide in sediment porewater to decrease variability of results. The porewater extraction technique is relatively difficult and expensive, so staff further proposed that this monitoring requirement may be discontinued by written approval of the Executive Officer if Dissolved Sulfides are not detected in any porewater sample from any benthic sediment monitoring station for one additional year. Since the Discharger has used the porewater extraction technique and not detected any Dissolved Sulfides at any station for two additional years, the Discharger has met this requirement. Staff therefore proposes to remove the requirement for testing Dissolved Sulfides in sediment porewater as requested.

Comment 15: "Revise the locations of the surfzone monitoring stations to conform to historical measurement locations [*Page E-2, Section E.II*]. The coordinates of the surfzone monitoring locations provided in the monitoring-location table in the permit do not coincide with the along-shore distances cited in the same table. Moreover, neither the coordinates nor the along-shore distances coincide with the precise locations where surfzone samples have been collected over the past two decades. These inconsistencies only became known after analysis of detailed navigational data collected during a recent shoreline survey. The revised surfzone monitoring stations should be as follows:

SZ-A1	Upcoast Reference	35° 23'58" N	120° 52'07" W	1330 m (4363 ft) N
SZ-A	Upcoast Midfield	35° 23'45" N	120° 52'04" W	912 m (2992 ft) N
SZ-B	Upcoast Nearfield	35° 23'31" N	120° 52'00" W	488 m (1602 ft) N
SZ-C	Onshore of Diffuser	35° 23'15" N	120° 51'57" W	0
SZ-D	Downcoast Nearfield	35° 23'02" N	120° 51'55" W	426 m (1398 ft) S
SZ-E	Downcoast Midfield	35° 22'46" N	120° 51'54" W	922 m (3026 ft) S
SZ-F	Downcoast Reference	35° 22'24" N	120° 51'53" W	1602 m (5250 ft) S

Staff Response 15: Staff appreciates the Discharger's attention to these details, and proposes to accept these changes as requested.

Comment 16: "Clarify the requirement that "*Dilution and control water should be obtained from an unaffected area of the receiving waters*" [*Page E-11, Section E.V.B*]. The statement should be modified to specify "*Dilution and control water should be obtained from an unaffected area ~~of the receiving waters~~ of the open ocean along the Pacific coast.*" Otherwise, the statement could be incorrectly interpreted to mean that dilution and control waters used in the chronic bioassays need to be collected from the region around the outfall. That would be an onerous and unnecessary requirement. In contrast to discharges within enclosed bays, the receiving waters of the open ocean are relatively uniform and there is no advantage to collecting seawater near the outfall, as opposed to seawater collected in the open ocean near the toxicity testing facility."

Staff Response 16: Staff agrees, and proposes to accept this change as proposed.

Comment 17: "Focus the discussion of toxoplasma and sea otters [*Page F-19 and F-20, Section F.IV.B.8*]. The discussion provided in the Fact Sheet under Section F.IV.B.8 misrepresents the potential for impacts from the MBCSD discharge, and fails to clearly state, at the beginning of the discussion, the empirical fact that the MBCSD discharge is not responsible for the observed toxoplasmosis in the local sea otter population. In particular, it does not fully discuss the implications of mussel-testing results, which unequivocally demonstrate that the MBCSD discharge cannot be the source of *Toxoplasma gondii* infection in sea otters. The Fact Sheet also fails to point out that the mussel analyses determined that the MBCSD discharge does not contain other bacterial pathogens such as *Campylobacter, Clostridium perfringens, Plesiomonas shigelloides, Salmonella, and Vibrio* spp. (*cholerae, parahaemolyticus*, etc.). Additionally, the Fact Sheet cites research published by Miller et al, but does not discuss the implications of their finding that "*...seropositivity to T. gondii was not significantly associated with ...proximity to sewage outfalls (P=0.955) but was highly correlated with freshwater flow (P<0.001).*" This finding clearly demonstrates both the

overwhelming influence of non-point source contamination, and the lack of influence from wastewater discharges. The rest of the toxoplasmosis discussion in this section of the Fact Sheet is either not pertinent to this NPDES permit, is highly speculative, or has since been proven wrong. Consequently, the last full paragraph on Page F-19 should be eliminated from the Fact Sheet in its entirety. In particular, discussing the details of the high toxoplasmosis infection rates in otters near Morro Bay is unwarranted given that they are unrelated to the discharge. Similarly, discussing early speculation that high infection rates might be related to "*...the only discharge with a 301(h) Waiver in the studied area*," is clearly unfounded since, as stated later in the Fact Sheet, "... *the subject discharge is not a source of T. gondii loading to Estero Bay.*""

Staff Response 17: Staff appreciates the Discharger's concern regarding its discussion of toxoplasma and sea otters in the Fact Sheet, but believes the discussion is balanced and complete. Staff does not accept the Discharger's recommended changes.

Comment 18: "**Remove tributyltin as a monitoring constituent [*Page E-6, Section E.IV.A*].** Tributyltin was eliminated from the effluent monitoring program in the current permit because it has never been detected in MBCSD effluent. Also, its use is now restricted within the U.S. and it is not a likely constituent of MBCSD effluent. Instead, its distribution in the marine environment is primarily linked to its use as an anti-fouling additive to bottom paint on large ships, and detectable levels tend to be associated with relict contamination within the seafloor sediments of very large harbors."

Staff Response 18: Staff checked the existing monitoring program and confirmed that effluent tributyltin monitoring is not required. Staff proposes to remove the effluent tributyltin monitoring requirement as requested.

Comment 19: "**Revise the description of the effluent sampling location [*Page E-2 (Section E.II)*].** The effluent sampling location should not coincide with the location of the offshore diffuser structure, as it is currently listed in the NPDES Permit. Instead, effluent samples are collected at the air-relief structure, which is located onshore within the confines of the treatment plant at 35° 22' 47"N, 120° 51' 40"W. This location is downstream of any in-plant return flows or disinfection units, and is the last access point before the wastewater flows into the outfall."

Staff Response 19: Staff agrees that the specified effluent sampling location should be the Facility's air-relief structure, not the offshore diffuser structure. Staff proposes to accept this change as requested.

Comment 20: "**Modify and move the following statement to a footnote on the appropriate constituents: "*The mass based goals determined from the 99th percentile of historical effluent concentrations and a flow of 2.06 MG*" [*Page E-8, Section E.IV.B*].** The statement is unclear as originally written. It should be replaced by "*The performance-based mass emission goal was determined from the 99th*

percentile of historically detected effluent concentrations, and a flow of 2.06 MGD." It should be a footnote on the following nine constituents: arsenic, copper, zinc, total cyanide, toluene, benzene, chloroform, halomethanes, and tetrachloroethene."

Staff Response 20: Staff agrees with this comment and proposes to accept this change as requested.

Comment 21: "Provide a footnote to "*Effluent Limitations*" stating that "*The daily mass emission calculations are based on the average design flow rate of 2.06 million gallons per day (MGD).*" [*Page 11, Section IV.A*]. Normally, mass emissions would be based on the effluent peak seasonal dry weather flow of 2.36 MGD that is stated in Section IV.A. However, in this version of NPDES Permit, the mass emissions are computed from the average design flow rate. This results in more restrictive limitations on mass emissions. This fact should be clarified in a footnote. Otherwise, the computed mass-emission limitations might be thought to be in error."

Staff Response 21: Staff agrees with this comment and proposes to accept this change as requested, except that the footnote is more appropriately added to Section IV.C.5, not Section IV.A.

Comment 22: "Remove the statement concerning the predictive ability of the monitoring and reporting program (MRP) [*Page 6, Section II.K*]. The finding, "*The MRP is not capable of predicting future impacts to water quality and beneficial uses resulting from significant increases in pollutant loading,*" is inappropriate and misleading. First, it adds nothing to an assessment of the MRP based on its intended use because "*...significant increases in pollutant loading*" are not proposed as part of this permit. Second, it is misleading because the intensive and well-designed monitoring program is capable of detecting small increases in pollutant loading, and is capable of detecting potential discharge-related impacts regardless of their cause. In accordance with its intent, the MRP acts as a sentinel for untoward influences from the discharge, thereby allowing timely implementation of corrective actions that limit potential "*...future impacts to water quality and beneficial uses....*""

Staff Response 22: Staff agrees this finding is somewhat misleading, and proposes to replace it with the following, taken from the MRP:

> "The MRP is intended to: a) document short and long-term effects of the discharge on receiving waters, sediments, biota, and on beneficial uses of the receiving water; b) determine compliance with NPDES permit requirements and conditions; and c) assess the effectiveness of industrial pretreatment and toxics control programs."

Comment 23: "Qualify the discussion of Total Suspended Solids (TSS) exceedances [*Page F-10, Section F.IV.A.1*]. As written, the statement concerning the TSS exceedances imply they are a regular occurrence. This is not the case, and the following statement should be qualified as indicated: "*...thus the long-term average effluent TSS concentration is far below these limitations. However, these*

limitations were violated on three related *occasions* during a brief period in 2002. S*since 1998*, there have been no other exceedances of the TSS limit.""

Staff Response 23: Staff did not intend to imply that effluent TSS violations are a regular occurrence. Staff proposes to accept these minor changes to the Fact Sheet as requested.

Comment 24: "Augment the statement concerning biosolids in the facility description [*Page F-3, Section F.II.A*]. The biosolids statement should be augmented to read: "Historically, b*Biosolids* have been~~are~~ *anaerobically digested and dried, composted, and then trucked to the San Joaquin Valley for use as a soil conditioner*. However, in the past two years, the MBCSD has successfully implemented a composting operation at the treatment plant that will allow beneficial reuse of biosolids locally."

Staff Response 24: Staff proposes to accept this change as requested.

Comment 25: "Remove the two-sentence preamble to the section on Receiving Water Limitations [*Page 15, Section V*]. In its current form, the statement is ambiguous and unnecessary. It states, "*Receiving water quality is a result of many factors, some unrelated to the discharge. This permit considers these factors and is designed to minimize the influence of the discharge to* [on] *the receiving water.*" This statement ambiguously implies that the permit considered factors unrelated to the discharge to minimize its influence. The statement adds nothing to the rationale for receiving-water limitations."

Staff Response 25: Historically, this statement has been included in most discharge permits in the Central Coast Region to protect dischargers from receiving water quality factors that are beyond the discharger's control. Staff agrees the statement "this permit considers..." is ambiguous. Since the Discharger's monitoring program is powerful enough to discern between discharge-related impacts and receiving water factors beyond its control, staff also agrees this statement is unnecessary. Staff therefore proposes to remove this statement as requested.

Note: The following comments were provided by the Discharger's staff, and were titled as "Recommended Corrections to Typographical Errors, and other Inaccuracies and Discrepancies." Only the more significant comments are included here. The very minor clerical corrections recommended by the Dischargers that are not included here were made as recommended.

Comment 26: "Use consistent and accurate terminology when referring to the 301(h)-modified NPDES discharge permit issued to the MBCSD. The only accurate descriptor of the permit or its requirements is "*modified.*" The Clean Water Act only uses the term "*modified*" in its description of Section 301(h). It never uses other terms that are commonly misapplied to the Act, such as "*variance*" and "*waiver.*" These other terms are misnomers, because Section 301(h) only modifies three of the secondary treatment requirements and all other secondary treatment standards still

apply. Use of the term "*waived*" gives the misleading impression that secondary treatment requirements are eliminated altogether. All instances where these misnomers are used in the draft MBCSD permit should be changed to use the term "*modified*"...[comments then specify all sections of the draft where "modified" should be used instead of "variance" or "waiver."]

Staff Response 26: *"Modified"* is the terminology used in the Clean Water Act, therefore staff has revised the permit to only use *"modified,"* not *"variance"* or *"waiver."*

Comment 27: "Use consistent and accurate terminology when referring to the MBCSD as the "*Permittee*" or "*MBCSD*," not the "*Discharger.*" This change implicitly acknowledges that the MBCSD, like the Regional Board, as a branch of government providing a valuable public service to its constituents. The term "*Discharger*" connotes that nothing of value is being achieved by the MBCSD's treatment and subsequent discharge of municipal wastewater. Specifically, modify the first sentence of Section II.A on Page 4 as follows: "*Background. The City of Morro Bay and Cayucos Sanitary District (hereinafter* MBCSD~~*Dischargers)*~~*...*," and modify the subsequent references to "*discharger*" accordingly."

Staff Response 27: Staff acknowledges that the City of Morro Bay and Cayucos Sanitary District provide a valuable service to its constituents. Staff disagrees that the term *"Discharger"* connotes that it achieves nothing of value. *"Discharger"* is a term used in Clean Water Act and the California Water Code and the term the Water Boards typically use to refer to all persons discharging waste pursuant to waste discharge requirements, including NPDES Dischargers. *"Discharger"* remains used in the permit.

Comment 28: "Correct the Conversion Schedule to conform to the Conversion Schedule contained in the *SETTLEMENT AGREEMENT FOR ISSUANCE OF PERMITS TO AND UPGRADE OF THE MORRO BAY-CAYUCOS WASTEWATER TREATMENT PLANT* that was negotiated by MBCSD and RWQCB staff [*Page 8*]."

Staff Response 28: The Conversion Schedule included in the draft was an old version by the Discharger's consultant Carollo Engineers, and is corrected in the proposed permit, and in this staff report, as requested.

Comment 29: "Correct the Six-Month Median Effluent Limit for silver to 0.07 mg/L [*Page 12, Section IV.C.2*]. The NPDES Permit incorrectly specifies a limiting concentration for silver as 0.09 mg/L. This concentration does not account for the background concentration of silver in seawater that is specified in the COP."

Staff Response 29: Correction made. Staff appreciates the Dischargers' diligence in pointing out a correction that results in a slightly more stringent limitation.

Comment 30: "Provide footnote "b" that is associated with the effluent limitations for cyanide [*Page 12, Section IV.C.2*]. The NPDES Permit indicates that cyanide has a footnote "b," but does not provide the footnote. According to the COP,

the footnote should read as follows. "*If a discharger can demonstrate to the satisfaction of the Regional Board (subject to EPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by the combined measurement of free cyanide, simple alkali metal cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR PART 136, as revised May 14, 1999.*""

"**Add a footnote that allows the effluent limitation for chromium (III) to be met as a total chromium limitation [*Page 12, Section IV.C.3*].** This is consistent with footnote #2 applied to hexavalent chromium on Page 11. It is also consistent with the current discharge permit."

Staff Response 30: Staff mistakenly omitted these footnotes from the draft, therefore has added them to the proposed permit, as requested.

Comment 31: "Correct the Average Monthly Effluent Limit for chloroform to 17.4 mg/L [*Page 13, Section IV.C.4*]. The NPDES Permit lists an incorrect limit (1.74 mg/L)."

Staff Response 31: Staff recalculated this chloroform effluent and checked the previous permit, and verified that the limit should be 17.4 mg/L. The chloroform limit is corrected as requested.

Comment 32: "Correct the units on the Six-Month Median Effluent Limit for heptachlor and heptachlor epoxide to ng/L [*Page 13, Section IV.C.4*]. The NPDES Permit specifies heptachlor limiting concentrations that are associated with units of ng/L rather than the units of pg/L, which are incorrectly listed in the NPDES Permit."

Staff Response 32: The heptachlor and heptachlor epoxide limits in the draft permit are correct and remain unchanged. Units of pg/L are more appropriate than units of ng/L, because ng/L requires an inordinate number of significant figures.

Comment 33: "Change the type of sample for chlorinated phenolics from composite to grab [*Page E-5, Section E.IV.A*]. This conforms to the sample type of non-chlorinated phenolic compounds. The sample type for endosulfan, which is the next parameter in the list below non-chlorinated phenolic compounds, should be explicitly spelled out as a 24-hour composite so the continuation marks for compounds listed below it are correct."

"**Change the type of sample for radionuclides from grab to composite [*Page E-5, Section E.IV.A*].** This conforms to the historical sample type used to determine radioactivity."

"Change the type of sample for bis(2-chloroisopropyl) ether from grab to composite [*Page E-6, Section E.IV.A*]. This conforms to the sample type of the other related constituents."

Staff Response 33: Staff agrees these corrections are appropriate. Corrections made as requested.

Comment 34: "**Change the mass-emission goal for total cyanide to 71 kg/yr [*Page E-8, Section E.IV.B*].** The revision is based on the measurement of a detectable cyanide concentration in July 2000. Because of this detection, it is now one of the nine compounds potentially subject to antidegradation analysis should its mass emission increase above the specified limit.

Change the mass-emission goal for benzene to 12 kg/yr [*Page E-9, Section E.IV.B*]. The revision is based on the measurement of a detectable benzene concentration in July 1999. Because of this detection, it is also one of the nine compounds potentially subject to antidegradation analysis should its mass emission increase above the specified limit.

Change the mass-emission goal for dioxin to 1.48 mg/yr [*Page E-10, Section E.IV.B*]. This is the correct emission based on the permit limit of 0.52 pg/L."

Staff Response 34: Staff checked these numbers and found these changes to be appropriate. Note that these are slight increases in the mass emission goals in the Monitoring and Reporting Program, not the Maximum Allowable Daily Mass Emission Rates. These changes do not constitute backsliding. With exception to dioxin, which is discussed extensively above, detections of these pollutants were not effluent violations. These detections have not resulted in any discernable degradation to receiving water quality or beneficial uses.

Comment 35: Elizabeth Leite of Willow Creek, California, submitted the following comments on January 20, 2006:

> "My husband and I volunteer as instructors and educators at the Marine Mammal Center housed in the Golden Gate National Seashore. We are retired school teachers and have taken extensive training in order to provide instructional programs to visiting groups and individuals. We have learned a great deal about ocean ecology and understand the necessity of maintaining a healthy oceanic ecosystem for the health of marine mammals, fisheries, and human beings. It is from this frame of reference that I urge you to improve the 9.5 year upgrade timeline now proposed by the Morro Bay/Cayucos sewage treatment plant. This timeline needs to proceed as rapidly as possible and it needs to protect the California sea otter, an endangered species. State and federal clean water laws require this.
>
> "As you probably know, we have a serious tragedy developing on our coast. Agricultural runoff, discharges of stormwater, and the outflow from sewage

treatment plants are affecting the nearshore environment. Our endangered marine mammal, the sea otter, once gaining in numbers, is struggling again on the central coast. Both domoic acid poisoning and taxoplasmosis are affecting this beautiful animal, and its numbers are going down. These catastrophic maladies are increasing as a result of pollution and bacterial contamination from inefficient sewage treatment. Similarly, an epidemic of leptospirosis last year affected California sea lions in record numbers. Sea lions along the north and central coast were infected. The magnitude of the problem suggests that the ocean is in trouble. California Fish and Game has stated this. (Outdoor California, September-October 2003) The evidence is before us.

"The only way to clean up the central coast is to maintain tough pollution standards. Toxins, herbicides, pesticides, fecal bacteria, and many kinds of contaminants threaten human health. They are obviously affecting the health of marine mammals. Marine mammals are sentinels. They are showing us what is wrong. Please insist on a faster, more efficient upgrade for the Morro Bay. Cayucos sewage plant."

Staff Response 35: Please see staff's response to Comment 2 above. There is no evidence that the discharge has adversely impacted the California sea otter.

Comment 36: Kristen Herald of Wooster, Ohio, submitted the following comments on January 17, 2006:

"It is unreasonable to give the Morro Bay/Cayucos sewage treatment plant almost 10 years (10 years!) to update its facilities to no longer be a threat to the California sea otter. The total population of California sea otters statewide is only a mere 2,700, and declining. The otters act as sentinels, showing the health of the ecosystem around them. They are now dying of infections, depleting an already low population in the state of California. The source has been traced to poor water quality due to contaminants from sewage dumped in the bay by the Morro Bay/Cayucos sewage treatment plant. The sewage contains high levels of bacteria, parasites, pathogens, and fecal bacteria as well as many other harmful pollutants that threaten the lives of marine animals such as a variety of shellfish, seals, dolphins, a multitude of fish species and several shorebird and geese populations, not to mention the otter.

"It has been researched and shown that the update of the treatment plant and its facilities could happen as quickly as two and a half years. Not only is it absolutely possible to be carried out and finished in such a short period of time, but it would also cost less!

"Please, do not let this happen. The sooner the updates to the treatment plant are carried out, the better for all involved. The disturbing quality of the water is not only threatening the California sea otter, but other species that inhabit the waters. Allowing the pollution to continue leads to dangers posed not only to marine life,

but also human life and public health, causes degradation of coastal habitats, beach closures, and damage to the local economy.

"I urge you to shorten the period of time given to the sewage treatment plant to upgrade. This has a great effect on helpless animals, and I hope that is taken in to consideration."

Staff Response 36: Please see staff's response to Comment 2 above. There is no evidence that the discharge has adversely impacted the California sea otter.

Comment 37: **E. Joy Oakes** of Los Angeles, California, submitted the following comments on January 20, 2006:

"Please upgrade the timeline to improve the Morro Bay/Cayucos sewage treatment plant, thus protecting the sea otters, other marine life and Moro Bay's famous estuary. I have cancer with no genetic history of the disease and have to believe that environmental hazards are one of the reasons I am so ill. Please do your part to help our planet, your beautiful city and the people and animals that depend on your concern. Thank you."

Staff Response 37: Please see staff's responses to previous comments.

Comment 38: The **City of Morro Bay** submitted additional written comments on February 2, 2006, regarding the new collection system requirements proposed in the draft permit. The comments are included verbatim here (without footnotes, for readability's sake):

"Thank you for this opportunity to submit additional comments on the proposed discharge permit for the Morro Bay - Cayucos (MBCSD) Wastewater Treatment Plant. These comments are based on a comprehensive review of the wastewater collection system requirements contained in the proposed WDR's, and reflect the input from City of Morro Bay staff only. The Cayucos Sanitary District staff has indicated that they will be submitting comments on the collection system requirements under a separate comment letter.

"City staff requests that the Wastewater Collection System Requirements (Pages 21-23), as well as the Elements of the Wastewater Collection System Management Plan - (Attachment G), be deleted from the proposed WDR for MBCSD. It is City staffs understanding that the State Water Resources Control Board (SWRCB) is scheduled to adopt Statewide General Waste Discharge Requirements for Wastewater Collection System Agencies (State WDR) in March 2006. The SWRCB will not exclude the City and District from the State WDR on the basis that it's operations are covered by specific NPDES Permit provisions. Strict compliance with both regulatory programs will result in duplication of effort and poor use of limited resources. Therefore, we feel that to include these new requirements in the permit is redundant and unnecessary and will place additional unnecessary burdens on City staff and the staff of the Regional Board.

"The State WDRs, in their current form, have been developed with extensive stakeholder input that includes large and small collection agencies, consultants, non-governmental organizations, federal agencies, RWQCB staff and SWRCB staff. It was the opinion of the State Sanitary Sewer Overflow Guidance Committee that it was in the best interests of the public to have uniform rules for all collection systems in the State. The State WDRs will provide consistent guidance for all collection system operators in California. Implementation will be uniform and in accordance with reasonable time schedules. It is the opinion of City staff that the State WDRs will achieve the goal of reducing Sanitary Sewer Overflows (SSO) and improving collection system management that is consistent with the collection system requirements presently included in the proposed WDR for MBCSD.

"Given the numerous differences and issues which face each of the two collection systems, and the City and District's record of consistent and appropriate response to preventing and reacting to sewer spills, it makes more sense to hold each system accountable individually under the State WDR that allows for 42 months for implementation of the program as opposed to the 24 months dictated by the WDR for MBCSD. The WDR for MBCSD will be in jeopardy if either one of the systems does not perform to the Regional Boards expectations. Thus, either agency may be punished while having little or no ability to affect needed changes.

"Including collection system management requirements and absolute SSO prohibitions in the WDR for MBCSD will expose the City and its ratepayers to expensive, third party citizen lawsuits for any instance of noncompliance, regardless of circumstances. This is a real threat that must be considered by the RWQCB. The statewide General WDR regulatory process will provide an equivalent level of water quality protection and enhancement, without the same level of exposure to litigation.

"In the event that the Collection System Requirements cited above are not removed from the proposed WDR for MBCSD, then City staff requests that the completion dates for the tasks outlined in the Wastewater Collection System Management Plan Development Schedule (WCSMP) be modified as follows:

Task	Completion Date
Legal Authority (Part III)	February 10, ~~2007~~ 2008
Measures and Activities (Part IV)	February 10, ~~2007~~ 2008
Overflow Emergency Response Plan (Part VII)	February 10, ~~2007~~ 2008
Design and Performance Provisions (Part V)	June 10, ~~2007~~ 2008

Capacity Evaluation (Part IX)	June 10, ~~2007~~ 2008
Source Control Program (Part VIII)	February 10, ~~2008~~ 2009
Final Wastewater Collection System Management Plan	February 10, ~~2008~~ 2009

"The Management Plan Development Schedule should be modified for the following reasons:

1. The City and District are fully committed to responsible management of their respective collection systems. The City and District currently implement comprehensive, proactive collection system management programs.
2. The excellent compliance record for the two collection systems over the past seven years is contained in the Table cited on page F-20 of the Fact Sheet. The Table demonstrates the City and District's commitment to Best Management Practices and proactive operations and maintenance procedures. Page F-20 of the Fact Sheet provides further evidence of the City and District's commitment to responsible management of their respective collection systems. "*In general, the Dischargers responded to each sewage spill appropriately; the spill was quickly contained, the cause of the spill was eliminated, the affected area was cleaned up and disinfected, proper authorities were notified, creeks and/or beaches were posted if necessary, and maintenance/replacement schedules were adjusted if necessary to prevent future problems.*"
3. The City and District are beginning the complicated task of upgrading the treatment plant per the Conversion Schedule negotiated by the City, District, and RWQCB. This is both an expensive and time-consuming process for City and District staff. Implementing the dates outlined in the existing Management Plan Development Schedule will divert staff time from critical tasks and procedures required in the upgrade process.
4. It should be noted that there are two distinct collection systems involved in this permit process. The point at which the two collection systems are starting from in terms of existing programs and practices are quite different based on the operators and managers first hand knowledge of their systems and the individual needs of the respective systems. Therefore, to establish arbitrary completion dates for Management Plan tasks on a "one size fits all" basis is unrealistic and does not provide sufficient flexibility for the City and District to design and implement a Sewer System Management Plan appropriate to their particular circumstances.
5. After careful review and evaluation, City staff does not believe that it has been allowed adequate time to perform the numerous and varied tasks outlined in Parts III, IV, VII, V, in the one year time frame mandated in the MPDS. The detailed tasks outlined in the WCSMP will require the City to: hire at least one additional full time position in the Collections

Division; divert staff time from critical tasks; contract out critical tasks to qualified consultants for implementation in accordance with standard engineering requirements; implement rate fee analysis and increases, and adhere to statutory requirements for public hearing, notice and posting requirements. The tasks cited will be impossible to accomplish in a professional and adequate method in the limited time provided.

6. There is no discussion of the RWQCB review and approval process. Conforming our current collection system management process and its structural elements to satisfy the Attachment G requirements will require significant effort. The City would appreciate some assurance that there will be meaningful review and approval of the WCSMP by the RWQCB in a timely manner.

Additional Comments:
The City has limited ability to control the operation and maintenance activates of some of the satellite collection systems, as they are owned and operated by State agencies. The City has and will continue to take necessary actions to promote Best Management Practices and work with all interested parties to limit SSOs and to protect water quality, however it is unreasonable to hold the City responsible for system failures that occur under the jurisdiction of other agencies.

Page E-20, D. Sewage Spill Reporting, 4:
The requirement to collect "*upstream, at, and downstream*" samples subsequent to a SSO is ambiguous for several reasons. In the opinion of City staff, upstream monitoring should only be required when the discharge is to a creek, stream, or similar open, accessible channel with continuous background flow. If the SSO is to a non-flowing waterbody, such as an estuary, pond or the Pacific Ocean, "*upstream*" sampling is not possible. In the case of a discharge to a storm drain, upstream and downstream sampling may be difficult or impossible. Furthermore, entering a storm drain for the purpose of sample collection could expose City staff to unsafe conditions, particularly during rainfall events. It is recommended that this paragraph be modified to clarify SSO monitoring requirements and to fully define "upstream" and "downstream" sampling locations and protocols.

Staff Response 38: The proposed collection system requirements are consistent with those approved in several previously issued NPDES permits and Waste Discharge Requirements. The proposed requirements are appropriate for the Dischargers. The Draft Fact Sheet (December 5, 2005) for the proposed statewide Waste Discharge Requirements states, "In order to provide a consistent and effective SSO prevention program, as well as to develop reasonable expectations for collection system management, these General [statewide] WDRs should be the primary regulatory mechanism to regulate public collection systems." Staff would prefer to rely on the pending statewide requirements, but there is still considerable uncertainty as to when those requirements will be approved by State Board. At its February 2006, State Board delayed adoption of the requirements. Staff therefore recommends the proposed collection system requirements be retained. However, the requirements should terminate when the Discharger enrolls under the statewide requirements,

therefore staff recommends addition of the following language to the beginning of Permit Section C.3:

> "The requirements of this section, including Attachment G, shall terminate when the Discharger obtains coverage under statewide General Waste Discharge Requirements for Sewage Collection System Agencies."

The Discharger's requested changes to the Wastewater Collection System Management Plan development schedule are consistent with the proposed statewide requirements. A revised schedule would allow time for adoption of the statewide General WDRs, and for the Dischargers to enroll under the General WDRs, which should address the Discharger's concerns about duplicating effort. Staff recommends acceptance of these changes.

Staff understands that the Discharger has limited ability to control satellite collection systems, and agrees it is unreasonable to hold the City responsible for system failures that occur under the jurisdiction of other agencies.

Staff agrees the draft requirement to collect "upstream, at, and downstream" samples subsequent to a sewage spill is ambiguous. Staff agrees that upstream monitoring should only be required when the discharge is to a creek, stream, or similar open, accessible channel with continuous background flow, and has made this change to the proposed Permit.

Comment 39: The **Cayucos Sanitary District** submitted written comments on February 2, 2006, regarding the new collection system requirements in the proposed permit. The comments were submitted separately from the City of Morro Bay because Cayucos Sanitary District operates a separate and distinct wastewater collection system. The comments are included verbatim here:

> "The Cayucos Sanitary District (District) acknowledges that the Elements of the Wastewater Collection System Management Plan - (Attachment G) (WCSMP) and the Wastewater Collection System Requirements (Pages 21-23) included in the proposed WDR are consistent with other NPDES permits recently adopted in the Central Coast RWQCB Region. The District is also aware that these same provisions have been the subject of much comment, and have been even appealed to the SWRCB. The District hereby restates the comments made by other Agencies, that prescriptive collection system management requirements should not be included as wastewater treatment/disposal NPDES Permit provisions. The City of Morro Bay (City) and the District are entirely separate and distinct public agencies that operate and maintain completely separate and distinct sewer collection systems; and therefore WDR for the two collection systems should likewise be separate, which will be more equitable for the District and City and will likely be more efficient for purposes of regulatory monitoring and enforcement. The District's recommendation is that the Wastewater Collection System Requirements section, as well as Attachment G, and Section E-20: Part D, #'s 4 and 6 be removed from the proposed WDR.

In the event that the Collection System Requirements are not removed from the proposed WDR, then the District requests that the completion dates for the tasks outlined in the Management Plan Development Schedule be modified as follows:

Task	Completion Date
Legal Authority (Part III)	24 months after adoption of the NPDES Permit
Measures and Activities (Part IV)	24 months after adoption of the NPDES Permit
Overflow Emergency Response Plan (Part VII)	15 months after adoption of the NPDES Permit
Design and Performance Provisions (Part V)	36 months after adoption of the NPDES Permit
Capacity Evaluation (Part IX)	36 months after adoption of the NPDES Permit
Source Control Program (Part VIII)	24 months after adoption of the NPDES Permit
Final Wastewater Collection System Management Plan	42 months after adoption of the NPDES Permit

The Management Plan Development Schedule should be modified for the following reasons:

1. The District recommends that the Task Descriptions and Completion Dates comport with the Tasks shown on Page 15 (of 19) of Draft Order No. 2006-? for the Statewide General WDR for Sewage Collection Agencies.
2. The District is fully committed to responsible management of its collection system. The District currently implements comprehensive, proactive collection system management programs.
3. The excellent compliance record for the District's collection system over the past seven years is contained in the Table cited on page F-20 of the Permit Fact Sheet. The Table demonstrates the District's commitment to Best Management Practices and proactive operations and maintenance.

4. The point from which the City and District collection systems are starting are very different in terms of current condition and the status of existing programs and practices from which to address the requirements of the Management Plan. To establish arbitrary completion dates for Management Plan tasks on a "one size fits all" basis is unrealistic and

doesn't address the realities the two agencies face in terms of their ability to comply with the Management Plan Development Schedule.

5. Given the numerous differences and issues which face each of the two collection systems, and the City's and District's records of consistent and appropriate response to preventing and reacting to sewer spills, it makes more sense to hold each system accountable individually under the proposed Draft Statewide WDR Sewer System Management Plan Time Schedule that allows for 42 months as opposed to the proposed 24 months dictated by this permit.
6. The City and District are commencing the complicated task of upgrading their jointly-owned wastewater treatment plant, in accordance with a Conversion Schedule negotiated with the RWQCB staff, pending adoption by the RWQCB of a Settlement Agreement. This is an expensive and time consuming process for a very small District staff. Implementing the activities and tasks by the corresponding completion dates outlined in the existing Management Plan Development Schedule (MPDS) will divert staff time from critical tasks and procedures attendant to the upgrade process.
7. After careful review and evaluation, the District contends that as provided for in the Permit, there will not be adequate time to perform the numerous and varied tasks outlined within the time frame mandated in the MPDS. Depending on the nature of the tasks outlined in the WCSMP, the District will be required to divert staff time from critical collection system operations and maintenance tasks in order to recruit, hire, and train qualified staff. Additionally, the District envisions there will need to be outsourcing of critical tasks areas where professional consultants' services are required such as when standard engineering requirements are involved, and to conduct rate fee analysis and studies, and to adhere to statutory requirements for public hearing, notice and posting requirements. The tasks cited will be virtually impossible to accomplish in a professional and adequate manner within the limited time provided.

While the District understands and supports the concept of a regulatory framework for collection systems that is intended to reduce SSOs and protect water quality, we do not believe that prescriptive collection system management requirements should be included as NPDES Permit provisions. Again, we recommend that this entire section, as well as Attachment G, be removed from the Tentative Order. The basis for this recommendation is outlined below:

1. The SWRCB is in the final stage of adoption of Statewide General Waste Discharge Requirements for Sewage Collection System Agencies (General WDRs).

2. The SWRCB estimates the General WDRs will be adopted in March of 2006. This timing will basically coincide with adoption of MBCSD's final NPDES Permit.

3. The General WDRs, in their current form, have been developed with extensive stakeholder input from large and small collection agencies, consultants, non-governmental organizations, federal agencies, RWQCB staff and SWRCB staff. In sharp contrast, the Wastewater Collection System Requirements set forth in the Tentative Order were developed without any input from the regulated community.

4. Including collection system management requirements and absolute SSO prohibitions in the Tentative Order will expose the District (and City) and its ratepayers to expensive, third party citizen lawsuits for any instance of noncompliance, regardless of circumstances. This is a real threat that must be considered by the RWQCB. The statewide General WDR regulatory process will provide an equivalent level of water quality protection and enhancement, without the same level of exposure to litigation.

5. The General WDRs will provide a level playing field for all collection system operators in California. Implementation will be uniform and in accordance with reasonable time schedules. Again, implementation under the statewide General WDR will allow the District to implement the required tasks in accordance with standard engineering requirements.

6. A key element of the statewide General WDR program is a standardized online (web-based) reporting system. This application will streamline and dramatically reduce costs associated with SSO reporting at all levels. If the collection system provisions of the Tentative Order are retained, the District will be subject to duplicative, expensive, and burdensome reporting requirements. The SWRCB will not exclude the District from the General WDR on the basis that its operations are covered by specific NPDES Permit provisions. Strict compliance with both regulatory programs will result in duplication of effort and poor use of already strained District resources.

Attachment G . – Elements of the Wastewater Collection System Management Plan

The wastewater collection system provisions of the Tentative Order require the City and District to prepare a Wastewater Collection System Management Plan in accordance with Attachment G. The City and District's comments on Attachment G are provided below:

1. The District is in the process of implementing required Wastewater Collection System Management Plan (WCSMP) elements. Redevelopment, repackaging, and related compilation efforts to satisfy the Attachment G requirements will require substantial outlay of resources and funding that could be better used to maintain and/or improve the District's collection system.

2. The District also questions the annual update requirements for many of the plan elements. For example, a very limited number of new connections are made within the District's service area each year. Annual updates of a Capacity Assurance Plan are not appropriate and would be of very little practical value to the District, the public or the RWQCB. This and similar efforts would divert staff time from critical maintenance, rehabilitation and upgrade activities.

3. There is no discussion of the RWQCB review and approval process. Conforming our current collection system management process and its structural elements to satisfy the Attachment G requirements will require significant expenditures of limited District resources. If not removed the District would appreciate some assurance that there will be meaningful review and approval of the WCSMP by the RWQCB in a timely manner.

Page E-20, D. Sewage Spill Reporting, 4:
The requirement to collect "upstream, at, and downstream" samples subsequent to a SSO is ambiguous for several reasons. In the opinion of the District, upstream monitoring should only be required when the discharge is to a creek, stream, or similar open, accessible channel with continuous background flow. If the SSO is to a non-flowing water body, such as an estuary, pond or the Pacific Ocean, "upstream" sampling is not possible. In the case of a discharge to a storm drain, upstream and downstream sampling may be difficult or impossible. Furthermore, entering a storm drain for the purpose of sample collection could expose District staff to unsafe conditions, particularly during rainfall events. It is recommended that this paragraph be modified to clarify SSO monitoring requirements and to fully define "upstream" and "downstream" sampling locations and protocols."

Staff Response 39: Please see staff's response to the previous comments from the City of Morro Bay. The Wastewater Collection System Management Plan development schedule proposed here by Cayucos Sanitary District is reasonable for both entities; therefore staff recommends acceptance of the schedule proposed by Cayucos Sanitary District.

Comment 40: The **Natural Resources Defense Council (NRDC)** submitted a 69-page comment letter on February 3, 2006, entitled *Time is of the Essence: The Legal and Technical Reasons Why EPA and the Regional Board Must Deny the 301(h) Waiver and Require Upgrade of the Morro Bay-Cayucos Sewage Plant "As Fast As Possible.* The comments are too lengthy to include verbatim here, so only summary portion of the document is included verbatim here. The entire comment letter is included as an attachment to the Staff Report.

"In the past decade, waivers from basic federal treatment requirements under section 301(h) of the Clean Water Act have become increasingly rare in the United States, and with good reason. The discharge of partially treated waste degrades receiving waters, and poses serious risks to public health and the marine ecosystem. For that reason, sewage treatment plants are not entitled to maintain Clean Water Act section 301(h) waivers from secondary treatment standards

merely for their administrative convenience. But at root, if EPA and the Regional Water Quality Control Board issue another waiver to the Morro Bay-Cayucos Sewage Treatment Plant (the "Sewage Plant" or "Plant"), bureaucratic convenience will be the true basis for such an action. Convenience for a discharger of partially treated sewage will come at the cost of the undeniable water quality improvements that secondary treatment provides, improvements that will both diminish risks to the ecosystem and marine life, including the threatened California sea otter, and to public health. Because an upgrade—including one that would include tertiary treatment—can be accomplished feasibly twice as fast as proposed, and because the Plant is not entitled to a waiver from secondary standards, the only appropriate and lawful action is to deny the waiver and order an upgrade "as fast as possible," the operative standard established under law.

There are numerous reasons why this is true.

First, a balanced, indigenous population of marine life does not exist in and around the zone of initial dilution. The presence of a healthy ecosystem is an indispensable prerequisite for issuance of a waiver—even if a waiver applicant proves it has no role in causing identified problems. But, here, the agencies' rote analysis of the evidence ignores a disease epicenter affecting a "sentinel" species—the California sea otter—nearly on top of the Sewage Plant's discharge pipe. This disease epicenter is the proverbial "elephant in the room" that the agencies inexplicably fail to properly consider in concluding that the Plant has met its heavy burden of proof here. EPA's analysis, and the accompanying assessment by the Regional Board, neither overcomes the mountain of data showing that pathogens have severely degraded the relevant ocean environment nor even persuasively rules out the role of the Plant in causing or contributing to the obvious problem. In fact, the one study relied on by the agencies simply does not rule out the possibility that pathogens—shielded from destruction by the relative inefficiency of the Plant's operation—are causing or contributing to otter morbidity and mortality.

Second, the Sewage Plant has not met its burden to show that it can comply with its existing permit and meet applicable water quality standards consistently. Based on a selective analysis, the Plant asks EPA and the Regional Board to ignore the accumulation of toxic metals around its discharge pipe, acute toxicity caused by chlorine, and the presence of dioxin in plant effluent, as well as other unambiguous violations of applicable standards. Dr. Bruce Bell, one of the leading experts on the operation and upgrade of sewage treatment facilities in the United States, exposes and debunks any contention that the Plant can satisfy section 301(h) requirements in this respect.

Third, recent water quality data, combined with an absence of evidence that the Sewage Plant has employed indispensable and standard tracking and monitoring protocols, preclude the Plant from meeting its burden to show that the discharge supports recreational uses in Estero and Morro Bays. By contrast, a leading expert on pathogenic contamination of recreational ocean waters, Dr. Mark Gold,

demonstrates that the Plant's application creates more questions than it answers—while failing to account for recent data that undercuts the fundamental conclusion that the Plant is not degrading beach water quality.

Fourth, and more generally, the Sewage Plant's failure to present a "complete" application with current data and information precludes issuance of another waiver. EPA and the Regional Board have before them an application submitted in 2003 and which, in many instances, relies on even older information. As a result, EPA's and the Regional Board's analyses, findings, and determinations are based on incomplete and stale information. Moreover, the Plant and the agencies have not complied with various consultation requirements that are legally required and substantively germane to the issues. By contrast, throughout our analysis, NRDC identifies and submits current and material information that has been omitted in the record.

Fifth, contrary to the implicit assumption of the agencies, the Plant is highly likely to process additional volumes of effluent in the next five years, a fact which will exacerbate each of the substantive problems that currently plague its operation—including the rate of effective disinfection and water quality standards compliance. The agencies have improperly failed to consider these issues and improperly have concluded that the anti-degradation requirements of the Clean Water Act are met in this instance. This is a glaring failure in light of the fact that waters of national significance are nearby, which deserve the highest level of protection from degradation. It is also a glaring failure in light of the Plant's record of collection system and other spills, which show that even now untreated effluent is reaching local waters due to the outdated nature of the Plant.

Sixth, the upgrade proposed by the Sewage Plant and the Regional Board to improve Plant performance will occur as much as five years later than it feasibly can be accomplished. By contrast, state law requires that remedial actions like that proposed here take place "as fast as possible." This clear mandate has been ignored so far, paving the way for a 9.5 year upgrade schedule that will assure that water quality degradation continues to occur for nearly a full decade.

Seventh, the Draft Permit the agencies propose in the meantime not only waives secondary treatment standards, it also fails to include effluent limits and monitoring for pollutants which have a reasonable potential to cause or contribute to violations of water quality standards. Chief among them is the particular pathogen scientifically linked to otter mortality and morbidity. Given the stakes for an iconic threatened species, one that scientists call a "sentinel" for coastal water quality conditions generally, this omission is indefensible.

Finally, because of all of these issues and additional ones contained in the draft settlement agreement, the settlement document itself fails to meet the standard courts use to determine whether the government is acting consistent with its discretion and in the best interest of the public. While there can be no doubt the upgrade in general furthers that interest, the document fails to require the work on

an expedited basis, as is required. Moreover, it otherwise creates the conditions for much longer delays beyond 9.5 years by providing insignificant fines—some smaller than a parking ticket—for many violations of its terms as well as broad, unusual interpretations of standard terms. Collectively, these factors indicate that the agreement may not truly reflect "an arm's length negotiation," which is what courts look for in assessing agreements like the one at issue here.

NRDC wishes it were in a position to fully support the Draft Permit and the upgrade agreement. Since 2003, NRDC has been working to forge a collaborative and cooperative resolution to one of the three remaining 301(h) waivers in California, and the only one so closely associated with a known disease epicenter. Towards this end, NRDC has met with local residents, conservation groups, Regional Board staff, Plant staff, and Joint Powers Agency ("JPA") Board members. This process, which was greatly aided by the perspectives of the Regional Board, and many of its staff, resulted in a JPA Board commitment to upgrade the Plant. However, while positive steps have been taken, given the risks and the evidence, additional commitments are both appropriate and necessary. Section 301(h) waivers are not intended to provide cover for bureaucratic wrangling, nor may they be issued to make meeting bedrock Clean Water Act rules convenient. Since this is the evident function of the proposal to grant the waiver here, EPA and the Regional Board should deny the waiver and require that the Plant upgrade so as to improve water quality "as fast as possible."

Staff Response 40: NRDC's conclusions are largely based on a series of speculative and out-of-context statements regarding sea otter health in the vicinity of the discharge, and are not supported by actual data. As discussed previously, the Discharger has monitored its discharge for the pathogen that is contributing to sea otter mortality in Estero Bay and found none. Actual data are entitled to far more evidentiary weight than unproven hypotheses.

Staff has previously considered every argument that NRDC has presented and found that none of the arguments merit denial of the 301(h)-Modified NPDES permit. U.S. EPA's Tentative Decision Document and staff's Evaluation of Compliance with Permit Requirements, which are based on actual monitoring data from the Discharger's approved monitoring program, both support reissuance of the proposed NPDES permit.

Reissuance of the 301(h)-Modified NPDES permit will effectuate a Settlement Agreement that enforces an upgrade of the Discharger's wastewater treatment plant and will improve discharge quality. Most agree that this is good progress. But NRDC asks for the upgrade timeline to be less than five years, such that the Dischargers may forgo their 301(h)-Modified NPDES permit now, rather than in five years. For several reasons explained previously, upgrading the facility within five years is not possible or necessary, so the Dischargers must seek reissuance of this 301(h)-Modified NPDES permit.

Denial of the proposed Permit would likely result in appeals or litigation that would delay any settlement agreement indefinitely, which may cause the opposite of the intended effect, that is, to further delay the upgrade. Discharger representatives have stated that they will challenge any denial of the 301(h) modification. In addition to litigation delays, the proposed permit would have to be rewritten and a new hearing would have to be noticed, so that some delay would occur even before the Water Board could issue any renewed permit. Whether the 301(h)-modification is eliminated now or in five years (as the settlement agreement provides), discharge quality will not improve until the treatment plant upgrade is complete. That is, the form of permit does not improve the environment, and there is no difference between a 301(h)-modified permit and a full secondary permit with a compliance schedule. The only difference is the length of the schedule. The final compliance date in the schedule is June 23, 2015, i.e., just over nine years. The Dischargers are currently a year ahead of schedule. Staff does not believe a three- to four-year acceleration of the schedule will produce lasting water quality benefits, even assuming that denial of the waiver would accelerate the schedule that much. That being said, in order to issue the proposed Permit, both EPA and the Water Board must find that the Discharger satisfies all elements of Section 301(h).

Following are several specific responses to NRDC's comments. Our overarching recommendation is that the Regional Board and USEPA base its decisions more on actual monitoring data than the speculative and dramatic arguments presented by NRDC. Staff recommends reissuance of the proposed NPDES permit. However, following this response is a discussion of the options available to the Water Board.

- NRDC states "Based on a selective analysis, the Plant asks EPA and the Regional Board to ignore the accumulation of toxic metals around its discharge pipe, acute toxicity caused by chlorine, and the presence of dioxin in plant effluent, as well as other unambiguous violations of applicable standards." Staff did not ignore these matters when formulating its recommendation. The Discharger's dioxin and chlorine effluent violations are discussed extensively in this Fact Sheet. The reference to "accumulation of toxic metals around its discharge pipe" must be qualified by the fact that chromium concentrations in seafloor sediments are increasing throughout the Central Coast, likely due to runoff from abandoned chromite mines throughout the Region, and effluent monitoring indicates that the Discharge is not contributing to the problem.

- On Page 2, NRDC suggests that reissuance of the proposed 301(h)-Modified NPDES permit be denied because "of the Plant's record of collection system and other spills, which show that even now untreated effluent is reaching local waters due to the nature of the Plant." First, when compared with other areas in the Central Coast Region and State, the Dischargers have an exemplary record of preventing sewage spills. Secondly, sewage spills originate from the collection system and not the treatment plant, and have nothing to do with the issue at hand, which is whether or not to reissue a modification of secondary treatment standards. Nevertheless, we should point out that the proposed Permit includes

several provisions to improve operation and maintenance of the Discharger's collection system.

- On Page 2, NRDC argues that State law requires that "remedial actions like that proposed here take place "as fast as possible".

  - Neither the Clean Water Act nor the Porter-Cologne Water Quality Control Act require a five-year upgrade, assuming the plant currently satisfies the 301(h) requirements. The five-year time schedule requirement only applies to upgrades necessary to cure existing permit violations. The mandatory minimum penalty provisions of the Water Code include an exception where the discharger is in compliance with a time schedule that is as rapid as possible, but not longer than five years. (Ca. Wat. Code §13385(j)(3).) If the Board and EPA issue another 301(h)-waiver permit, the Discharger will be in compliance with its permit limits. Since the Discharger would not be in violation of its permit, no cease and desist order under Section 13385 would be necessary to avoid MMPs. On the other hand, if the Board were to find that the plant does not meet the 301(h) requirements, the permit would have to include full secondary treatment limits. In order to shield the plant from MMPs, the Board could issue a time schedule for the upgrade, during which MMPs for violating the secondary treatment requirements would not apply. After five years (or any faster schedule the Board determined to be possible), the Board could no longer shield the plant from MMPs.

  - The NPDES compliance schedule provisions do not apply either. (40 CFR §122.47.) The type of compliance schedule described in the NPDES regulations is in the permit itself, and provides for a delayed effective date of permit limits. This type of compliance schedule cannot extend compliance deadlines beyond "the applicable statutory deadline under the CWA." The applicable statutory deadline for secondary treatment requirements has long passed, except for facilities subject to a 301(h) modification. EPA staff has advised Water Board counsel that EPA will not approve NPDES permits that include compliance schedules for secondary treatment requirements. Even if the Board amended the Basin Plan to allow compliance schedules for new water quality standards, that provision would not apply in this case. There is nothing to suggest that the compliance schedule provision in the NPDES regulations requires *every* plant with a 301(h) modification to upgrade as quickly as possible. That interpretation would eliminate the 301(h) exception to secondary treatment requirements.

  - Even where the NPDES compliance schedule provisions apply, both EPA and the State Water Board allow time schedules in excess of the five-year permit term, where appropriate. (*See, e.g., In the Matter of the Review on its Own Motion of Waste Discharge Requirements for the Avon Refinery, et al.* [Tosco] (State Water Board Order No. 2001-0006); Enclosed Bays and Estuaries/Inland Surface Waters Plan §2.1 (compliance schedules may extend up to ten years beyond the Plan's adoption).)

- Other evidence might support a faster time schedule. For example, if the record supports NRDC's argument that the aging treatment plant will become unable even to meet the current effluent limits, this would support requiring a faster upgrade. This is indistinguishable from other failing treatment plants in the Central Coast Region, but it is not related to Section 301(h).

- On Page 2, NRDC states that the Draft permit "fails to include effluent limits and monitoring for pollutants which have a reasonable potential to cause or contribute to violations of water quality standards. Chief among them is the particular pathogen scientifically linked to otter mortality and morbidity." This statement is false. The proposed Permit complies with Clean Water Act requirements (40 CFR §122.44) to include effluent limits for all pollutants with reasonable potential to cause or contribute to water quality standards. The Discharger performed monitoring of its discharge for the presence T. gondii (the only discharger in the State to complete such monitoring), and found none. These monitoring data are the best information available on T. gondii and this discharge. Even if the discharge did have reasonable potential to contain T. gondii, there is no established water quality standard for this specific pathogen. The proposed permit is consistent with the California Ocean Plan in that it already contains effluent limitations for Total Coliform, which is the widely accepted surrogate for pathogens such as T. gondii. Standards are not required where the record contains no evidence from which appropriate standards could be derived, nor does the Ocean Plan require any such standards. (*Petition of Friends of the Sea Otter and Department of Fish and Game,* Order No. WQ 90-1 at 21-22.)

- On Page 12, in summarizing its evidence, NRDC states "Discharge of primary treated sewage is the second most likely factor accounting for the Morro Bay T. gondii hot spot." This statement is taken from a 2002 study that pre-dated the 2003 discharge monitoring study, which demonstrated that the subject discharge does not contain T. gondii. The actual monitoring data relied on by US EPA and Water Board staff clearly outweighs the reports NRDC cites, which pre-date the actual site-specific data. Later in its comments, NRDC argues (incorrectly) that staff bases its recommendation on stale and incomplete information. However, that is what NRDC is doing here.

- On Page 18, NRDC asserts that the proposed settlement agreement should be rejected because it was not "the product of good-faith, arms-length negotiations," or that negotiations were not full of "adversarial vigor." Nothing subjects this type of settlement to the standards governing court approval of consent decrees.[1] The

[1] Even when such standards apply, a court must review the settlement in light of the public policy favoring settlement. (*U.S. v. Chevron U.S.A., Inc.*, 380 F. Supp. 2d 1104, 1111 (N.D. Cal. 2005), citing *United States v. Comunidades Unidas Contra La Contaminacion,* 204 F.3d 275, 280 (1st Cir.2000).) Although the court should not rubber stamp government settlements, its "deference is particularly strong where the decree has been negotiated by the Department of Justice on behalf of an agency like the EPA which is an expert in its field. *United States v. Akzo Coatings of Am., Inc.,* 949 F.2d 1409, 1436 (6th Cir.1991)." (*U.S. v. Chevron* at 1111.) The costs and benefits of the settlement are important. (*Id.* at 1113.) Although the best-case scenario is used as a benchmark to evaluate a settlement, "... it is to be expected that the actual relief secured under the Consent Decree will fall short of the best-case scenario. Such a result may be reasonable result of the compromise inherent

more important question is whether the settlement is consistent with applicable law and adequately protective of the environment. Those issues are addressed above. The Dischargers had refused to upgrade just three years ago, but now, after nearly two years of negotiation with staff and pressure from NRDC and the public, the Dischargers have agreed to a multi-million dollar upgrade. The fact that the Discharger originally proposed a 15-year upgrade timeline, but then ultimately agreed to a 9.5 year timeline is evidence enough that the agreement is fair. Staff communicated and met with NRDC representatives numerous times during and after negotiating the agreement. NRDC representatives attended public and private meetings with the Dischargers. The agreement was circulated for public comment for much longer than the 30 days required by NPDES regulations, assuming these regulations even apply to a settlement related to a permitting decision. (40 CFR 123.27(d)(2)(iii).) We received no comments other than NRDC's February 3 comments. The Executive Officer did not sign the agreement before the close of the comment period and thorough review of all comments.

- NRDC criticizes the Settlement Agreement for other reasons:
  - NRDC correctly points out that the administrative civil liability for missing time schedule deadlines are very low. However, this is justified because the Dischargers have agreed not to apply for a second 301(h) waiver. The administrative civil liability in the settlement agreement applies only to violations of the settlement agreement, and not to other permit violations. (Settlement Agreement, §E.4.) If the Dischargers fail to complete the upgrade within five years of issuance of the second permit, they will be subject to Section 13385 administrative civil liability for violating the effluent limits in the permit.[2]
  - NRDC misconstrues the importance of the "clear and convincing evidence" language in the agreement. According to the agreement, the Dischargers waive their right to challenge any interim BOD^5, TSS or pH requirements, or a faster timeline, that are (i) the same as in the current permit, in the case of the effluent limits; or (ii) more stringent and based on clear and convincing evidence. (Settlement Agreement, §§B.2.b, see also, B.2.a.3 and B.2.b.) If the Water Board imposes more stringent requirements that are based on something less than clear and convincing evidence, the only consequence is that the agreement to which NRDC so strenuously objects has no further effect. The Dischargers can challenge the more stringent requirements or shorter time schedule, and the obligation to complete the upgrade in 9-1/2 years (or ever, if the permit is not upheld) is void. The increased evidentiary standard recognizes the uncertainty that the Dischargers face regarding what the second permit will require, since (as NRDC points out) the Board retains all discretion regarding the terms of the second permit.
  - Staff recognized that a settlement agreement is more difficult to enforce than a consent decree. Breach of the settlement agreement requires the Board to bring a breach of contract action, in which it can request the court to order the

in any settlement." (*Id.* at 1114.) It is reasonable to include a compliance schedule that takes into account how long it would have taken to litigate the matter. (*Id.* at 1118.)

[2] Interim effluent limits will be set forth in a time schedule or cease and desist order, or, if the Basin Plan and EPA regulations change, in the permit itself.

Dischargers to comply with the agreement. Alternatively, the Board can pursue administrative civil liability. Although the amounts are small during the upgrade process, the goal of any schedule is to ensure the discharger meets the final compliance date. If the Dischargers do not, potential adminstrative civil liabilities become significant unless the agreement is amended,[3] and failure to adhere to a schedule that allowed latitude to the Dischargers would be a factor in setting penalty amounts. That provides a sufficient deterrent effect. In addition, even small administrative civil liabilities signal the community that the upgrade is off-track. Water Board staff, the Dischargers and NRDC have all stated that community support for the upgrade is very strong. The Dischargers will have to account to their constituents for failure to adhere to the schedule.

- Staff, the Dischargers and EPA considered a consent decree in lieu of the agreement that was negotiated. EPA indicated that it cannot participate in a consent decree until permit violations are actually occurring, *i.e.,* if the Dischargers give up the waiver and begin incurring violations of the secondary treatment standards. This would preclude a schedule longer than five years, since the consent decree could not shield the Dischargers from mandatory minimum penalties after that. (Water Code §13385(j)(3).) EPA's internal review requirements would cause significant delay in negotiating a consent decree. The California Attorney General would also have to become involved, and a court approval process would be necessary. In addition, a consent decree is not possible absent the Dischargers' agreement, and they refused to consider this option.

- In Part 3, beginning on Page 20, NRDC argues that the Discharger's application and therefore EPA and Regional Board staff's evaluations are based on stale and incomplete information. Staff's recommendation is not based solely on the Discharger's 2003 permit application, but on the most relevant information available—all monitoring data submitted since 2003. The subject discharge remains essentially unchanged since 2003. Staff also considered all of the most recent sea otter studies when formulating its recommendation to reissue the proposed permit. NRDC bases its conclusions on these same studies while at the same time arguing that such information is stale and incomplete. Staff was prepared to bring the proposed permit to the Regional Board in June 2004, but chose to delay to allow for negotiation of the proposed settlement agreement, partly at the insistence of NRDC. So on the one hand, NRDC argues that the settlement agreement was not adequately negotiated, but on the other hand argues that allowance of time for adequate negotiations is not permissible. These arguments are not valid.

- On page 22, NRDC points out that USFWS has not provided an evaluation of the discharge since 1998. The Discharger fulfilled its obligation and properly pursued such an evaluation in 2003. USFWS has not yet provided an evaluation due to its other priorities. The Discharger has again requested such an evaluation from USFWS, and staff understands that USFWS may provide it before the March 24

[3] Of course, even absent an amendment, whether to assess any administrative civil liability beyond MMPs is within the Board's discretion.

hearing. Regardless of whether USFWS provides its evaluation prior to the hearing of the proposed permit, the absence of a USFWS evaluation does not merit denial of the proposed permit absent evidence of any *substantive* violations, that is, evidence that the discharge may affect sea otters, tidewater goby, steelhead trout, or other listed species in violation of the Endangered Species Act; or that there is a take under the Marine Mammals Protection Act. The outfall area, and the area it impacts, does not include habitat for steelhead or goby. Both species require a freshwater inlet. The closest is Morro Creek, 0.9 mile from the outfall. In addition, the mouth Morro Creek is too dynamic and does not provide the type of protected cove or inlet that goby prefer. The area surrounding the outfall is primarily sandy bottom. Studies of benthic communities are the most appropriate measure of whether any impact is occurring. The USFWS letter can also be obtained after the Board acts, as is the case with Coastal Commission certification of consistency with the Coastal Zone Management Act.

- Throughout Part 3B, beginning on page 22, NRDC suggests that it is the Discharger's burden to prove that the population of every species in Estero Bay is healthy. On page 26, NRDC states that the Discharger should have considered steelhead trout and tidewater goby, species whose critical habitats are fresh or estuarine waters, which clearly could not be affected by the discharge. Any toxic pollutants present in the discharge are most likely bound up in sediments that sink to the seafloor in the vicinity of discharge. Benthic organisms (i.e. those living on or in the seafloor) are the most sensitive receptors to these pollutants. Demersal fish and other higher order organisms move in and out of the discharge area freely and are not practical to monitor for a discharge of this size. This is why benthic monitoring has always been required and not demersal fish monitoring in this case. As discussed extensively previously in this report, twenty years of benthic monitoring data indicate that populations of benthic organisms in the vicinity of the discharge are balanced and healthy.

  This Facility is factually different from the Oxnard 301(h) application discussed in *Rimmon C. Fay,* Order No. WQ 86-17 (regarding the City of Oxnard's treatment plant), for these reasons. In the Oxnard case, EPA concluded that the discharge was likely to have an adverse impact on plankton, and TetraTech concluded it was impossible to tell. EPA concluded that there was insufficient data to determine whether the discharge was adversely affecting demersal fishes and epibenthic macroinvertibrates, and that available data on bioaccumulation of pesticides and toxics was inconclusive. In the TDD for this Facility, on the other hand, EPA concluded that adequate evidence of a BIP is present. It should also be noted that the Oxnard facility, which had a design capacity of 25 mgd, did eventually obtain a 301(h)-modified permit.

- On page 35, NRDC challenges the validity of the Discharger's efforts with UC Davis scientists to monitor its discharge for T. gondii. Staff recognizes that all sampling methodologies have limitations; however, the method used by the Discharger is the best available.

- On page 38, NRDC argues that the reissuance of the 301(h)-modified permit is prohibited under 40 CFR 125.59(b)(4) because the discharge of pollutants "enters into saline estuarine waters." This section of law prohibits issuance of 301(h)-modified permits for direct discharges to saline estuarine waters, not this discharge to the open ocean. NRDC bases this argument on a 1986 dye study, which suggested that the discharge may enter the mouth of Morro Bay under certain infrequent oceanographic conditions. NRDC omits that this study found that the discharge was diluted from 16,700:1 to 91,000:1 (seawater:effluent) before entering the mouth of the Bay, and that was during flood tide conditions when the mouth of the Bay was hardly estuarine. This extremely high level of dilution before reaching the mouth of the Bay is verified by the Discharger's current offshore monitoring program, which is superior to the 1986 dye study in tracking the fate and transport of the discharge plume, and which indicates that the discharge is diluted by hundreds of parts of seawater within several meters of the outfall, and that the discharge plume is imperceptible at the mouth of Morro Bay. The stated prohibition clearly does not apply in this case.

- On page 40, NRDC disagrees with language common to all ocean discharge permits in California. The "shall not cause" language in the Receiving Water Limitations section of the proposed permit is taken directly from the California Ocean Plan, and complies with Clean Water Act Section 122.44. The proposed permit contains effluent limitations for all pollutants with reasonable potential to cause or contribute to a violation of a State water quality standard, including all priority pollutants with Water Quality Objectives. Thus, the "have a reasonable potential to cause, or contribute to" language that NRDC believes is necessary is already inherent in the effluent limitations, and is not necessary in the Receiving Water Limitations section of the permit.

- On page 41, NRDC argues that Discharger cannot show compliance with water recreation standards. This is false. As discussed above under "Bacteria", the Discharger's extensive beach monitoring program demonstrates there is no impact to beach water quality from the subject discharge. Staff analyzed all surf zone total coliform monitoring data collected since 1993...over ten years of data. The data set consisted of 385 to 390 samples at each monitoring station. With exception to the monitoring station at the mouth of Morro Creek, the annual median at each monitoring station was well below 70 MPN/100 mL. Staff's inclusion of the exemplary Heal the Bay Beach Report Card results for this beach was only to reinforce that the subject discharge is not impacting beach water quality. The Discharger's comprehensive beach monitoring program is the basis of staff's evaluations, not Heal the Bay's Beach Report Card (which is based on a far more limited data set). NRDC points out that Atascadero (i.e. Morro Strand State) Beach received an "F" grade for wet weather in the 2005 Report Card, but fails to qualify this statement by pointing out that winter 2004-2005 was an exceptionally wet year, and that the same beach received good grades for the dry season. If the discharge were impacting beach water quality, then one would expect the same beach to receive poor grades during the dry season as well. NRDC points out that it is unable to determine if the discharge plume comes back to shore. However,

the Discharger's annual reports of its intensive offshore monitoring program all clearly illustrate that the discharge plume is rapidly diluted within a short distance from the outfall and not coming back to shore.

- On page 42, NRDC points out that the current beach monitoring program does not include enterococcus monitoring. Enterococcus monitoring was not required by the California Ocean Plan when the existing monitoring program was approved, and the proposed monitoring program includes enterococcus monitoring.

- On Page 47, NRDC states, "For trace metals, the Plant's data also shows a series of violations." This is patently false. The existing and proposed permit includes effluent limitations for these metals, which are protective of water quality. The Discharger has occasionally detected low levels of copper and chromium in effluent, but has never exceeded its effluent limitations.

- On page 50 and 51, NRDC argues that Anti-Degradation policies do not allow any new or increased discharges. The proposed permit does not allow any new or increased discharges. In fact, as discussed previously, effluent limitations for several constituents are more stringent than the existing permit. In addition, the Permit does not permit any degradation of receiving waters, whether this is a Tier III or Tier II discharge. The fact that Morro Bay is within Estero Bay does not make Estero Bay a Tier III water. In addition, NRDC argues that the discharge will so degrade receiving waters that accelerating the schedule by three to four years is critical, but that receiving waters are Tier III waters. The 301(h) modified discharge has existed for over twenty years, making it difficult to reconcile these two positions.

- On page 55, NRDC argues that the Discharger requires an "incidental take permit" from U.S. Fish and Wildlife for the take of sea otters in Morro Bay. This is incorrect. There is no evidence that the subject discharge is killing or harming sea otters, goby or steelhead.

- <u>Alternatives to issuance of the Permit and upgrade according to the settlement agreement:</u>

  - If the Board concludes that the Dischargers have not met the standards for a 301(h) modification, the Board must deny concurrence with EPA's Permit. For example, the Board might consider the evidence and conclude that the Discharger has not shown that a balanced, indigenous population exists outside the zone of initial dilution or in areas likely to be impacted by the discharge; *and* that the Discharger has not shown that the absence of BIP is caused by other pollutant sources and that the discharge is not causing or contributing to the absence of BIP. If the Board denies concurrence, the Clean Water Act would prohibit EPA from issuing the Permit. The Board would then either require a revision of the Discharger's report of waste discharge, if necessary; if not, Water Board staff would redraft the permit to include full secondary standards, notice another public comment period, and then notice

another hearing. In the meantime, the Dischargers have advised that they will petition the denial to the State Water Board. If the State Water Board takes up the petition and issues an order, that will take approximately one year. Either NRDC or the Dischargers are likely to challenge the State Water Board order (or the Central Coast Water Board decision, if the petition is dismissed). Water Board counsel has concluded that there is a substantial exposure to litigation on these issues.

- The upgrade schedule was negotiated, and is not a requirement of the Permit. The Board cannot impose a shorter schedule. A second alternative, with the concurrence of the Discharger, would be to revise the settlement agreement to provide for a shorter schedule. A continuance for this purpose is not recommended unless the Discharger requests it, since a continuance would add additional delay to final resolution of this matter. If a new settlement is feasible, it can be negotiated while any State Water Board petition is pending. However, if the Water Board concludes that the Dischargers have satisfied Section 301(h), the Water Board may not deny concurrence merely to negotiate a new schedule, since that would constitute an abuse of the Board's discretion. Denial of the Permit must be based on failure to satisfy an applicable legal requirement.

Comment 41: Dr. Mark Gold of Heal the Bay, Santa Monica, California, submitted extensive written comments on February 3, 2006, at the request of **NRDC**. The comments include Dr. Gold's background and qualifications, an evaluation of beach monitoring data, an evaluation of monitoring design and information relied upon by USEPA and the Regional Board, as well as Dr. Gold's curriculum vitae. The comment letter is too voluminous to include verbatim here, therefore is included in entirety as an attachment to the Staff Report.

In short, Dr. Gold believes that recent variations in San Luis Obispo County Environmental Health Department monitoring results for this beach suggests influences beyond seasonal storm water discharge, and that such influences could include the subject discharge. Dr. Gold criticizes the Discharger's surf-zone and receiving water monitoring program. Dr. Gold recommends denial of the Permit.

Staff Response 41: Dr. Gold's suggestions that the beach may be influenced by the subject discharge are based on a very limited set of recent beach monitoring by San Luis Obispo County Environmental Health Department. His conclusions are largely based on monthly monitoring during wet season 2004-2005, which includes less than 25 data for that period for this beach. By contrast, staff's evaluation of beach water quality extends back over ten years and includes nearly 400 data points for this beach. This difference exemplifies the superiority of the Discharger's surf-zone monitoring program.

Dr. Gold compares the depth of the subject discharge to those in Southern California, which discharge orders of magnitude more wastewater to the ocean. This is inappropriate comparison.

Dr. Gold states that "EPA and the Regional Board do not refer to monitoring information that would allow them to determine" if discharge plume comes back to shore. The Discharger's offshore monitoring program clearly illustrates that the discharge plume is rapidly diluted within a short distance from the outfall and is not coming back to shore.

Dr. Gold correctly points out that the current beach monitoring program does not include enterococcus monitoring. Enterococcus monitoring was not required by the California Ocean Plan when the existing monitoring program was approved. The proposed monitoring program includes enterococcus monitoring. Such monitoring will not be required until the proposed permit is reissued.

Even if valid, these reasons do not merit denial of the proposed Permit. Such reasons would normally only justify simple modifications to the Discharger's monitoring program, not denial of the Permit. Interestingly, if the Permit was denied and a permit with full-secondary requirements were issued instead, the entire surf-zone monitoring requirement could be eliminated, to be commensurate with other similar Central Coast discharges.

Comment 42: Dr. Bruce Bell of **Carpenter Environmental Associates**, Monroe, New York, submitted extensive written comments on behalf of NRDC on February 3, 2006. The comments include Dr. Bell's background and qualifications, evaluation of water quality impacts, evaluation of the upgrade schedule, and Dr. Bell's curriculum vitae. Dr. Bell is a leading expert of environmental engineering. The comment letter is too voluminous to include verbatim here, therefore is included in entirety as an attachment to the Staff Report.

Dr. Bell provides an evaluation of water quality impacts and the secondary treatment upgrade schedule. Dr. Bell estimates that the upgrade to secondary treatment may be completed in 4.7 to 6.6 years, plus time for Water Board review of the facilities plan. He states, "In summary, the City and District's reasons for recommending the proposed 9.5 year schedule are based on political issues and not technical/construction issues."

Staff Response 42: Staff finds most of Dr. Bell's comments factually correct, although staff has concluded 7 years is a more realistic timeline.

Comment 43: The Otter Project, local chapters of the **Sierra Club** and **Surfrider Foundation**, **California Coastkeeper Alliance**, and **Defenders of Wildlife** all submitted written comments letter. Those comment letters are included in entirety as attachments to the Staff Report. The comment letters either urge denial of the proposed Permit or urge adoption of a shorter upgrade timeline.

Staff Response 43: These comment letters essentially reiterate NRDC's comments and do not necessitate further treatment here. Please refer to staff's response to NRDC's comments above (Comment 40).

Note: The Dischargers submitted a rebuttal to NRDC's comments on March 3, 2006. The Water Board Chairman approved this submittal. Due to timing of the rebuttal, staff is not able to provide a response here.

C. Notification of Hearing Continuance

As discussed in Section II.D of the Fact Sheet, the Central Coast Water Board continued the hearing to provide time for USEPA develop an Endangered Species Act Biological Evaluation on the potential effect to the southern sea otter and the brown pelican. As a result of USEPA's recommendations, the Order incorporates conservation measures proposed by the biological evaluation. The U.S. Fish and Wildlife Service agreed with the biological evaluation that the continued discharge from the Facility will have no likely adverse affects on the southern sea otter and the brown pelican.

The Central Coast Water Board and USEPA have notified the Discharger and interested agencies and persons of their intent to reissue this NPDES Permit and have provided them with an opportunity to submit their written comments specific to the revisions based on the USEPA's Biological Evaluation and concurrence from the U.S. Fish and Wildlife Service. Notification was provided to interested parties through mail, through the publication in the San Luis Obispo Tribune on September 12, 2008, and through the Central Coast Water Board website at:

http://www.swrcb.ca.gov/centralcoast/Permits/Index.htm

D. Notification of Interested Parties for Comment on Revised Permit with New Information

The Central Coast Water Board notified the Discharger and interested parties of its intent to prescribe waste discharge requirements for the discharger and provided them with the opportunity to submit their written comments and recommendations.

Interested parties were invited to submit written comments focused specifically on permit revisions based on the USEPA's Biological Evaluation and concurrence by the U.S. Fish and Wildlife Service. According to the May 11, 2006 Water Board meeting transcripts, the Central Coast Water Board continued this matter pending USEPA's Biological Evaluation and consultation from USFWS. Further discussion of the Water Board's decision can be found in Section II.D of the Fact Sheet. Written comments not pertaining to new information (the basis for the continued hearing) were considered, but may not be discussed in the following section (Section VI.E of the Fact Sheet).

Notification was provided through internet posting, publishing in the San Luis Obispo Tribune on September 12, 2008, and through direct mailing to the following known interested parties as well as other interested parties. Written comments were due no later than October 14, 2008.

- Mr. Bruce Keogh and Mr. Bruce Ambo, City of Morro Bay
- Mr. Bill Callahan and Ms. Bonnie Connelly, Cayucos Sanitary District
- Dr. Doug Coats, Marine Research Specialists
- Ms. Anjali Jaiswal, Natural Resources Defense Council
- Mr. Babak Naficy, Coastal Alliance
- Mr. Mark Delaplane, California Coastal Commission
- Mr. Joshua Borger, Environmental Law Foundation
- Ms. Hillary Hauser, Heal The Ocean
- Mr. Gary Sheth and Kathi Moore, U.S. Environmental Protection Agency, Region IX
- Mr. Peter Hernandez
- Ms. Rebecca Barclay
- ECOSLO

E. Written Comments on New Information

Written comments were received by Water Board staff on or before October 14, 2008. According to the September 4, 2008 public notice, written comment were to address relevant revisions incorporating new information, specifically, the USEPA's Biological Evaluation and the USFWS concurrence letter. Some written comments submitted by the public addressed issues other than revisions based on new information. These comments have been reviewed and considered. All written comments are included as attachments to the staff report.

Settlement Agreement

Many commenters objected to not having the opportunity to review the revised settlement agreement, stating that meaningful public comments were impossible without a draft copy of the settlement agreement.

The December 4-5, 2008 hearing will be a continuation of a hearing held on May 11, 2006. Prior to the May 11, 2006 hearing, the Executive Officer of the Water Board, the City of Morro Bay, and the Cayucos Sanitary District had entered into a settlement agreement that set forth an expidited conversion schedule of 8.5 years. The expedited conversion schedule was discussed at the May 11, 2006 hearing. The settlement agreement is consistent with Finding AA of this Order and all terms and conditions to upgrade the facility will be enforceable through the settlement agreement. Changes to this Order regarding facility upgrades will be consistent with the settlement agreement.

Given the time that has passed since the hearing began on May 11, 2006, the parties to the settlement agreement are negotiating revisions to the settlement agreement to acknowledge factual changes since the May 11, 2006 version and to revise dates, but the settlement agreement remains essentially as the May 11, 2006 version. The purpose of the settlement agreement is to enforce the schedule for the facility upgrades since they extend beyond the term of the permit and is not intended to drive

the enforcement of this Order. Furthermore, the settlement agreement format as well as some language will remain consistent with the 2006 version of the settlement agreement. The 2006 settlement agreement is located on the Water Board website and available for review. A copy of the revised settlement agreement will be made available prior to the December 4-5, 2008 Water Board meeting and will be proposed to the Central Coast Water Board for consideration and approval. Any significant comment to the settlement will be considered by the involved parties.

It is important to note that the Clean Water Act requires publicly owned treatment works to achieve at secondary treatment prior to discharge to ocean waters of the United States, unless the facility obtains a variance from USEPA pursuant to Clean Water Act section 301(h) to implement modified secondary treatment (301(h) waiver). The facility will not complete the upgrade to at least secondary treatment until after the five-year term of this permit, and, therefore a 301(h) waiver continues to be necessary for the discharge subject to this permit. The next permit will contain the final enforceable compliance dates to achieve at least secondary treatment. The Clean Water Act establishes secondary treatment as the technology based standard for discharges to surface water, but tertiary treatment that meets Title 22 California Code of Regulations requirements is required for certain reclaimed water uses. The Discharger intends to upgrade to tertiary treatment for purposes of reclaimed water use during the eight and one-half year conversion schedule set forth in the settlement agreement. The Central Coast Water Board may require the discharger to comply with more stringent water quality based standards beyond secondary treatment for discharges to surface water if necessary to protect the beneficial uses of waters of the state and the United States. With respect to the discharge to the ocean, the USFWS has concurred with USEPA's Biological Evaluation supporting the continued 301(h) waiver, which concluded that the continued discharge from the facility will have no likely adverse affects on the southern sea otter and the brown pelican. If the Central Coast Water Board receives new information to support the need to impose more stringent water quality based requirements beyond secondary, it may consider imposing such requirements only after required public notice and comment and hearing, but such information is not available at this time. Since tertiary treatment is not required by federal law, the settlement agreement requires at least secondary treatment.

Written Comments

Mr. Bruce Keogh, Morro Bay/Cayucos Wastewater Treatment Plant, submitted comment on October 14, 2008. The Discharger's written comments are included in their entirety as an attachment to the staff report. The written comments include general comments to the overall permit template and other more specific comments. The discharger also included corrections to typographical errors, inaccuracies, and discrepancies. Typographical errors and minor revisions that do not alter the intent or substance of the Order are not discussed below. Further, comments not pertaining to new information, as specified in the public notice, have been reviewed and considered for permit clarity and consistency. Mr. Keogh's comments are addressed below.

Comment 1: References to Tertiary Upgrades

"MBCSD staff insists that any reference to the upgrade project for the WWTP should be modified to read "*at least full secondary or tertiary treatment*". This modification would be consistent with the third Conservation Measure contained in the Biological Evaluation (BE) from USEPA, which states, "*Facility upgrade to at least full secondary or tertiary treatment by 2014.*" As correctly noted in the BE, "*These measures have been agreed to by both the applicant and RB3...* ". (Page 6 of the BE) While the City and District have elected to upgrade the facility to tertiary treatment for the protection of the environment, this policy decision from the City Council and District Board exceeds the full secondary treatment requirements set forth in 40 C.F.R. Part 133. The Regional Board has no findings or basis to include the requirement to upgrade to tertiary treatment in the Draft Order."

"In addition, modification of the language to read "*at least full secondary or tertiary treatment*" would be consistent with the Settlement Agreement agreed to by the City and District and Regional Board staff, which states, "*The Discharger agrees to undertake a program to install and operate equipment at its treatment plant capable of achieving, and that will achieve, full secondary treatment requirements set forth in 40 C.F.R. Part 133, other than 40 C.F.R. section 133.105.*" (Page 4 of the 8.5 Year Settlement Agreement) On page 12, II.AA of the Draft Order, it states that, "*The Discharger has agreed to upgrade the Facility to tertiary treatment pursuant to a settlement agreement with the Central Coast Water Board.*" This statement is misleading, is not consistent with the record to date, and does not accurately reflect the language in the settlement agreement cited above."

Staff Response 1: Water Board staff has carefully reviewed the Discharger's comment regarding the discussion of upgrading the facility to provide tertiary treatment. We agree that the Central Coast Water Board has no authority to require Disinfected Tertiary Treated Recycled Water[4], due to the fact that the Discharger is not currently recycling its treated wastewater. Furthermore, the Water Board only has the legal authority to require at least secondary standards in accordance with 40 CFR Part 133 without new information.

We understand that the Morro Bay City Council unanimously agreed to upgrade the Morro Bay/Cayucos Sanitary District Wastewater Treatment Plant to "meet tertiary standards with the intention to move towards reclamation" at its May 29, 2007 meeting. Further, the USFWS December 21, 2007 concurrence letter states, "our [USFWS] office believes this decision [to upgrade the plant to provide tertiary treatment] has significant potential to minimize the concern regarding possible effects on the otter. Proceeding to tertiary treatment would result in reduced loadings of a wide range of pollutants to the environment....The applicants' progress toward implementing their present commitment to tertiary treatment will also be a significant

[4] As defined by the California Health Laws Related to Recycled Water "The Purple Book," or Section 60301.230 of the California Water Code.

factor in any future Endangered Species Act analysis conducted by our office pertaining to this discharge." In light of these significant statements made by your governing board and the USFWS, Water Board staff recommends keeping the references to tertiary treatment. The revised settlement agreement will be consistent with this Order to eliminate any discrepancies between the two documents.

Water Board staff has not altered effluent limitations to reflect the definition of Disinfected Tertiary Treated Recycled Water. Secondary standards, in accordance with 40 CFR Part 133, are maintained as the basis for effluent limitations.

Comment 2: Reference to Water Reclamation

"Delete Section IV.F.1 and 2 of the Order (Reclamation Specifications), as there are no current plans to implement a water reuse project in the next five year NPDES Permit cycle, the Reclamation Specifications are superfluous and not germane to the Draft Order."

Staff Response 2: The comment is noted. Although this issue is not subject to public comment, staff made some minor modifications to the language to reflect that these Reclamation Specifications are pertinent if/when the Discharger chooses to recycle treated water.

Comment 3: Collection System Requirements

The Discharger "strongly" recommends that all references to the collections system requirements, as regulated by the Statewide General Waste Discharger Requirements for Sanitary Sewer Systems (General Order No. 2006-0003-DWQ), be removed from the Order.

Staff Response 3: This comment is noted. However, this issue is not subject to public comment.

Comment 4: Cat Litter Outreach Program

"Modify the statement as follows: '*The Discharger will target specific commercial and professional establishments to ~~ensure~~ encourage that appropriate policies and procedures are in place to properly dispose~~al~~ of cat waste.*' As described in the conservation measures contained within the BE, the cat litter outreach program is designed to be an educational tool to minimize the input of cat litter-box wastes into the municipal sewer system, not an enforceable ordinance. In addition, during public outreach to the two existing veterinary clinics in Morro Bay and the two existing pet groomers within Morro Bay, all establishments noted that based upon their current BMP's they do not currently flush cat litter."

"Modify the statement as follows: '*The Discharger will ~~ensure~~ encourage ~~that~~ the aforementioned establishments develop and implement best management practices*

prohibiting the flushing of cat litter,...' As noted above, the cat litter outreach program is primarily designed to be an educational tool not an enforcement mechanism."

Staff Response 4: Water Board staff concurs with this comment regarding modifications using the word "encourage" rather than "ensure." We agree that the current language infers that the City will adopt and enforce an ordinance to require commercial and professional establishments to develop policies and/or procedures. As with any education and outreach program, we expect that the Discharger will develop a program to encourage and teach good business practices in order to minimize the potential for cat waste contribution into the discharger's waste stream. Section VI.5.b has been modified to reflect the Discharger's comments.

Mr. Steve Shimek, Executive Director of the Otter Project, submitted written comment on October 13, 2008. Mr. Shimek's written comments are included as an attachment to the staff report. Comments not pertaining to new information, as specified in the public notice, have been reviewed and considered for permit clarity and consistency. Mr. Shimek's comments are addressed below.

Comment 5: Settlement Agreement

Mr. Shimek urges the Water Board to deny the permit on that basis that the revised settlement agreement was not disclosed for public review and comment. Mr. Shimek states that "the most critical components of this permit – timeline and level of upgrade – are not specified in the draft permit. This application is vague and public comment cannot be meaningful without further detail."

Staff Response 5: The comment is noted. Refer to the section above discussing the revised settlement agreement and staff's recommendation.

Comment 6: Secondary Treatment

Mr. Shimek urges the requirement of tertiary treatment for the facility's effluent. Mr. Shimek's comment includes a discussion of otter mortality in Estero Bay.

Staff Response 6: The comment is noted. The Order includes a discussion of facility upgrades to provide tertiary treatment. Refer to Staff Response 1 (above) for a discussion of tertiary treatment.

Comment 7: Timeline for Conversion

Mr. Shimek contends that the current conversion schedule does not satisfy 40 CFR 122.47(a)(1) requiring plants to upgrade "as fast as possible."

Staff Response 7: The comment is noted. However, the conversion schedule is not subject to public comment. It should be noted that this issue was discussed and heard at the May 11, 2006 Water Board meeting. Since the May 11, 2006 Water

Board meeting, the City has agreed to expedite the conversion schedule as described in Section II.AA of this Order.

Comment 8: Triggered Surf-zone Monitoring

Ms. Sarah Corbin, Central California Regional Manager of the Surfrider Foundation, submitted written comments on October 9, 2008. The comments discussed Surfrider Foundation's disagreement with triggered surf-zone sampling.

Staff Response 8: The comment is noted. However, triggered surf-zone sampling is not subject to public comment. A discussion of Water Recreation standards was held at the May 11, 2006 Water Board meeting.

The National Resources Defense Council, Surfrider Foundation, the Sierra Club, and Defenders of Wildlife, submitted written comments on October 14, 2008. This comment letters is included in entirety as an attachment to the Staff Report. The comment letter request the rejection of the Permit based on inadequacies not consistent with the Clean Water Act. Written comments are provided below.

Comment 9: No Legal Basis to Re-issue the 301(h) Waiver

"There is no legal basis to re-issue the 301(h) waiver for the Morro Bay/Cayucos Wastewater Treatment Plant (Plant), as the Plant has consistently not met the substantial burden established by the Clean Water Act and its implementing regulation."

Staff Response 9: The comment is noted. However, this discussion and comment is not subject to public comment. Furthermore, this issue was discussed at the May 11, 2006 Water Board meeting. This discussion can be reviewed at the following website: http://www.swrcb.ca.gov/centralcoast/board_info/minutes/2006/05_06_morro_bay_cayucos_wwtp_hearing_transcript.pdf

Comment 10: Settlement Agreement Reference

"The Draft Permit repeatedly references and relies upon a Settlement Agreement between the Regional Water Quality Control Board, Central Coast region and the City of Morro Bay/Cayucos Sanitary District that is crucial for meaningful review of the Draft Permit, but that the Regional Board has not made available to the public. This is particularly alarming considering the U.S. Environmental protections Agency finding of "No likely Adverse Effect" for the continued discharge from the Plant was predicated on the existence of an enforceable agreement that the plant upgrade."

Staff Response 10: The comment is noted. Refer to the section above discussing the revised settlement agreement. The settlement agreement will be available prior to the December 4-5, 2008 Water Board meeting.

Comment 11: Contradictory Language Regarding Plant Upgrade

"The Draft permit is in critical aspects vague and confusing or contradictory, specifically with regards to provisions that specify the conversion schedule and level of compliance to be obtained at the plant..."

Staff Response 11: Water Board staff disagrees with this comment and provides the following for clarification. The conversion schedule is not subject to public comment. It should be noted that this issue was discussed and heard at the May 11, 2006 Water Board meeting. However, since the May 11, 2006 Water Board meeting, the City has agreed to expedite the conversion schedule as described in Section II.AA. of this Order. This expedited conversion schedule will be incorporated in the settlement agreement.

We disagree that the language regarding treatment upgrades in the Draft Permit is confusing or contradictory. As noted in Staff Response 1, the Water Board is obligated to require "federal secondary standards" as mandated by 40 CFR Part 133. However, effluent limitations identified in Section IV.B. of this Order reflect modified secondary standards for discharges of treated wastewater to surface waters in accordance 40 CFR Part 125.57. As a point of clarification, the definition of tertiary treatment is specific to recycled water uses (refer to Section 60301.203 of the California Water Code or The California Health Laws Related to Recycled Water "The Purple Book"). Since the Discharger has agreed to upgrade to provide tertiary treated water, then by default they will meet secondary standards. Currently, the Discharger does not have any demands to provide recycled water. The upgrade to tertiary treatment will allow the Discharger to consider future recycled water projects.

Comment 12: Discussion of Concerns from USFWS

"The Draft Permit fails to accurately characterize the findings on the scientific studies cited in the Permit, or the explicit concerns of the U.S. Fish and Wildlife Service (USFWS) in issuing a concurrence with the findings of the USEPA Biological Evaluation."

Staff Response 12: Staff disagrees with the allegation of omitting information to mislead the public. Furthermore, this written comment alleges that the "conspicuously absent" discussion of USFWS concerns mischaracterizes the scientific study. Water Board staff does not dispute the fact the December 21, 2007 USFWS letter offers some concern for southern sea otters located within the vicinity of the subject wastewater discharge and that some scientific literature discusses the possibility that pollutant loading from the sewage treatment plant discharges could have an effect on the otter. However, the USFWS acknowledges that a significant degree of scientific uncertainty exists as to the mechanisms for potential impacts to the otter. More to the point, because the USFWS finds there is a significant amount of scientific uncertainty, the USFWS concern may not be scientifically proven. We believe that this concern is predicated on the idea that the Discharger will not upgrade the facility to tertiary treatment. The USFWS letter also states that "this decision [to upgrade the facility to provide tertiary treated wastewater] has significant potential to minimize the concerns

regarding possible effects on the otter." Staff believes that the USFWS concerns will be addressed when the Discharger upgrades the facility to provide tertiary treatment. Additionally, the conservation measures required by USEPA and this Order will continue to minimize the potential impacts to the otter as well as facilitate gathering additional data necessary to assess the direct impacts to the southern sea otter in the vicinity of the discharge.

Comment 13: Cat Litter Public Outreach Program is Vague and Lacks Measurable Goals

"The provisions of the Cat Little Public Education Outreach Program are vague and lack measurable goals. The Draft Permit must set out specific requirements for the Discharger to comply with under this program, in order to ensure the introduction of cat little waste into the municipal sewer system is reduced to the greatest extent possible."

Staff Response 13: Water Board staff reviewed and carefully considered this comment. Staff concurs with this comment and has added language to require the Discharger to develop implementation goals. These goals should be quantifiable allowing the Discharger to track their implementation efforts. Water Board staff views this provision to be very similar in nature to municipal stormwater education and outreach programs. These programs as well as associated measurable goals are typically developed by the Discharger. In concert with the implementation goals, the Discharger will be required to reevaluate its implementation goals on an annual basis. Reevaluation methods will be developed by the Discharger and may include surveys or other methods.

Comment 14: Conversion Schedule

"The proposed conversion schedule for the plant violates the Clean Water Act's requirement that upgrades be conducted as 'fast as possible'."

Staff response 14: As stated in Staff Response 9, the conversion schedule is not subject to public comment. It should be noted that this issue was discussed and heard at the May 11, 2006 Water Board meeting.

Dr. Douglas Coats, Program Manager for the Marine Research Specialist, submitted written comments on October 9, 2008. Dr. Coats' written comments are included as an attachment to the staff report. Typographical errors and minor revisions that do not alter the intent of the Order are not discussed below. Further, comments not pertaining to new information, as specified in the public notice, have been reviewed and considered for permit clarity and consistency. Dr. Coats' comments are addressed below.

Comment 15: Revising Finding F to Reflect Modified Secondary Standards

Dr. Coats' written comment explains that the newly added Finding F (Technology-Based Standards) is inconsistent with the original permit application. He explained that this finding needs to be changed in order to state "modified secondary standards." Dr. Coats requested that the language be to comply with 40 CFR Part 125(g).

Staff Response 15: Although this issue is not subject to public comment, Water Board staff believes that this modification will further clarify and maintain consistency throughout the Order. Section II.F. of the Proposed Order has been modified. The last sentence of the finding now states "However, due to the provisions set forth in 40 CFR Part 125.57 discharges authorized by this Order are subject to modified secondary standards. A detailed discussion of development of technology-based effluent limitations is included in the Fact Sheet (Attachment F)."

Comment 16: Remove Section Implementation Provisions for Bacterial Characteristics

Dr. Coats explains that Section V.D. (Implementation Provisions for Bacterial Characteristics) of the Order is inconsistent with Section VII.A. of the Monitoring and Reporting Program (Triggered Surf-Zone Monitoring). Dr. Coats recommends modifying Section V.D. to coincide with the triggered sampling language in the Monitoring and Reporting Program.

Staff Response 16: Although this issue is not subject to the public comment, Water Board staff agrees that the removal of Section V.D. of the Order will eliminate confusion with Section VII.A. of the Monitoring and Reporting Program. Furthermore, the removal of this section is consistent with Water Board staff's previous recommendations for bacterial monitoring.

Comment 17: Revise the Monitoring Location for Influent Sampling

Dr. Coats explains that there is a negligible amount of return flows to the facility's headworks. To address these return flows, Dr. Coats recommends including two sampling locations to adequately reflect the influent flows. One sample location would be at the metering manhole upstream of any in-plant return flows and the other locations would be at the headworks, which include in-plant return flows.

Staff Response 17: The comment is noted. However, this issue is not subject to public comment.

Comment 18: Modify Special Provision "Receiving Water Monitoring for Bacteria" to Conform to the Triggering Threshold Level Identified in MRP

"The triggering threshold in the MRP is based on exceedances of the limit on maximum coliform density alone (2400 MPN/100ml). Use of the monthly effluent limit to trigger surf zone monitoring is inappropriate because any elevated coliform densities within discharged wastewater will have dissipated long before the required surf zone monitoring would be initiated, up to a month after the fact."

Staff Response 18: This comment is noted. Appropriate changes were made to Section VI.C.4 of the Order to coincide with Section VII.A (Surf-Zone Monitoring) in the Monitoring and reporting program.

Comment 19: Correct the Chronic Testing Requirements

Dr. Coats explains that the current language in the Draft Permit is not consistent with the past Staff Responses explaining "that two tests were appropriate for determining the most sensitive species, especially considering that other discharges are only required to have one test."

Staff Response 19: Although this issue is not subject to public comment, staff believes that the recommended changes to Section V.A of the Monitoring and Reporting Program are appropriate. Section V.A. of the Monitoring and Reporting Program has been revised to reflect a minimum of two test species to determine the most sensitive species. This modification is also consistent with previous Water Board staff determinations.

Comment 20: Remove the Requirements for Sulfide Analysis of Benthic Porewater

According to previous Water Board staff findings and a delay in permit reissuance, two additional years of sulfide sampling under the current permit have more than met the requirements for one additional year of sulfide analysis, and additional sulfide testing of benthic samples is no longer needed. Due to permit reissuance delays, the Discharger has been conducting high-resolution sulfide analysis of sediment porewater for a total of five years. None of these sulfide samples contained detectable sulfide concentrations.

Staff Response 20: Although this issue is not subject to public comment, staff has made modifications to the Fact Sheet to further clarify and coincide with Water Board staff's previous recommendations. The proposed Order does not require sulfides sampling of benthic porewater (refer to the discussion in Section IV.B.5. of the Fact Sheet).

Comment 21: Exclude Dioxin Sampling for Biosolids

"In accordance with the USEPA recent final decisions not to regulate dioxin and dioxin-like compounds in sewage sludge, dioxin should also be excluded from the list of priority pollutants that are required for analysis in biosolid samples."

Staff Response 21: The comment is noted. However, this issue is not subject to public comment.

Comment 22: Modify Outfall Inspection

"Much of the MSCSD outfall pipe is buried deep within seafloor sediments and it is not possible to conduct an external inspection along its entire length." Dr. Coats offered modifications to the existing text in order to provide clarity.

Staff Response4 22: The comment is noted. However, this issue is not subject to public comment.

F. Public Hearing

The Central Coast Water Board held the continuation of the joint public hearing on December 4-5, 2008, to consider reissuance of the draft NPDES Permit at the Central Coast Water Board's regular meeting as follows:

Date: **December 4-5, 2008**
Time: **8:30 a.m.**
Location: **Regional Water Quality Control Board Conference Room**
895 Aerovista Place, Suite 101
San Luis Obispo, California

Interested persons were invited to attend. At the public hearing, the Central Coast Water Board and USEPA heard testimony pertinent to the discharge and permit. The Central Coast Water Board unanimously adopted the 301(h) modified NPDES Permit Order No. R3-2008-0065 on December 4, 2008.

G. Petitions

Any person aggrieved by this action of the Regional Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of regulations, title 23, section 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filling petitions may be found on the internet at:

http://www.waterboards.ca.gov/public_noticies/petitions/water_quality

or will be provided upon request.

H. Information and Copying

The Report of Waste Discharge (ROWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Coast Water Board by calling or faxing Sue Gerdsen at (805) 549-3465 (phone) or (805) 788-3521 (fax).

I. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding this NPDES Permit should contact the Central Coast Water Board, reference this facility, and provide a name, address, and phone number.

J. Additional Information

Requests for additional information or questions regarding this order should be directed to **David LaCaro (805) 549-3892 or dlacaro@waterboards.ca.gov**, or Burton Chadwick (805) 542-4786 or bchadwick@waterboards.ca.gov.

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GEOINSITE

REPORT

ENGINEERING GEOLOGIC HAZARDS EVALUATION FOR ENVIRONMENTAL IMPACT REPORT

Cayucos Sustainable Water Project
San Luis Obispo County, California

Prepared for:

FIRMA CONSULTANTS, INC.
187 Tank Farm Road
Suite 230
San Luis Obispo, CA 93401

Attn: DAVID FOOTE, ASLA

Project No. C1510A
October 17, 2016

Prepared by:

GEOINSITE, INC.

15919 Orange Blossom Lane
Los Gatos, California 95032

Tel 408.839.5404
www.geoinsite.com

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1.0 INTRODUCTION AND SCOPE OF WORK

This report presents the results of an engineering geologic hazards evaluation performed by Geoinsite, Inc. (Geoinsite) for Firma Consultants, Inc. The evaluation addresses the Cayucos Sustainable Water Project (Project) for the Cayucos Water District (CSD), which includes a proposed Water Resource Recovery Facility (WRRF) and associated infrastructure. Our work was conducted in general accordance with our Proposal for Professional Services dated March 9, 2016.

The investigation findings presented herein are intended to be used for the geology section of the Environmental Impact Report (EIR), currently being prepared by Firma. The scope of services for the investigation included the following tasks:

1. Research and review of pertinent published geologic literature, stereoscopic analysis of historical aerial photography, and consultant reports, including
    - "*Screening-Level Engineering Geologic Investigation, Five Candidate Sites, Cayucos Sustainable Water Project, San Luis Obispo County, California"*, report prepared by Geoinsite Inc. (Geoinsite, 2015); and
    - "*Preliminary Geotechnical Report, Cayucos Sustainable Water Project, Toro Site 5, Toro Creek Road, Cayucos, San Luis Obispo County, California*", report prepared by Yeh and Associates Inc. (Yeh, 2016).
2. Development of GIS-based geologic and geologic hazards maps for project components.
3. Meetings and discussions with Firma and other project consultants, including coordination with the geotechnical engineering consultant (Yeh and Associates).
4. Reconnaissance-level engineering geologic field mapping of the Project sites.
5. CEQA-level evaluation of geology and regulatory setting, impact significance thresholds, and potential impacts, and presentation of mitigation measures.
6. Preparation of this report summarizing the findings the investigation services.

Section 2 of this report briefly describes the project, including our understanding of project components. Section 3 addresses the environmental setting of the Project relative to the geologic and seismic conditions. Section 4.0 describes the regulatory framework. Section 5.0 provides the standards of significance, analysis of potential impacts, mitigation measures, and impact significance after mitigation.

2.0 PROJECT DESCRIPTION AND LOCATION

The Project consists of two phases. Phase 1 includes construction of a new WRRF, related conveyance pipelines, production of tertiary treated water for agricultural irrigation, and discharge of process water to an existing ocean outfall. This phase would also include participation in the decommissioning of the existing Wastewater Treatment Facility (WWTF) in

Morro Bay. Phase 2 is the construction of a conveyance pipeline for recycled water to the CSA 10 Surface Water Treatment Facility (CSA 10).

The Proposed Project site is located in the Toro Creek Valley approximately 0.75 miles inland from State Route 1 (SR1) in Cayucos, San Luis Obispo County, California. The Project site was identified as Chevron Site 5 in the 2015 screening-level report (Geoinsite, 2015). The facility site is outside the Coastal Zone. The CSD would create a public lot within this parent parcel of approximately 5 acres for the wastewater treatment facility.

The Facility Plan for the WRRF is being developed concurrently with the EIR. The study area identified for EIR analyses is approximately 12 acres in size. It is anticipated that the WRRF will require only a portion of this area.

The Alternative site is located in the Willow Creek Valley approximately 1.25 miles inland from SR1 in Cayucos. This site was identified as the Molnar site in the 2015 screening-level report (Geoinsite, 2015). The parent parcel is 215.0 acres owned by the Molnar Family (APN 073-093-011). Under this alternative, the CSD would create a public lot within this parent parcel of approximately 5 acres for the wastewater treatment facility. The zoning is Agriculture. The facility site is outside the Coastal Zone.

Pipelines associated with the Project consist of: 1) influent to WRRF, 2) Treated wastewater to Lift Station 5, 3) Effluent to outfall, and 4) recycled water pipeline to CSA 10 site. These four lines are described below:

- Influent to Facility: Construction of force main from existing Lift Station 5 at Toro Creek Road and SR1 to the Proposed Project site is approximately 4,200 LF of pipe along Toro Creek Road. Modifications to Lift Station 5 will be constructed. Net increase in energy demand from existing infrastructure is 9,000 kWh/year. The pipeline will cross Toro Creek at the existing bridge.
- Treated wastewater to Lift Station 5: The pipeline back down Toro Creek Road will parallel the influent line from the Proposed Project site to Lift Station 5.
- Treated wastewater (effluent) to existing outfall: From Lift Station 5, treated wastewater will utilize an existing force main in Caltrans Right of Way and Main Street in Morro Bay to the intersection of Island Street and Main Street. At that point, a new force main will be constructed down Main Street to Highway 41/Atascadero Road to the existing Morro Bay-Cayucos WWTF outfall. The connection to the existing outfall will occur within the existing facility property. The CSD has a 35% interest in the outfall capacity that will accommodate this discharge.
- Recycled Water to CSA 10 site (Phase 2): A pipeline will be constructed to the CSA 10 Water Treatment Facility on Cabrillo in Cayucos. The routes would run west on Toro Creek Road then north along SR1 in the CSD easement in the right of way to Chaney

Street. The force main will then run along Ocean Blvd. past the cemetery, crossing the existing footbridge over Old Creek to the CSA 10 site. The recycled water pipeline will be capped at that location.

3.0 ENVIRONMENTAL SETTING

This report section addresses the environmental setting of the Project relative to the geologic and seismic conditions. Baseline geologic conditions were established for the Project through a review of documents, including published technical maps and reports, a screening-level engineering geologic investigation (Geoinsite, 2015); preliminary geotechnical assessment prepared for the Proposed Project (Toro Creek) site (Yeh, 2016), interpretation of stereoscopic aerial photographs (1939, 1969, 1987, 1997) and online imagery; reconnaissance-level geologic mapping; and data evaluation.

3.1 *Geologic Conditions*

The Project is located within the southwestern margin of the Santa Lucia Range in the California Coast Ranges. The Coast Ranges are characterized by northwest-trending, elongate mountain ranges separated by narrow valleys. Structurally, the Santa Lucia Range is cut by the Nacimiento fault, which separates the range into two different bedrock assemblages. To the northeast, the range is underlain by granitic and metamorphic basement rock of the Salinian block. To the southwest, including the Project area, the range is underlain by Franciscan Complex melange.

Geologic maps prepared by Hall et al. (1979), Dibblee (2006a, 2006b) and the California Geological Survey (CGS, 2016a, 2016b) show that Franciscan Complex melange underlies most of the Project area. The Franciscan Complex melange is a heterogeneous mix of widely varying rock types of Upper Cretaceous to Jurassic age, including graywacke, shale, argillite, and metavolcanic greenstone, with smaller bodies of chert, schist, and ultra-mafic rocks (e.g., serpentinite). Other geologic units in the area include Coast Range Ophiolite (serpentinite), found within the Mesozoic-age Franciscan Complex and Great Valley Sequence. Locally overlying the basement rocks are discontinuous outcrops of Cenozoic sedimentary, pyroclastic and igneous rocks, and accumulations of Quaternary-age marine terraces, stream alluvium, and alluvial fan deposits. Landslides also are present within the Franciscan Complex and serpentinite rocks in the area.

3.1.1 Geologic Units

The distribution of geologic units in the Project vicinity is presented on the Regional Geologic Map (Figure 1) based on review of published geologic maps and site reconnaissances. Geologic units present in the Project area are described below in order of ascending age (youngest unit listed first).

Beach and Dune Sand Deposits (Qs) – Coastal sand deposits are characterized as unconsolidated, beach and dune sand (Holocene). This unit is present along the beach from Estero Bay northward along the coastline. The existing Morro Bay-Cayucos WWTF outfall is located in the beach and sand dune deposits. These deposits are generally considered highly susceptible to liquefaction due to relatively low density, cohesion-less nature and association with shallow ground water conditions.

Alluvium (Qal) - Within the Project area, alluvium (Holocene) is generally present north of Morro Bay, between the coastal sand dunes and base of the west-facing hillsides, and in the stream valleys of Toro Creek, Willow Creek and Old Creek. The alluvium consists of stream deposits, and is characterized as unconsolidated accumulations of cobbles, pebbles, sand, and silt. Included with the Qal map unit are alluvial fan deposits, which generally consist clay, sand and gravel deposited at the mouths of hillside drainages. The Proposed Project and Alternative sites and the effluent-to-outfall pipeline are located within alluvium.

Landslide Deposits (Qls) **-** Landslide deposits (Pleistocene and Holocene) are present locally on hillslopes in the Project area. Landslide types identified in the Project area include, but are not limited to debris flows, rockslides, rock falls, rock and soil slumps and rock-block slides. Landslide deposits vary from unconsolidated mixtures of soil and rock debris to semi-coherent blocks of rock, depending on the style, velocity and age of slope movement. The most significant landslide deposits to the Project are located on the southeast slopes of Toro Creek Valley, on both sides of Willow Creek Valley east of SR1, and on the hillside east of Old Creek Valley, downstream from Whale Rock Reservoir Dam.

Marine Terrace Deposits (Qtm) **-** Marine terrace deposits (Pleistocene) are former beach deposits that now lie on elevated benches to the east of the modern beach level, and consist of loosely consolidated, locally cemented sand and gravel. Lift Station 5, and much of the Phase 2 recycled water pipeline to CSA 10, are located within mapped terrace deposits.

Tertiary-Age Sedimentary Rock Units (Tps, Tpe, Tm, Trt, Tv) **-** Tertiary-age sedimentary rock units in the region include the Pliocene to Miocene-age Edna and Squire Members of the Pismo Formation (Tps and Tpe), Miocene-age Monterey Formation (Tm), lower Miocene to Oligocene-age Rincon Formation tuff and sandstone (Trt), and Oligocene-age Vaqueros Sandstone (Tv).

Unnamed Sandstone (Ks) **-** This Cretaceous to Jurassic-age sedimentary rock unit is described as being a feldspathic graywacke or arkosic wacke sandstone and interbedded micaceous shale and siltstone. The unit is thick-bedded, and generally strong.

Franciscan Complex metavolcanics (KJfv) and mélange (KJfm) **-** Within the project vicinity, the local hillsides are composed of Cretaceous or Jurassic-age Franciscan Complex melange and metavolcanics. The Franciscan metavolcanics primarily consist of metamorphosed basalt and diabase with localized, extensively sheared zones. The mélange is a pervasively sheared graywacke and claystone, with exotic clast inclusions, including graywacke (gw), shale (sh) and chert (ch). The mélange typically weathers to a highly expansive soil at the ground surface, and is prone to soil creep, slope instability, and landsliding.

Toro Formation (KJt) **-** The Toro Formation is a Lower Cretaceous to Upper Jurassic sedimentary rock unit consisting of thinly stratified, interbedded shale or claystone and sandstone.

Serpentinite (Jsp) **-** Serpentinite belonging to the Jurassic-age Coast Range Ophiolite is present as generally northwest-trending, elongated bodies of sheared serpentine and ultramafic rock which are present along fault zones in the region.

3.1.2 Faults

The California Central Coast region is characterized by transpressional deformation between the San Andreas fault zone (SAFZ) to the east and the San Gregorio–San Simeon–Hosgri system of offshore and near-coastal faults to the west (Regional Fault Map, Figure 2). The transpressional deformation has produced several distinct but interacting crustal domains and tectonic structures (Lettis et al., 2004).

The Project is located in the "Los Osos Domain", which consists of northwest-striking reverse, oblique, and strike-slip faults that border uplifted blocks and subsiding basins within the domain (Geoinsite, 2015). The northwestern portion of the Los Osos Domain is bounded by the Hosgri-San Simeon-San Gregorio fault on the southwest and the Oceanic-Huasna fault zone on the northeast. Other significant faults in the vicinity of the sites include the Cambria and Los Osos faults. The Cayucos fault, which crosses the project area, is considered to be a pre-Quaternary fault and not a source of future earthquakes (Jennings and Bryant, 2010).

Major faults in the project vicinity are described below.

Hosgri Fault Zone (including San Simeon Fault) - The Hosgri fault zone is the southern portion of the larger 410 km long San Gregorio–San Simeon–Hosgri fault system. It is an active transpressional, convergent right-slip fault zone that extends southeastward approximately 110 km from a location 6 km offshore of Cambria to a point 5 km northwest of Point Pedernales (Hanson et al., 2004). The Hosgri fault zone lies offshore for its total length. As described above, the fault zone separates two tectonic domains of contrasting styles and rates of crustal deformation: the offshore Santa Maria basin on the western side of the fault zone and the onshore Los Osos Domain on the eastern side (PG&E, 2014, Lettis et al., 2004). To the

east, the fault zone truncates a marine bedrock platform associated with uplift of the San Luis–Pismo Structural Block.

The Hosgri and San Simeon fault zones are characterized by 1–3 millimeters per year (mm/yr) of right-lateral slip, with the rate of slip increasing from south to north along the San Gregorio–San Simeon–Hosgri fault system, ultimately to 6–8 mm/yr on the San Gregorio fault zone to the north in the San Francisco Bay area (Hanson et al., 2004).

Cambria Fault - The Cambria fault is a zone of northwest-striking reverse faults that forms the boundary between the southwestern margin of the Santa Lucia Range and the Los Osos Valley. The fault zone appears to extend between the Hosgri-San Simeon fault zone to the southwest and the Oceanic-West Huasna fault zone to the northeast. According to Jennings and Bryant (2010), the fault is considered to be late Quaternary active (movement in the past 700,000 years), although Holocene movement has not been documented. The fault juxtaposes basement rock with Quaternary gravels within the town of Cambria, but has little geomorphic expression. Consequently, Quaternary activity is considered to be low. The Cambria fault is not considered active by CGS (Wills et al., 2008); however, it is categorized as "potentially active" by the County of San Luis Obispo.

Oceanic-West Huasna Fault Zone - The Oceanic-West Huasna fault zone forms the east margin of the Los Osos Domain, and is characterized by multiple reverse faults and near-vertical faults that separate Franciscan Complex melange on the southwest from younger Mesozoic and Cenozoic rocks on the northeast. The fault zone strikes north-northwest approximately from the Santa Maria River to San Simeon for approximately 100 kilometers. The CGS has not yet established a slip rate (distance of slip per year) for this fault zone.

Late Cenozoic uplift of the Santa Lucia Range is accommodated primarily by reverse displacement on the Oceanic-West Huasna fault system. The 2003 San Simeon earthquake (M=6.5) has been attributed to the Oceanic fault due to its proximity to the epicenter. However, the dip and thrust movement of the 2003 earthquake are not consistent with movement on a vertical fault. Researchers have concluded that the 2003 earthquake likely occurred on a blind thrust fault in the Santa Lucia Mountains.

The West Huasna fault zone is characterized by dextral, strike-slip earthquakes and forms the eastern boundary of northwest-southeast trending ranges and range-bounding faults (e.g., Los Osos fault) within the Los Osos Domain.

Nacimiento and Rinconada Faults - The Nacimiento fault and Rinconada faults comprise the tectonic boundary between the coastal Franciscan Complex and the Salinian granitic basement. The Nacimiento fault zone is characterized by multiple, northwest-striking faults and varying styles of earthquake modes, including strike-slip, reverse and normal displacements. Although

Quaternary displacement has not been documented, low to moderate seismicity along the fault trend indicates some degree of ongoing strain release (Clark et al., 1994).

The Rinconada fault is an important element of the San Andreas fault system, and has accommodated about 18 km of post-Miocene offset (Rosenberg and Bryant, 2003). Fault displacement has continued into the late Quaternary and possibly into the Holocene.

Los Osos Fault Zone - The Los Osos fault zone is a range-bounding, southwest-dipping reverse fault with a late Quaternary slip rate of 0.2 to 0.5 mm/yr. The Los Osos fault consists of multiple fault traces along a generally northwest-southeast-trending zone along the northwestern edge of the San Luis Range. As currently characterized, the fault zone is a 50 km long, 2 km wide system of discontinuous, subparallel, and en echelon fault traces extending from Estero Bay on the north to an intersection with the West Huasna fault southeast of San Luis Valley. Results from new geomorphic mapping, interpretation of reprocessed seismic-reflection data, analysis of seismicity data, and structural analysis suggest that the fault zone dips steeply to the southwest (45 to 70 degrees or possibly steeper), and may be primarily an oblique-slip fault, with a significant component of dip slip to accommodate uplift of the range. Late Cenozoic activity of the Los Osos fault is expressed along the northwestern range front by uplift, tilting and folding above a blind fault tip (Unruh et al, 2015).

San Andreas Fault Zone - The San Andreas fault zone is the principal element of a network of dextral strike-slip faults that collectively accommodates the majority of relative motion between the Pacific and North American tectonic plates, extending for about 1,100 km along the western side of California. The total fault length can be divided into segments based on historical ruptures.

The closest distance to the San Andreas fault from the project area projects to near the junction between two fault segments: the Cholame-Carrizo Plain section, which extends southeastward about 200 km from the southern end of Cholame Valley, and the Parkfield segment, which extends northwestward for a distance of about 36 km. The most recent rupture event on the Cholame-Carrizo section is the M=7.9 1857 Fort Tejon earthquake, which produced shaking that lasted 1 to 3 minutes and was felt over more than 350,000 square kilometers of central and southern California. The maximum fault movement of about 9 meters occurred in the Carrizo Plain section, 90 to 130 kilometers southeast of Parkfield, and slip on the Cholame section is estimated at 3 to 7 meters (Sieh, 1978). The estimated recurrence interval for large earthquakes on this segment is 100 to 450 years (Bryant and Lundberg, 2002). The Parkfield segment is known as the “creeping” segment and is characterized by a slip rate of about 30 mm/year and magnitude 6.0 earthquakes that do not rupture adjoining segments.

3.2 *Seismic (Earthquake) Conditions*

3.2.1 Historic Seismicity

Historically, large-magnitude (>6.0) earthquake activity in the project vicinity is generally sparse, as depicted on the Regional Seismicity Map (Figure 3). Micro-earthquake activity west of the San Andreas fault zone is concentrated in several areas: (1) within the Santa Lucia Range, (2) west of the San Simeon area (offshore); (3) along and east of the Hosgri fault zone within the western Los Osos Domain; and (4) in the southwestern offshore region, west of Pt. Arguello (Hardebeck 2010). A dense cluster of earthquakes along the Santa Lucia Range contains primarily aftershocks from the 2003 M_W 6.5 San Simeon earthquake.

The San Simeon earthquake, centered approximately 34 km northeast of the study area, is the largest event recorded in the Central Coast region since the 1927 M_W 7.2 Lompoc earthquake, which was located further away, in the southern offshore region southwest of Point Conception. A study of the elastic- waves radiated from the source indicates that the San Simeon earthquake was caused by reverse faulting. Rupture propagated to the southeast from the hypocenter over a distance of approximately 20 km. The nearest mapped fault is part of the Oceanic fault zone, a system of vertical strike-slip faults. However, the dip and thrust movement of the 2003 earthquake are not consistent with movement on a vertical fault, and the earthquake may have been generated by a blind thrust fault.

Focal mechanisms of the region are predominantly reverse and strike-slip and are consistent with dextral transpressional deformation. Mechanisms beneath the Santa Lucia Range from the San Simeon aftershock zone to the area northeast of the San Simeon fault zone show predominantly reverse motion along west-northwest-trending fault planes.

There are numerous strike-slip mechanisms along the Hosgri fault zone between Estero Bay and Pt. San Luis, and directly east of the Hosgri in Estero Bay, along the Shoreline fault zone, and onshore within the Irish Hills. Generally, the Hosgri mechanisms have nodal planes that strike more north-northwesterly compared to the northwesterly striking focal mechanisms directly east of the Hosgri fault zone. Strike-slip mechanisms along the West Huasna fault zone change from nearly north-south-striking nodal planes east of San Luis Obispo to west-northwest-striking nodal planes north of San Luis Obispo to the southern end of the 2003 San Simeon earthquake aftershock zone.

3.3 *Geology at Project Sites*

The geologic conditions at the Proposed Project and Alternative sites are depicted on Figures 4 and 5. Yeh and Associates performed a preliminary geotechnical assessment of the Proposed Project site, and much of the following description is based on their report (Yeh, 2016). Additional site geology information is based on the screening-level evaluation by Geoinsite (2015) and reconnaissance-level observations conducted for this study.

3.3.1 Proposed Project Site

The Proposed Project site is located in the Toro Creek drainage, at the base of a northwest-facing hillside and about 400 feet southeast of the Toro Creek channel (Figure 4). The approximate latitude-longitude coordinates of the site are North 35.4199 and West 120.8630. The elevation of the site is approximately 80 to 120 feet above sea level.

The site is located on an alluvial fan emanating from a hillside drainage ravine at the base of a steep hillside. The drainage ravine transitions to a shallow gully across the property. The slope gradient on the hillside upslope of the site is approximately 20 to 30 degrees (about 35 to 60 percent inclination), and the slope gradient on the site is generally less than 5 degrees (less than about 9 percent inclination).

The site is underlain, at depth, by serpentinite and Franciscan melange bedrock. The bedrock is overlain by a thick sequence of surficial materials. Yeh and Associates performed field exploration consisting of seven (7) cone penetrometer (CPT) soundings and one boring at the Project Site in April 2016 (Yeh, 2016). The CPT soundings were advanced to depths of 30 to 73 feet below the ground surface. The boring was drilled to a depth of 50.5 feet below the ground surface. Interbedded alluvium and colluvium were encountered, which were not differentiated for the purpose of geotechnical characterization. The materials consisted of clay with varying amounts of sand and gravel. Geotechnical properties for the materials are presented in the Yeh (2016) report. Bedrock was not encountered in the subsurface exploration.

Ground water was encountered at a depth of 32 feet in the boring, and is estimated to vary from 22 to 32 feet in CPT soundings (Yeh, 2016). Ground water was not found in two of the CPT soundings. Ground water levels and soil moisture conditions will vary seasonally, and as a result of local runoff and streamflow, ground water pumping, irrigation and rainfall. A water well drilled in 2014 on Lot 8, approximately 750 feet southwest of the Project site and near the Toro Creek channel, encountered water at a depth of 18 feet (Cleath, 2015). The well was drilled to a depth of 80 feet and did not encounter bedrock.

The site is situated between two large landslide complexes. Further discussion of potential landslide impacts is provided in Section 4.0 of this report.

Surficial soils encountered at the site are considered expansive based on the general classification and one-dimensional swells tests (Yeh, 2016). Expansive soil conditions can cause differential movement and damage to foundations, slabs, flatwork and other improvements due to shrinking and swelling in response to moisture fluctuations. Various design provisions can be used to reduce the effect of expansive soil movement.

The central drainage channel conveys flow emanating from the upslope ravine and hillside. The drainage channel appears to have been modified in association with farming operations to reduce sheetflow and flooding of the adjacent fields (Yeh, 2016). The channel is about 4 to 6 feet in depth, and flows to a culvert beneath Toro Creek Road. The drainage channel should be considered in the design of the WRRF to prevent uncontrolled overflow, flooding and erosion impacts to the facility.

According to regional geology maps (Hall et al., 1979; CGS, 2016b), the site is located approximately 600 feet northeast of the potentially active Cambria fault. The Cambria fault zone is associated with serpentinite bodies located along an irregular linear trend. However, the precise locations of the fault traces in the immediate vicinity of the site are uncertain due to their concealment in Toro Creek Valley by overlying alluvium and landslide deposits. The site is located approximately 3,000 feet southwest of the inactive Cayucos fault, based on regional geologic mapping.

3.3.2 Alternative Site

The Alternative site is located in Willow Creek Valley, and east of Whale Rock Reservoir (Figure 1). The approximate latitude-longitude coordinates of the site are North 35.4433 and West 120.8696. The elevation of the site is approximately 170 to 205 feet above sea level. The site is relatively level (graded terrace) and is used for grazing and farming.

The approximately 9-acre site is located about 400 feet upstream of the confluence of two stream channels, and is roughly V-shaped (Figure 5. A southwest-trending ridge separates the two drainages until they merge at the site. The eastern limb of the site is within the Willow Creek drainage, and the western limb is within an unnamed tributary that roughly parallels Old Creek Road.

The Alternative site is situated on a fluvial terrace located between the two creeks and central ridge, and is underlain, at depth, by Franciscan Complex melange. Various rock types, including argillite, graywacke sandstone and serpentinite were observed on hillslopes in the vicinity of the property. The bedrock materials are overlain by up to at least 25 feet of alluvium deposited by the creeks, based on surface reconnaissance observations. The alluvium, which is crudely stratified with various amounts of clay, silt, sand and gravel, likely decreases in thickness in an upstream direction from the confluence.

Landslides are present locally in the Franciscan Complex rocks on nearby hillsides; however, none are mapped on the site or beyond the creeks bordering the site (Plate 6). Several landslide complexes, consisting of multiple, shallow, coalescing earth slumps and flows, are present on the east-facing hillside upslope (west) of Old Creek Road. In

addition, two rock slumps are present on the flanks of the central ridge. All of the local landslides are within weak bedrock (melange or serpentinite).

The banks along the margins of both creeks are characterized by moderately steep to precipitous (near-vertical) slopes up to approximately 25 feet in vertical height. Local slope failures (creek bank slumps) were observed along both creeks in the vicinity of the site. Creek bank instability may have a potential for eroding or regressing into the site. However, no significant changes to the width of the creek channel are apparent on historical aerial photography, indicating generally long-term stability of the creek banks at that location.

Ground water conditions are unknown. No water was flowing in the drainages, and no seeps were observed from creek banks observed during our field reconnaissances. It should be anticipated that shallow, perched ground water conditions may develop seasonally in response to rainfall and flows in the creek channels.

Depending on the physical properties (e.g., density) of the alluvial materials, the site may be susceptible to liquefaction during times of shallow ground water and strong earthquake shaking. According to the County hazard map, the site is classified as having a Moderate potential for liquefaction.

No known active or potentially active faults underlie the site. The site is located approximately 3,000 feet north of the inactive Cayucos fault, based on regional geologic mapping (Hall et al., 1979; CGS, 2016b).

3.3.3 Project Pipelines

The project pipelines will cross a variety of geologic units, as shown on Figure 1. In addition, certain pipeline segments will cross potential geologic hazards, as described in the following sections.

Lift Station 5 to Proposed Project Site

The influent pipeline from Lift Station 5 to the Proposed Project site will involve construction of a force main pipe along Toro Creek Road. A second pipe conveying treated wastewater from the Proposed Project site to Lift Station 5 will parallel the influent pipeline. Both pipelines will cross Toro Creek at the existing bridge site, but will not be attached to the bridge. The design and method of the creek crossing will be determined during the design phase of the project.

The pipeline section between Toro Creek and the WRRF is underlain by alluvium. Toro Creek Road along this section also closely follows the downslope edge of a massive landslide deposit that consists, in part, of displaced serpentinite rock. From Toro Creek westward to Lift Station 5, the pipelines mostly will be in Franciscan Complex melange. Serpentinite was observed

immediately west of the Toro Creek crossing. Lift Station 5 appears to be underlain by Pleistocene marine terrace deposits.

The Lift Station 5 to Proposed Project site pipelines will cross the mapped (concealed) trace of the potentially active Cambria fault, roughly midway between Toro Creek and the WRRF (Figure 1). The precise location of the Cambria fault trace is uncertain due to concealment by overlying alluvium and landslide deposits in Toro Creek Valley.

Left Station 5 to Existing Outfall

South from Lift Station 5, treated wastewater will utilize an existing force main in Caltrans Right of Way and Main Street in Morro Bay to the intersection of Island Street and Main Street. At that point, a new force main will be constructed down Main Street to Highway 41/Atascadero Road to the existing Morro Bay-Cayucos WWTF outfall. The connection to the existing outfall will occur within the existing facility property.

The existing force main south of Lift Station 5 is underlain by Pleistocene marine terrace deposits, a short section of Cretaceous sandstone, and alluvium. The new force main route is primarily underlain by alluvium, and a possible section of Franciscan Complex melange just north of the Highway 41/Atascadero Road intersection. The existing outfall appears to extend into modern beach sands.

Alternative Site Bridge and Pipelines

The Alternative site will be accessed by a clear span bridge across Willow Creek. Conveyance pipelines will be attached to the proposed access bridge across the creek. The influent and treated wastewater pipelines will also cross Willow Creek and an ephemeral drainage on Old Creek Road. The specific design and method of the bridge and creek crossings will be determined during the design phase of the project.

A third pipeline will convey tertiary-treated water from the WRRF to a proposed agricultural storage pond on the property. The pond is anticipated to be located about 1,000 feet east of the planned access road to the facility.

The proposed bridge and near-property pipelines will be underlain primarily by alluvium. Much of the pipeline route between the Alternative site and SR1 also are underlain by alluvium, but also intervals of Franciscan Complex rock (melange, metavolcanic) and serpentinite. The route also crosses a mapped landslide approximately midway between the site and SR1. From SR1 southward to Lift Station 5, the pipeline route is underlain by Pleistocene marine terrace deposits.

The SR1 to Lift Station 5 segment also crosses the mapped (concealed) trace of the potentially active Cambria fault, near the intersection of Willow Creek Road and SR1 (Figure 1). The

precise location of the Cambria fault trace is uncertain due to concealment by overlying marine terrace deposits.

Recycled Water Pipeline from WRRF to CSA 10 (Phase 2)

A force main pipeline conveying recycled water will be constructed from either the Proposed Project or Alternative Site to the CSA 10 Water Treatment Facility in Cayucos, where the pipeline will be capped. The Proposed Project route would run west on Toro Creek Road then north along SR1 in the CSD easement in the right of way to Chaney Street, then run along Ocean Blvd. past the cemetery, crossing the existing footbridge over Old Creek to the CSA 10 site. The Alternative Project route would run southwest on Willow Creek Road, then follow the same route northward to the CSA 10 site.

The Phase 2 recycled water pipeline will run parallel to either the Proposed Project or Alternative pipelines in Toro Creek or Willow Creek valleys, respectively. The section along SR1, Chaney Street and Ocean Boulevard primarily is underlain by marine terrace deposits. The northern terminus and CSA 10 site are underlain by alluvium. Landslides are present locally along the hillsides upslope from the route.

The Phase 2 pipeline will cross the mapped (concealed) trace of the potentially active Cambria fault, near the intersection of Willow Creek Road and SR1 (Figure 1). The precise location of the Cambria fault trace is uncertain due to concealment by overlying marine terrace deposits.

4.0 REGULATORY SETTING

This report section reviews the applicable regulations, rules, plans and industry standards that govern the geologic and seismic aspects of the Project. Geologic resources and hazards, including seismic hazards and geotechnical hazards, generally are governed by California State regulations. Similarly, state regulations typically govern the management and protection of mineral resources excepting such resources on lands under federal jurisdiction.

California Building Code

The current version of the California Building Code (CBC) is the 2013 edition. It is anticipated that the 2016 edition of the CBC will be adopted by local agencies, including the County of San Luis Obispo, in 2017. The CBC contains general building design and construction requirements relating to fire and life safety, structural safety, and access compliance. CBC provisions provide minimum standards to safeguard life or limb, health, property and public welfare by regulating and controlling design, construction, quality of materials, use and occupancy, location and maintenance of all buildings and structures and certain equipment. The CBC also includes definitions of

seismic sources, site soil types and the procedure to calculate seismic forces on structures.

Surface Fault Rupture and the Alquist-Priolo Earthquake Fault Zoning Act

Inspired by the damaging effects of the 1971 San Fernando Earthquake, the State of California promulgated the Alquist-Priolo Special Studies Zone Act in 1972 (currently the Alquist-Priolo Earthquake Fault Zoning Act of 1972). This Act regulates development of buildings for human occupancy near known active faults through the Alquist-Priolo Special Studies Zone Act. "Fault-Rupture Hazard Zones" (formerly "Special Study Zones") have been established around known active faults by the California Division of Mines and Geology (Bryant and Hart, 2007). CEQA makes reference to the Act, and concludes that a project will have a significant impact on the environment if it will "*Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving 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*".

Seismic Hazards Mapping Act

Prompted by damaging earthquakes in northern and southern California in the 1980s, the State adopted the Seismic Hazards Mapping Act in 1990. The purpose of the Act is to protect public safety from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and other hazards caused by earthquakes. The Act requires the State Geologist to delineate seismic hazard zones, which is currently an ongoing program. The Act does not apply directly to the Project because seismic hazard zones have not yet been delineated in the Project area. However, the Act led to establishment of guidelines for evaluating seismic hazards (other than surface fault rupture). The guidelines, originally summarized in CGS Special Publication 117 and later revised in Special Publication 117A (CGS, 2008), provide industry-standards for evaluating and mitigating seismic hazards. Further, the standards are generally incorporated into the County's guidelines (see Local Geology Guidelines below).

Surface Mining and Reclamation Act

The Surface Mining and Reclamation Act of 1975 (SMARA) requires the State of California to prepare an inventory and classify selected mineral resources within the State. Areas are classified into Mineral Resource Zones (MRZ) based on the occurrence and availability of mineral resources. The information is intended to inform local agencies regarding the planning and development of lands that contain significant mineral resources.

Local

Geology Guidelines, San Luis Obispo County

The hillside areas east of Cayucos are subject to moderately to high landslide risk according to the County of San Luis Obispo Safety Element, and are designated a Geologic Study Area (GSA) by the County. Section 22.14.070 of the County Inland Land Use Ordinance and Section 23.07.080 of the Coastal Land Use Ordinance require land use permit applications within a GSA be accompanied by a geology and soils report prepared by a certified engineering geologist and/or registered geotechnical (soils) engineer. Guidelines for information necessary for approval of reports submitted to the County are provided in "*San Luis Obispo County Guidelines for Engineering Geologic Reports*" (originally prepared 2005, updated October 2013).

Air Pollution Control District, San Luis Obispo County

In 1970, California legislation was passed that placed the primary responsibility of controlling air pollution at the local level. The County's Air Pollution Control District (APCD) is the local agency tasked with enforcing rules and regulations pertaining to air quality. The state Air Resources Board has identified asbestos as a toxic air contaminant, and serpentine rock is a known source of naturally occurring asbestos. Serpentine rock is located in many regions of San Luis Obispo County, including the Project area. Work in serpentine areas requires a District pre-approved dust control plan and may include asbestos air monitoring.

5.0 SIGNIFICANCE THRESHOLDS, IMPACT ANALYSIS AND MITIGATION MEASURES

5.1 *Thresholds of Significance*

In accordance with the California Environmental Quality Act (CEQA), the effects of a project are evaluated to determine if they will result in significant adverse impact on the environment. The criteria used to determine the significance of an impact to geology are based on the initial study checklist in Appendix G of the CEQA Guidelines. Accordingly, geology impacts resulting from the proposed project are considered significant through application of the following thresholds of significance:

Would the project:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - 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?
  - Strong seismic ground shaking?
  - Seismic-related ground failure, including liquefaction?
  - Landslides?
- Result in substantial soil erosion or the loss of topsoil?
- Be located on a geologic unit or soil that is unstable, or that would become unstable because of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?
- 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?
- 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?

5.2 *Impact Analysis and Mitigation*

5.2.1 Construction and Operation of Project

Construction of the WRRF and associated infrastructure will involve earthwork activities that will need to be defined according to geotechnical and civil engineering standards and codes. The estimated earthwork volume at the Proposed Project site is 12,000 cubic yards; however,

specific dimensions and depths of excavations and fills have not been provided. In addition, earthwork quantities for other project components have not been determined, but will likely include trenched excavations, drilling, and waterway crossings. Potential impacts from construction and operation of proposed WRRF sites and pipelines may result from the following geologic hazards: surface fault rupture; seismic ground shaking; seismic ground deformation, including liquefaction; landslides and slope instability; expansive soils; and naturally-occurring asbestos. It is anticipated that the potential impacts can be reduced to Less than Significant through appropriate geotechnical investigation and analysis of site conditions for specific structures. Individual geologic impacts are analyzed in the following sections of this report, with mitigation measures presented for specific locations and conditions. Most impacts will be mitigated by following the design criteria and construction recommendations provided in a design-level geotechnical report for project components.

Impact GEO-1. The geologic impact of site construction activities and operation is a Significant Impact that Can Be Mitigated with appropriate mitigation measures.

Mitigation Measure GEO-1. Design-Level Geotechnical Investigation and Report

Yeh (2016) performed a preliminary geotechnical assessment of the Proposed Project site for conceptual development of the treatment plant. Following selection of the WRRF site and associated pipeline routes, a geotechnical design investigation should be performed to provide final recommendations and geotechnical design criteria for specific project components, such as structures, foundations, pipelines, pump stations, loading conditions, excavations, grading, dewatering, drainage and other site work. The geotechnical design investigation should include additional field exploration for specific structures, and include testing and analyses as needed to provide a basis for design criteria and construction recommendations in accordance with local (County of San Luis Obispo) regulations and the applicable California Building Code (CBC).

Significance after Mitigation: Less than Significant

5.2.2 Surface Fault Rupture

Movement along an active tectonic fault that intersects the ground surface can result in permanent ground displacements which may severely damage built structures. Faults are considered to be “active” if they display evidence of movement within Holocene time (the last 11,000 years), and “potentially active” if they display evidence of movement within Quaternary time (i.e., within the last 2.6 million years). The State of California regulates development near known active faults through the Alquist-Priolo Special Studies Zone Act. Fault-Rupture Hazard Zones (formerly “Special Study Zones”) have been established around known active faults by the California Division of Mines and Geology (Bryant and Hart, 2007). Construction of structures for human occupancy are not permitted within a Special Study Zone until a site-specific geologic

study has been performed which concludes that a specific site does not lie on or across an active fault trace. The Project is not located within an Alquist-Priolo Fault-Rupture Hazard Zone.

Traces of the Cayucos and Cambria faults have been mapped in the Project area. The Cayucos fault is considered inactive, and the Cambria fault is considered potentially active. No fault traces have been mapped on the Proposed Project or Alternative sites. Consequently, there is no impact for surface fault rupture associated with primary tectonic faulting for the Proposed Project and Alternative sites.

Proposed project pipelines cross the mapped trace of the Cambria fault at two locations: 1) Toro Creek Road roughly midway between Toro Creek and the Proposed Project Site, and 2) the intersection of SR1 and Willow Creek Road. The precise location of the Cambria fault trace is uncertain due to concealment by overlying alluvium and landslide deposits in Toro Creek Valley, and by marine terrace deposits along SR1.

Permanent ground displacements caused by surface fault rupture can pose a major hazard to the safety and operation of pipelines. When ground displacements associated with fault rupture occur along a fault that intersects a pipeline, they may break or severely damage the pipeline or associated. If fault rupture is distributed over a wider area, then the deformation may manifest as a zone of ground cracking with smaller amounts of offset on individual faults or fractures.

Impact GEO-2A. There is no impact of surface fault rupture at the Proposed Project and Alternative sites.

Impact GEO-2B. The impact of surface fault rupture on certain pipeline segments is a Significant Impact That Can Be Mitigated with appropriate mitigation measures.

Mitigation Measure GEO-2A. Geologic Fault Evaluation for Pipelines

The geotechnical design investigation for the project (Mitigation Measure GEO-1) should include appropriate geologic fault evaluations of the Cambria fault to develop project-specific design parameters for pipeline sections crossing the fault. The fault evaluations should be directed towards, but not necessarily be limited to, defining the location and width of the fault zone at the pipeline-fault crossings. Since the fault traces are concealed beneath young geologic deposits, the fault zones may be difficult to define with precision. Consequently, fault zone widths should incorporate conservative assumptions for pipeline design.

Mitigation Measure GEO-2B. Fault Crossing Pipeline Design

The most common method of mitigating the hazard of primary surface fault rupture is to avoid active tectonic fault traces. However, due to the locations of critical infrastructure sites that will be connected via pipelines, certain pipeline sections will not

be able to avoid crossing traces of the potentially active Cambria fault. Therefore, pipeline crossings of fault traces shall be designed to accommodate potential flexure and horizontal and vertical offsets based on the results of the geologic fault evaluations (Mitigation Measure GEO-2A). Fault rupture mitigation strategies for pipelines may include measures such as flexible connections, gravel trench backfill, double lined pipes, strengthened pipes, automatic shutoff valves and similar measures to prevent the release of product to the environment.

Significance after Mitigation: Less than Significant

5.2.3 Seismic Ground Shaking

The project area is situated in an area of high seismic activity. It should be anticipated that the project structures will experience moderate and strong ground shaking that may be generated by earthquakes on any one of several major active and potentially active faults during the life of the project. The closest known major *active* fault to the Project sites is the Hosgri-San Simeon fault zone. Other nearby active or potentially active faults include the Cambria, Oceanic and Los Osos faults. In addition, the historically active San Andreas fault zone is located roughly 60 km from the project area.

Preliminary seismic data applicable to the new treatment plant at the Proposed Project site are provided in Yeh (2016). The Proposed Project site is classified as site class "D" based on penetration resistances recorded in the boring and CPT soundings (Yeh, 2016). This soil profile type corresponds to a stiff soil profile according to the California Building Code (CBC). Estimated ground motions at the Proposed Project site, corresponding to a 2 percent probability of being exceeded in 50 years (statistical return period ≈ 2,475 Years), are tabulated below.

Table 1: Estimated Seismic Ground Motions at Proposed Project Site (Yeh, 2016)

Hazard Level	Peak Horizontal Acceleration	0.2 Second Period Horizontal Acceleration	1.0 Second Period Horizontal Acceleration
2% Probability of Exceedance in 50 years	0.48	1.183	0.658
Notes: All acceleration values in units of gravity(g) which is 32 ft/sec^2 or 9.81 m/s^2			

The seismic data provided by Yeh (2016) were estimated for use with the 2013 California Building Code (CBC). The 2016 CBC is expected to be adopted by local agencies, such as the County of San Luis Obispo, in 2017. Geoinsite (2015) performed a probabilistic assessment of earthquake shaking in the entire Project area for an earthquake event having a 2 percent chance of being exceeded in 50 years or a return period of 2,475 years. According to the U.S. Geological Survey's 2008 "Next Generation Attenuation" model (USGS, 2008), the anticipated peak ground acceleration in the Project area vary from 0.43g to 0.49g. The selected exceedance level is

indicative of more critical facilities, and is a higher standard than the level typically used for less critical structures (e.g., residential structures).

Impact GEO-3. The impact of strong seismic shaking on project structures is a Significant Impact that Can Be Mitigated with appropriate mitigation measures.

Mitigation Measure GEO-3. Seismic Design of Project Structures

Project structures should be designed to resist lateral forces generated by earthquake shaking in accordance with the current building code, State pipeline safety standards and applicable design practice. The design-level geotechnical report (Mitigation Measure GEO-1) should include recommendations for seismic data for design that may be updated for the new code requirements, additional subsurface information, or further site-specific analyses. Appropriate seismic ground motion parameters should be estimated and incorporated into project design by the project engineer.

Compliance with applicable seismic design codes does not eliminate potential damage should a large earthquake occur during the operation of the Project. However, adherence to the appropriate seismic design and construction codes will mitigate the earthquake shaking effects to a less than significant level.

Significance after Mitigation: Less than Significant

5.2.4 Liquefaction and Other Seismically Induced Ground Failures

Liquefaction is a sudden loss of soil strength due to rapid increases in pore water pressures caused by seismic shaking. Liquefaction typically occurs during an earthquake in unconsolidated loose to medium dense sandy soils that are below the ground water table. The potential and severity of liquefaction will depend on the intensity and duration of the strong ground motion, the depth to ground water, the soil type, and terrain in the area where liquefaction occurs. Seismically induced settlement, collapse, or lateral spreads can occur in soils that are loose, soft, or that are moderately dense and weakly cemented, or in association with liquefaction.

Following the 2003 San Simeon earthquake, evidence of liquefaction was observed along the shorelines of Morro Bay and Cuesta Inlet. Liquefaction was manifested as sand that had ejected around the pilings that support the Baywood T-pier, numerous sand boils and mud volcanoes on the shore of Morro Bay mainly below the high-tide line, and lateral spreads, pipes, and fissures along the shoreline of Cuesta Inlet. The liquefaction appeared to be constrained to near the shoreline, and did not appear to have seriously impacted the adjacent roadways or infrastructure such as may have been evidenced by cracks, fissures, or differential settlement. Evidence of liquefaction or differential seismic settlement at the higher elevations was not observed, as these areas were located away from the shoreline.

The Safety Element of the San Luis Obispo County General Plan (1999) identifies areas where the potential for liquefaction should be evaluated based on mapping of geologic formations that may contain soil types susceptible to liquefaction. Within the Project area, the Safety Element identifies geologic units such as beach sand, dune sand, and younger alluvial deposits as having a high potential to contain sediments that may be prone to liquefaction. Based on review of geologic maps, portions of the Project structures are underlain by geologic units that may contain sediments susceptible to moderate liquefaction potential. Liquefaction hazard zones in the Project area are depicted on Figure 6 (Liquefaction Hazard Areas). The liquefaction potential categories are described below:

- Very High. Groundwater has been encountered within about 10 feet of the ground surface, soil units previously encountered are loose and vulnerable to liquefaction.
- High. Groundwater is present within about 50 feet of the ground surface and previous explorations suggest sediments are loose and prone to liquefaction. The depth of potentially liquefiable material may be limited or near the groundwater table.
- Moderate. Groundwater is present within about 50 feet of ground surface, and previous explorations suggest sediments are medium dense and prone to liquefaction, or geologic units may contain sediments susceptible to liquefaction.
- Low. Groundwater likely not present within 50 feet of ground surface or sediments in this vicinity were previously evaluated and found to be dense and have a low potential for liquefaction.
- Very Low. Bedrock or formation units that are not considered vulnerable to liquefaction.

In places where pipelines or other Project facilities are in part located on potentially liquefiable soils and in part on non-liquefiable soils, liquefaction may result in large vertical movements from differential settlement of the foundation soils. These large differential movements may cause breakage or leakage of the pipeline contents and/or damage to Project facilities.

In addition to liquefaction, seismic ground failure can include lateral spreading and seismic densification, which can result in the loss of foundation support for structures.

Lateral spreading is a phenomenon associated with strength loss following liquefaction and the presence of a free face, such as an unsupported creek bank. Lateral spreading involves the lateral movement of a liquefied soil layer (and overlying layers) toward the free face. Based on the presence of potentially liquefiable materials and incised stream channels, there is a potential for lateral spreading to occur on the Alternative site. Further investigation is needed to quantify the amount of liquefaction and lateral spreading at the Alternative site.

Seismic densification is caused by earthquake-shaking induced densification or compaction of loose to medium-dense granular soils. The densification can result in settlement of the ground surface and local differential settlement that may damage foundations and structures, and pipelines. The potential for seismically induced settlement to occur is controlled by the intensity and duration of ground shaking, and the relative density (the ratio between the in-place density and the maximum density) of the subsurface soils. In general, young alluvial sediments in the Project area are potentially subject to seismically-induced settlement. Where the pipeline or above-ground facilities straddle deposits of loose to medium dense granular sediments and dense soils or bedrock large, potentially damaging differential settlements may occur and adversely impact the Project. Subsurface geotechnical investigations typically address the potential for seismically induced settlement on a site-specific basis.

Impact GEO-4. The impact of seismically-induced ground failures, including liquefaction, lateral spreading and seismic densification, is a Significant Impact that Can Be Mitigated with appropriate mitigation measures.

Mitigation Measure GEO-4. Liquefaction and Seismic Ground Failure Evaluations

The Proposed Project site is classified as Class D based on the subsurface conditions encountered and is not considered vulnerable to liquefaction or loss of strength in response to the design earthquake (Yeh, 2016). However, the Alternative site and sections of proposed pipelines are underlain by potentially liquefiable sediments with a Moderate susceptibility classification based on regional information. The design-level geotechnical report (Mitigation Measure GEO-1) should include evaluations of liquefaction potential and estimated liquefaction-induced settlement based on field exploration, testing and analysis of site conditions for final project components (WRRF and pipelines). The potential effects of other seismically induced ground failures should also be evaluated, including lateral spreading and seismic densification. Mitigation measures should be provided where estimated ground deformations exceed typical foundation and structural design parameters.

The liquefaction, lateral spreading and seismic settlement evaluations should be conducted in accordance with guidelines published by the California Geologic Survey (formerly the California Division of Mines and Geology) and relevant local and professional standards. At a minimum, the liquefaction hazard evaluation and mitigation study should be undertaken in a manner consistent with the *Guidelines for Evaluation and Mitigation of Seismic Hazards in California, Chapter 6, Analysis of Liquefaction Hazards* (CGS Special Publication 117A, 2008).

Significance after Mitigation: Less than Significant

5.2.5 Landslides and Slope Instability

Landslides are displaced blocks or masses of soil and rock that have separated from their original location on a hillside and been transported downslope by falling, sliding or flowing. Landslides can involve shallow movement of soil or colluvium, or deeper movement of the underlying bedrock. Movement velocities vary from nearly imperceptible (creep and slow-moving flows) to very fast (avalanches). Landslides are the result of a variety of interrelated natural factors such as weak soil and rock, oversteepened slopes due to rapid stream down cutting, adverse geologic structure, heavy or prolonged rainfall, and earthquake ground shaking. In addition to natural factors, human activities can initiate landsliding by improper grading, excessive watering, removal of natural vegetation, and disruption of natural drainage.

Landslides are ubiquitous throughout the Coast Ranges, owing to the presence of relatively weak geologic units, active tectonic uplift and corresponding stream downcutting, and steep topography. Most landslides identified in the project area are rock falls, rock slides, soil and rock slumps, debris flows, and rock-block glides. The depth of movement appears to vary from shallow (less than 10 feet) to very deep (greater than 50 feet or more).

As noted in Section 3.1, landsliding in the Project area is a common occurrence on slopes underlain by serpentinite and Franciscan Complex melange. Numerous landslides were observed in the Project area. The Safety Element of the San Luis Obispo County General Plan (1999) identifies areas of relative landslide potential based on the distribution of geologic formations. Within the Project area, the geologic units considered to have the highest landslide hazard potential are existing landslides ("Very High" potential) and weak geologic units such as serpentinite and Franciscan Complex melange ("High" potential). Geologic units with the lowest hazard potential are young valley fill and coastal sediments, including alluvium, terrace deposits and beach sand. County's relative landslide hazard potential is presented on Figure 7 (Landslide Hazard Areas).

> **Impact GEO-5**. The impact of landsliding and slope instability is a Significant Impact that Can Be Mitigated with appropriate mitigation measures.
>
> **Mitigation Measure GEO-5. Landslide and Slope Instability Evaluations**
>
> The design-level geotechnical report (Mitigation Measure GEO-1) should include evaluations of landsliding, creek bank instability and other types of slope instability settlement based on field exploration, testing and analysis of site conditions for final project components (WRRF and pipelines).
>
> Several very large, ancient landslide complexes are present on the hillsides in the Toro Creek drainage area. It can be expected that the landslide complex may experience renewed movement in the future. The Proposed Project site is not underlain by a

known landslide, but it is situated between two identified landslide complexes. The potential impact of slope instability on the construction and operation of the WRRF should be evaluated as part of the geotechnical design investigation and report (Mitigation Measure GEO-1).

Creek bank instability potentially affects the Alternative site, which is situated adjacent to incised creek channels with high (locally up to 25 feet in height), steep to near-vertical creek bank slopes. Creek bank slumps were observed at several locations in the drainages, indicating past instability. Depending on further study, some form of mitigation may need to be incorporated into project design to reduce to the potential for bank instability from encroaching on the built facilities. Possible mitigation measures, if necessary, may include construction setbacks, slope stabilization, or protective measures to assure long-term stability of site structures. The future behavior of the creek banks should be assessed further in the design-level geotechnical study for the Alternative site, if it is selected for the WRRF.

Certain pipeline sections cross mapped landslides or are located near the downslope margins of mapped landslides, which have a "Very High" potential for slope movement according the County's landslide hazard potential map (Figure 7). Slope movements that affect pipelines could result in a pipeline leak or rupture. Mitigation measures to reduce the potential for damage due to slope movement should be developed for the depths and types of slope movements that may impact the pipelines at the locations identified in the landslide evaluations. It is anticipated that a variety of mitigation measures could be successfully constructed or implemented to reduce the probability of adverse impacts due to slope movement at identified slope hazard sites.

Significance after Mitigation: Less than Significant

5.2.6 Soil Erosion

Erosion and associated loss of topsoil is a natural process that can occur as a result of wind or water or both, and it can be affected by man's activities including construction activities. Active erosion has been observed in the Project area and for discussion purposes can be divided into hillside erosion and stream erosion, including scour. Hillside erosion typically occurs in steep hillside terrain and in areas disturbed by man's activities or other natural slope processes. Stream erosion and channel scour occur within existing drainage courses and can include vertical as well as lateral migration and scour.

Project construction and related activities during the construction phase can have a significant impact on erosion. Construction-related erosion can occur as surface erosion and also as trench erosion. Surface erosion occurs within and adjacent the disturbed area (construction right-of-way, temporary work areas, contractor and pipe laydown yards, access roadways, etc.). Trench

erosion is a form of subsurface erosion that can occur within and along the trench excavation for the pipeline. In extreme cases, trench erosion and seepage along the pipeline trench can lead to "piping failures" or the progressive mobilization of fine-grained soils in the trench producing voids, sinkholes and otherwise failure of the trench backfill. Surface and subsurface flow along the pipeline trench also can adversely affect local slope stability triggering reactivation of landslide deposits or causing new landslides. Also, if construction occurs during the rainy season, erosion can have a significant impact on the project construction activities.

Erosion processes common to the Project area prior to construction are likely to continue through the operation phase of the Project, and in some cases erosion associated both with streams and hillside areas have a high potential to impact the Project, primarily the pipelines. Construction activities can result in erosion during as well as after the construction phase, extending into the operation phase of the Project.

Impact GEO-6. The impact of soil erosion and loss of topsoil due to construction and operation of Project components is a Significant Impact that Can Be Mitigated with appropriate mitigation measures.

Mitigation Measure GEO-6A. Erosion Control Plan and Implementation

During construction and operation of project structures and facilities, erosion could occur during rain, runoff or high wind events. Excavated soils and exposed earth materials could erode if preventive measures are not implemented. An Erosion Control Plan (ECP), including elements of a Storm Water Pollution Prevention Plan (SWPPP), should be prepared by a geotechnical or civil engineer. The ECP and SWPPP would describe measures intended to reduce erosion and deposition in to local creeks and the Pacific Ocean.

The plan should conform to applicable local requirements and those established under the NPDES stormwater permit program. The plan should include BMPs for the construction and operation phases of the project. BMPs should include those from the Federal Energy Regulatory Commission (FERC) "*Upland Erosion Control, Revegetation, and Maintenance Plan*" (FERC, 2003) and other guidelines, as appropriate. The plan should include both temporary and permanent surface and trench erosion mitigation and restoration measures. In particular, the plan should include, but not be limited to recommendations for final grading and compaction, revegetation, seeding, mulching and design placement and construction of trench breakers and surface breakers following, at a minimum, the FERC guidelines or project-specific guidelines. The SWPPP, including recommendations from the approved erosion control plan, shall be incorporated into the construction plans and specifications, prior to construction.

Mitigation Measure GEO-6B. Evaluation of Creek Crossings for Pipelines

As part of the geotechnical design investigation for the Project (Mitigation Measure GEO-1), creek crossings for pipelines should be investigated and evaluated with respect to the methods of crossings. If horizontal directional drilling methods (HDD) are proposed, then HDD feasibility investigations should be performed for each location where that method is being considered. The geotechnical design report shall include geotechnical design criteria for creek crossings, which may include recommendations for pipeline burial depths, methods of crossing, trench or trenchless design parameters, and lateral setbacks. Recommendations for specific crossings shall be incorporated into the Project plans and specifications prior to construction of the pipeline.

Significance after Mitigation: Less than Significant

5.2.7 Expansive Soils

Surficial soils encountered at the Proposed Project Site are considered expansive based on the general classification and one-dimensional swells tests (Yeh, 2016). In addition, portions of proposed pipeline routes are underlain by rock types known to generate expansive soils (serpentinite and melange). Consequently, there is a high potential for expansive materials to underlie a significant portion of project locations. Due to the mostly granular nature of the stream alluvium that appears to underlie the Alternative Site, there is a low potential for a significant amount of expansive materials at that site.

Expansive soil conditions can cause differential movement and damage to foundations, slabs, flatwork and other improvements due to shrinking and swelling in response to moisture fluctuations. Various design provisions can be used to reduce the effect of expansive soil movement. These include increasing the depth of shallow foundations into soil less prone to moisture fluctuations, placing a mat of non-expansive soil (typically sand) below slabs and flatwork, chemical treatment using lime or cement to reduce the expansion potential below pavement or slabs, providing positive drainage away from foundations and flatwork, providing liners and drainage provisions below planters, connecting roof gutters and downspouts that direct runoff away from buildings, and providing additional reinforcement within foundation and floor slabs to better accommodate movement associated with heaving and swelling movements of the soil.

Impact GEO-7. The impact of expansive soils on Project components is a Significant Impact that Can Be Mitigated with appropriate mitigation measures.

Mitigation Measure GEO-7. Specific Design Recommendations for Expansive Soils

Testing of samples in a geotechnical laboratory is the standard method of quantifying the expansibility of materials, and should be performed as part of design-level

geotechnical studies for the selected WRRF site and pipeline routes (Mitigation Measure GEO-1). If expansive materials are identified, then appropriate design and construction measures should be provided to mitigate the adverse effects. The design-level geotechnical investigation should provide specific recommendations to address expansive soil conditions for the design of foundations, flatwork, pavement, pipelines and other site work.

Significance after Mitigation: Less that Significant

5.2.8 Naturally Occurring Asbestos

Naturally-occurring asbestos (NOA) is associated with ultramafic bedrock, including serpentinite, which is present in the Project area, both within the Franciscan Complex melange and along fault zones. Airborne asbestos, commonly associated with dust from disturbance of the naturally occurring asbestos minerals, is a health hazard. The state Air Resources Board has identified asbestos as a toxic air contaminant, and serpentine rock is a known source of naturally occurring asbestos.

Bedrock at the Proposed Project site was not encountered in the explorations (30 to 73 feet below the ground surface) performed by Yeh (2016). It is anticipated that bedrock will not be encountered in excavations for the WRRF at the Proposed Project site. Consequently, there is a very low potential for naturally occurring asbestos to be exposed at the Proposed Project site.

Melange and serpentinite may underlie the Alternative site, but the depth to bedrock is not known. Geotechnical exploration will be required to determine the depth and type of bedrock at the Alternative site, before an assessment of naturally occurring asbestos at that site can be made.

Melange and serpentinite underlie portions of the proposed pipeline routes, thus it is anticipated that naturally occurring asbestos may be present at selected locations along those routes. The potential for naturally occurring asbestos should be evaluated as part of further environmental assessments of sites selected for further evaluation. Site development impacts for sites where NOA is suspected or known normally involve testing, monitoring and mitigation (dust control) during construction.

Impact GEO-8. The impact of naturally occurring asbestos on Project components is a Significant Impact that Can Be Mitigated with appropriate mitigation measures.

Mitigation Measure GEO-8. Evaluation of the Presence of Naturally Occurring Asbestos

Prior to any grading activities, the geologic evaluations shall be conducted to determine if Naturally Occurring Asbestos (NOA) is present within the area(s) that will

be disturbed. The geologic evaluations should be performed in accordance with the *Guidelines for Geologic Investigations of Naturally Occurring Asbestos in California* (CGS Special Publication 124, 2002).

If NOA is not present, and exemption request must be filed with the County's Air Pollution Control District (APCD), which is the local agency tasked with enforcing rules and regulations pertaining to air quality. If NOA is found at project sites, the project activities must comply with all the requirements outlined in the Asbestos ATCM. This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program for approval by the APCD. Refer to APCD webpage (www.slocleanair.org/business/asbestos/noa).

Significance after Mitigation: Less that Significant

5.2.9 Unstable Geologic Units

Unstable and potentially unstable geologic units and soils in the Project area include, but are not limited to, areas of active faulting, landslides, steep slopes, areas of soil erosion and stream scour, potentially expansive soils, areas that may be prone to liquefaction and other seismically-induced ground failures. These potentially unstable conditions have been described and analyzed in the previous impact and mitigation statements in this section of the report.

Other potentially unstable geologic units and soils may be prone to subsidence, settlement, hydrocompaction and flooding, including both stream and alluvial fan flooding. Surficial geologic materials underlie the Proposed Project and Alternative sites, as well as significant portions of the proposed pipeline routes. Dewatering and excavations associated with construction of Project structures could potentially result in adverse impacts of ground subsidence. No Project structures are sited over known underground openings such as mine shafts or tunnels.

Potential impacts associated with those unstable geologic units and soils that are not previously assessed in Section 5.0 of this report will be reduced to Less Than Significant with implementation of Mitigation Measure GEO-1 (Design-Level Geotechnical Investigation and Report).

Impact GEO-9. Potential impacts associated with those unstable geologic units and soils that are not previously assessed in Section 5.0 of this report will be reduced to Less Than Significant with implementation of Mitigation Measure GEO-1 (Design-Level Geotechnical Investigation and Report).

Mitigation Measure GEO-1. Design-Level Geotechnical Investigation and Report

Significance after Mitigation: Less than Significant

5.2.10 Tsunami Inundation

Tsunami are a series of ocean waves generated by vertical movement of the seafloor. The movement is typically caused by earthquake-related faulting, but can also result from submarine landslides or volcanic eruptions. San Luis Obispo County could be affected by a tsunami caused by fault-related ground displacement on a near of distant fault. Common sources of tsunami affecting California in the past have been earthquakes on faults off the coast of Chile and the North American coast.

Tsunami are a unique hazard because the arrival time of a wave generated from a distance source can be predicted fairly accurately. Unfortunately, the intensity of the wave when it reaches shore cannot be accurately predicted. The local threat of tsunami inundation is confined to low-lying coastal areas. If the gradient is shallow, tsunami waves can travel upstream into stream channels. Tsunami affects may include erosive wave action, swift moving water, and inundation. A moderate to heavily damaging tsunami may cause in damage and disruption of utilities and infrastructure, including pipelines, electrical equipment, communication systems, sewage facilities, water supplies, and roads and bridges.

A general analysis and projected tsunami inundation mapping of San Luis Obispo County was completed for the State Office of Emergency Services (San Luis Obispo County, 2016). The maps use the 50-foot elevation above mean seal level as a working maximum height potential for a tsunami event. The maps are intended as an emergency planning working tool, and do not necessarily reflect current tsunami prediction data. Nonetheless, the maps provide an indication of where tsunami may have a damaging affect (Tsunami Inundation Zone Map, Figure 8).

Generally, much of the Cayucos-Morro Bay coastline is protected from significant tsunami run-up by wide beaches, coastal dunes or bluffs. Inland effects are possible along the mouths of certain creeks, including Old Creek, Willow Creek, Toro Creek, and Moro Creek.

> **Impact GEO-10A**. The Proposed Project and Alternative sites are located inland from potential tsunami inundation zones, and are not impacted by the threat of tsunami damage.
>
> **Impact GEO-10B**. The impact of tsunami inundation on Project components near the coast is a Significant and Unavoidable Impact. Mitigation measures can be implemented to reduce the impact. However, the pipeline outfall will be vulnerable to damage from wave erosion if a significant tsunami occurs at that location.
>
> **Mitigation Measure GEO-9. Pipeline Mitigation Strategies**
>
> Due to the locations of critical infrastructure sites that will be connected via pipelines, certain pipeline sections will not be able to avoid portions of the tsunami inundation zone. Pipeline segments along SR1, the CSA 10 facility, and the outfall segment

between SR1 and the coast, are located within the maximum tsunami inundation zone (i.e., less than 50 feet above mean sea level).

Mitigation strategies for infrastructure located within tsunami inundation zones may include measures such as flexible connections, double lined pipes, strengthened pipes, automatic shutoff valves and similar measures to prevent the release of wastewater and treated water to the environment.

5.2.11 Less Than Significant Impacts

The following geologic conditions were evaluated and determined to have a Less than Significant Impact on the Project. Consequently, no specific mitigation measures are required.

5.2.11.1 Soils Incapable of Adequately Supporting the Use of Septic Tanks or Alternative Waste Disposal Systems

The Project does not involve the installation of septic systems or leach fields. Therefore, there is no impact associated with waste disposal.

5.2.11.2 Loss of Mineral Resources

According to the State's Mineral Land Classification for the region, the Project area is classified as MRZ-3, which is defined as areas containing known or inferred aggregate resources of undetermined mineral resource significance (Miller et al., 1989; Busch and Miller, 2011). Sources of construction aggregate deposits may be potential mineral resources in the region. However, no specific locations have been identified as known mineral resources within the Project area according to the Mineral Land Classification for the region.

There are no known construction aggregate sites currently permitted or planned within the limits of the Project. There are no other known mineral resources or resource extraction sites that will impact or be impacted by the Project. Therefore, there is no impact associated with loss of mineral resources.

6.0 CLOSURE AND LIMITATIONS

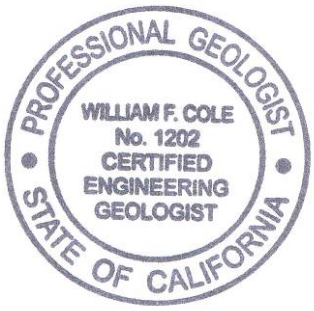
Our services consist of professional opinions and recommendations made in accordance with generally accepted engineering geology principles and practices. No warranty, expressed or implied, or merchantability of fitness, is made or intended in connection with our work, by the proposal for consulting, or by the furnishing of oral or written reports or findings.

This report has been prepared in order to provide our client with engineering geologic hazards evaluations for the site(s) identified herein. Observations, findings and conclusions regarding this investigation are based on technical research and surface reconnaissance. Additional investigations and evaluations of site features are required to fully characterize geologic constraints to development, as described in the text of this report.

In performing our work, we relied on information provided by our clients regarding the size, scope and location of proposed development site(s). In the event that any new information pertaining to site conditions or proposed improvements is formulated, our conclusions and recommendations will not be considered valid unless the changes are reviewed and our conclusions are modified or approved in writing. Unanticipated soil and geologic conditions are commonly encountered during earthwork and construction, which cannot be fully determined from review of existing data.

This report is issued with the understanding that it is the responsibility of the owner(s), or owner representative(s), to ensure that the information and recommendations contained herein are called to the attention of the project engineer(s). Conclusions and recommendations provided in this report are contingent on Geoinsite, Inc. reviewing drawings that may be prepared and submitted for permit applications.

The findings of this report are valid for the present time for the site and structures identified herein. With the passage of time, changes in site conditions can occur, whether they are due to natural processes or to human activities on this or adjacent properties. Therefore, this report should not be relied upon after a period of one year, or if changes become evident prior to the passage of one year, without our express consent.



Respectfully,

GEOINSITE, INC.

William F. Cole

William F. Cole, President
Certified Engineering Geologist 1202
Certified Hydrogeologist 403

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Aerial Photographs

Date	Type	Approximate Scale	Identification	Source
1939	b&w	1:20,000	AXH-1939-ARMY-102-107, 108, 125, 126	U.C. Santa Barbara
2/13/1969	b&w	1:12,000	HB-OE-30, 31	U.C. Santa Barbara
8/21/1987	b&w	1:24,000	GS-VFLO-C-4-86, 87, 88	U.C. Santa Barbara
7/1/1999	color	1:12,000	GS-3913 1-1, 3-1	Golden State Aerial

FIGURES

Cayucos Sustainable Water Project

EXPLANATION

Earth Materials

Qs	Holocene beach sand
Qal	Holocene alluvial deposits
Qls	Landslide deposit
Qtm	Pleistocene terrace deposits
Tps, Tpe, Tm, Trt, Tv	Tertiary sedimentary rocks
Ks	Cretaceous Unnamed Sandstone
KJf	Franciscan Complex (Cretaceous - Jurassic), includes melange (KJfm), metavolcanics (KJfv), chert (ch), graywacke (gw)
KJt	Toro Formation
Jsp	Serpentinite

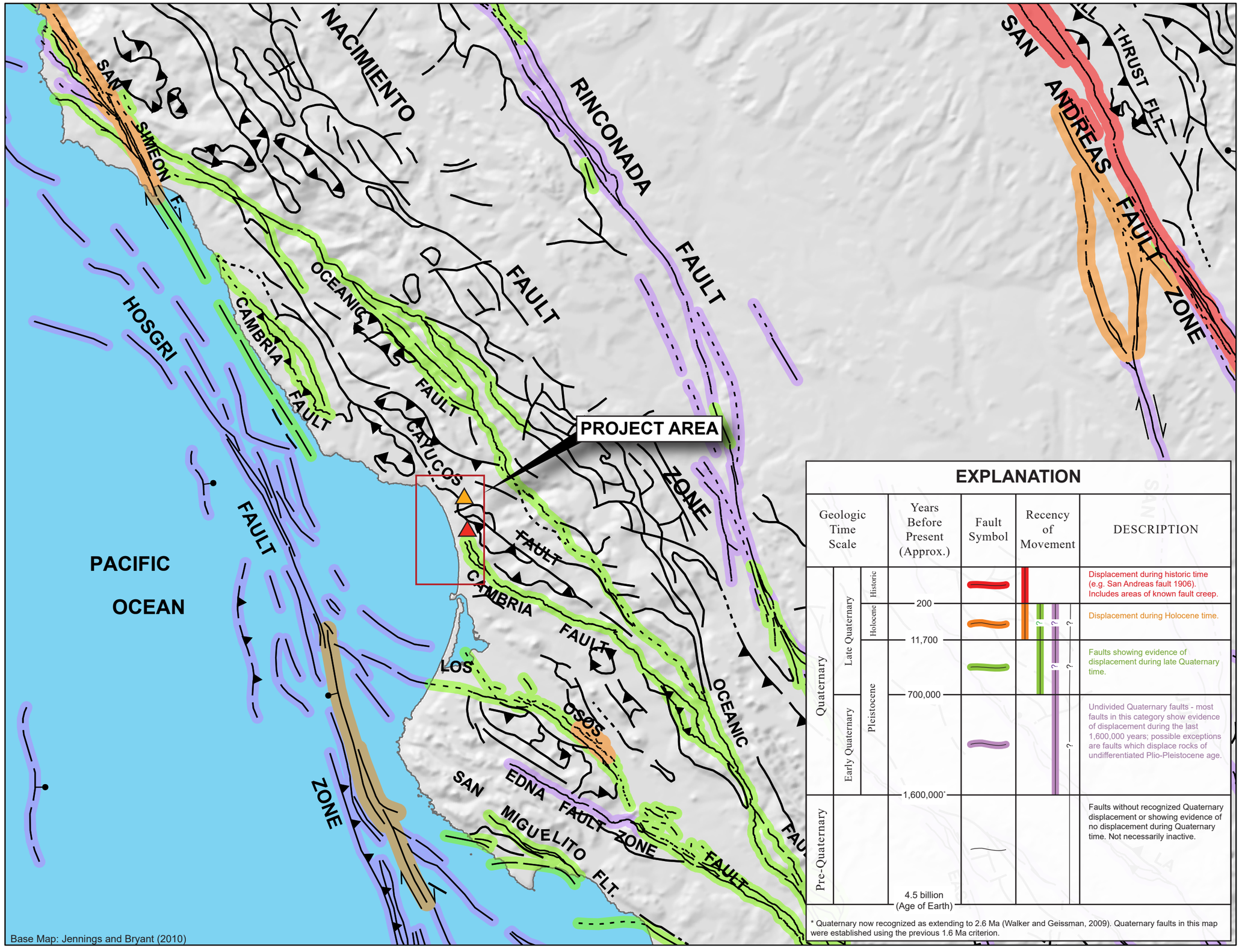
Symbols

- Geologic contact
- Potentially active fault, dotted where concealed and inferred
- Influent pipeline
- Effluent pipeline
- Effluent to LS5 pipeline
- RW pipeline
- Existing Force Main
- Creek crossing
- Staging area
- Outfall area
- DPR connection point
- Interceptor tie-in/pump station

REGIONAL GEOLOGIC MAP

Figure:	1
Date:	October 2016
Project No:	C1510A

GEOINSITE



Cayucos Sustainable Water Project

EXPLANATION

Proposed Project Site

Alternative Site

N

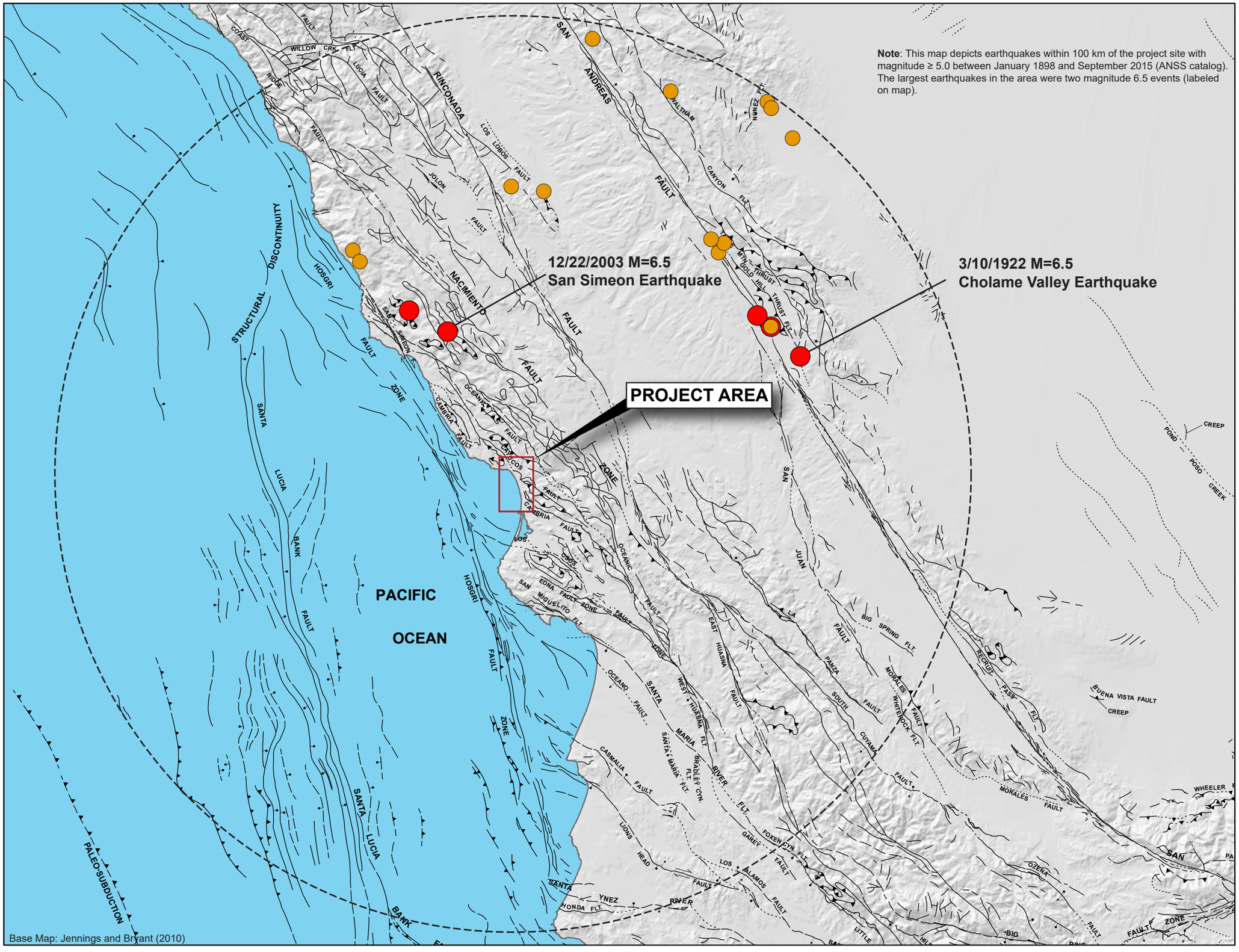
0 2.5 5 10

Scale in Miles

REGIONAL FAULT MAP

Figure No:	2
Date:	October 2016
Project No:	C1510A

GEOINSITE



CAYUCOS SANITARY DISTRICT
200 ASH AVENUE

Cayucos Sustainable Water Project

EXPLANATION

Earthquake magnitude 5.0 - 5.9

Earthquake magnitude 6.0 - 6.9

Fault – solid where well located, dashed where approximate or inferred, dotted where concealed. Bar and ball on downthrown side. Barbs on upper plate of low angle fault.

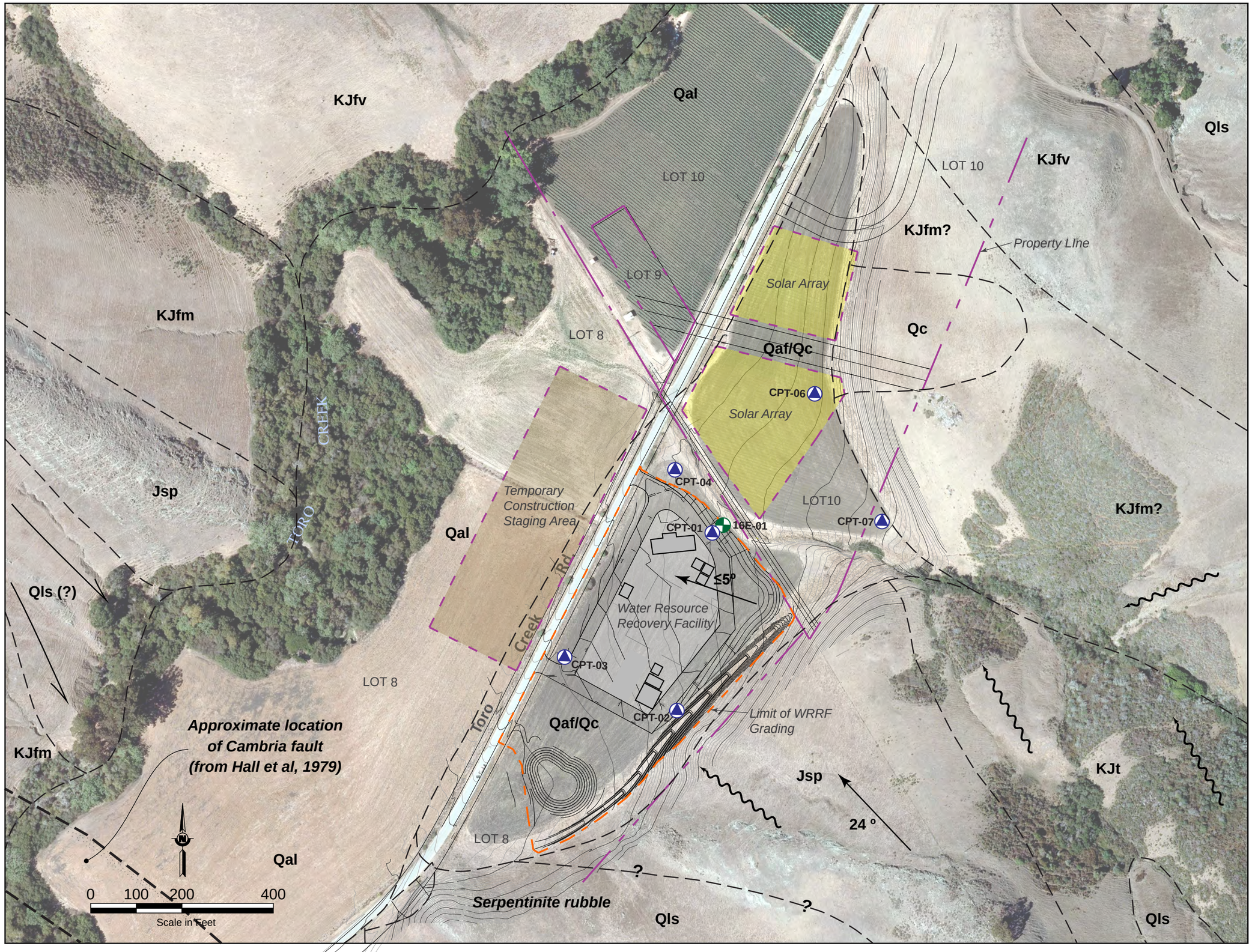
100-km radius circle around Project Area

0 5 10 20
Scale in Miles

REGIONAL SEISMICITY MAP

Plate No:	3
Date:	October 2016
Project No:	C1510A

GEOINSITE

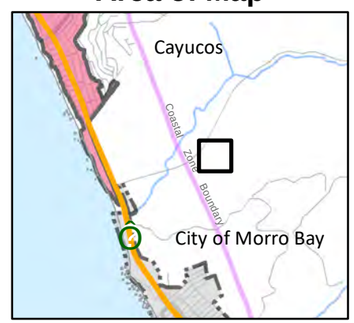


Cayucos Sustainable Water Project

EXPLANATION

Qal	Stream alluvium
Qaf	Alluvial fan deposits
Qc	Hillside colluvium
Qls	Landslide
KJfm	Franciscan melange (may include sandstone, shale, argillite and serpentinite
KJt	Toro Formation
Jsp	Serpentinite
— —	Geologic contact: approx. location, querried where uncertain
	Landslide: arrows show direction of movement, hachure denotes scarp, queried where uncertain
	Shallow hillside creep
	Downslope creep
	Cut slope
24°	Slope inclination
	CPT (Yeh, 2016)
	Drill hole (Yeh, 2016)

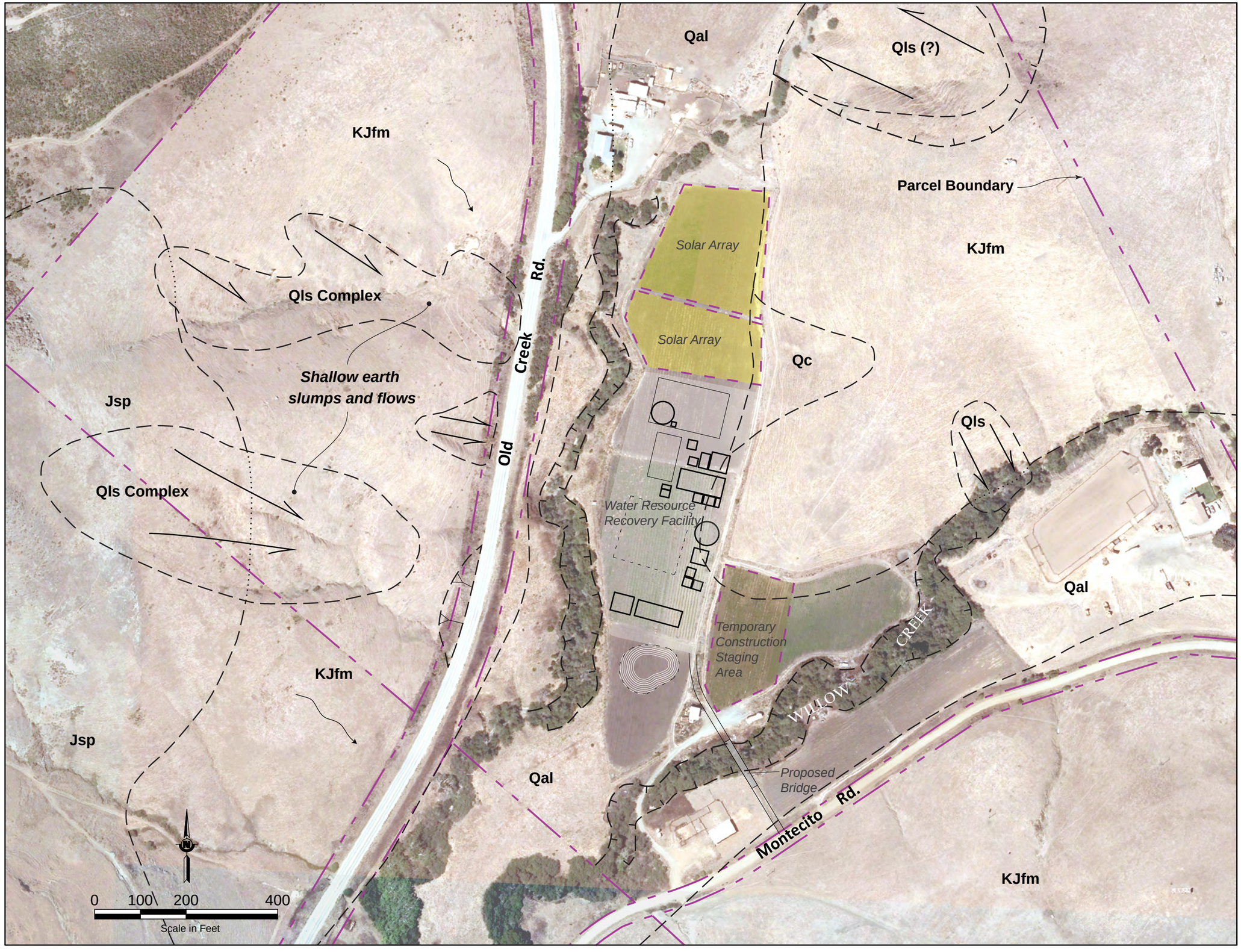
Area of Map



SITE GEOLOGIC MAP
PROPOSED PROJECT SITE

Figure:	4
Date:	October 2016
Project No:	C1510A

GEOINSITE

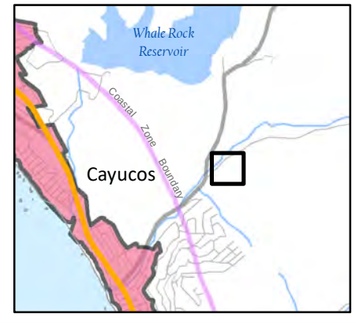


Cayucos Sustainable Water Project

EXPLANATION

Qal	Stream alluvium
Qaf	Alluvial fan deposits
Qc	Hillside colluvium
Qls	Landslide
KJfm	Franciscan melange (may include sandstone, shale, argillite and serpentinite
Jsp	Serpentinite
— —	Geologic contact: approx. location, querried where uncertain
	Landslide: arrows show direction of movement, hachure denotes scarp, queried where uncertain
	Shallow hillside creep
	Cut slope
	Creek bank scarp

Area of Map



SITE GEOLOGIC MAP ALTERNATIVE SITE

Figure:	5
Date:	October 2016
Project No:	C1510A

GEOINSITE

Cayucos Sustainable Water Project

EXPLANATION

Liquefaction Potential

- VH — Very High
- M — Moderate
- L — Low
- VL — Very Low

Symbols

- Influent pipeline
- Effluent pipeline
- Effluent to LS5 pipeline
- RW pipeline
- Existing Force Main
- Creek crossing
- Staging area
- Outfall area
- DPR connection point
- Interceptor tie-in/pump station

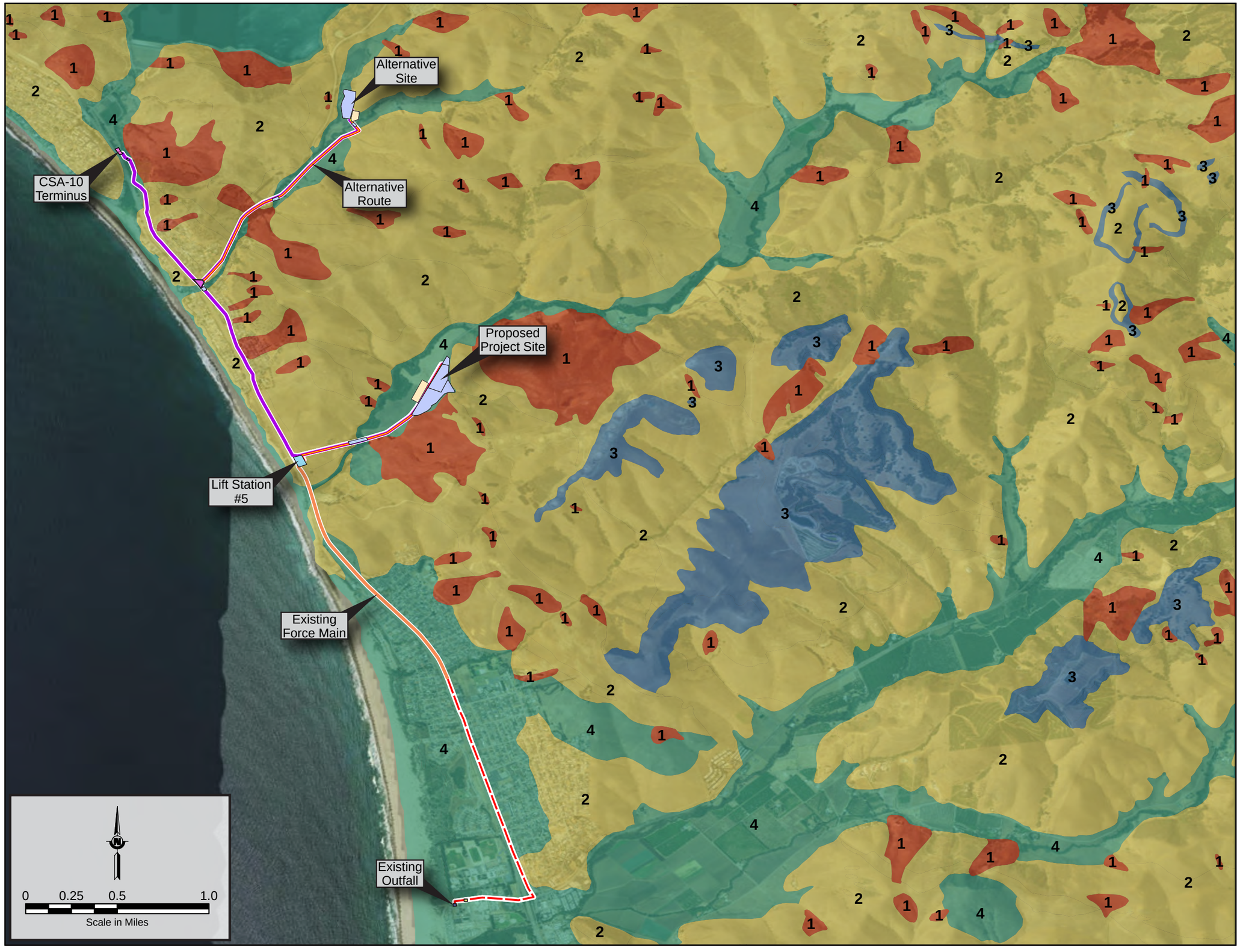
NOTES:

- Geologic units and hazard zones are from SLO County GIS website
- Locations of project components are from Firma Consultants (2016)

LIQUEFACTION HAZARD AREAS

Figure:	6
Date:	October 2016
Project No:	C1510A

GEOINSITE



Cayucos Sustainable Water Project

EXPLANATION

Landslide Hazard Potential

- 1 Very High
- 2 High
- 3 Moderate
- 4 Low

Symbols

- Influent pipeline
- Effluent pipeline
- Effluent to LS5 pipeline
- RW pipeline
- Existing Force Main
- Creek crossing
- Staging area
- Outfall area
- DPR connection point
- Interceptor tie-in/pump station

NOTES:

- Geologic units and hazard zones are from SLO County GIS website
- Locations of project components are from Firma Consultants (2016)

LANDSLIDE HAZARD AREAS

Figure:	7
Date:	October 2016
Project No:	C1510A

GEOINSITE

Cayucos Sustainable Water Project

EXPLANATION

Symbols

- Tsunami Inundation Zone
- Influent pipeline
- Effluent pipeline
- Effluent to LS5 pipeline
- RW pipeline
- Existing Force Main
- Creek crossing
- Staging area
- Outfall area
- DPR connection point
- Interceptor tie-in/pump station

NOTES:

- Tsunami inundation zone from California Office of Emergency Services
- Locations of project components are from Firma Consultants (2016)

TSUNAMI INUNDATION ZONE MAP

Figure:	8
Date:	October 2016
Project No:	C1510A

GEOINSITE

PRELIMINARY GEOTECHNICAL REPORT

Cayucos Sustainable Water Project
Toro Site 5, Toro Creek Road
Cayucos, San Luis Obispo County, California

Yeh Project No.: 216-112

May 13, 2016

Prepared for:

firma consultants, inc.
187 Tank Farm Road, Suite 230
San Luis Obispo, CA 93401
Attn: Mr. David Foote, ASLA

Prepared by:

Yeh and Associates, Inc.
391 Front Street, Suite D
Grover Beach, California 93433

Phone: 805-481-9590

Yeh and Associates, Inc.
Consulting Engineers & Scientists

Yeh and Associates, Inc.
Consulting Engineers & Scientists

May 13, 2016 Project No. 216-112

firma consultants, inc.
187 Tank Farm Road, Suite 230
San Luis Obispo, CA 93401

Attn: Mr. David Foote, ASLA

Subject: **DRAFT - Preliminary Geotechnical Report, Cayucos Sustainable Water Project – Toro Site 5, Toro Creek Road, Cayucos, San Luis Obispo County, California**

Dear Mr. Foote:

Yeh and Associates, Inc. is pleased to submit this preliminary geotechnical report as input to the Environmental Impact Report (EIR) and geologic hazards evaluation for the Cayucos Sustainable Water Project in the Cayucos area of San Luis Obispo County, California. This report was prepared in accordance with our subconsultant agreement with firma dated March 22, 2016. Yeh's authorized scope of work under the agreement includes an evaluation of two sites: Willow Creek Valley Site 3 and Toro Site 5. The scope was modified at the request of Mr. Rick Koon (Cayucos Sanitary District Manager), and confirmed by firma, to only focus on the Toro Site 5. This report, therefore, is limited to an evaluation of Toro Site 5. This report provides a liquefaction evaluation and preliminary geotechnical considerations for the site as input to the geologic hazards study and portions of the EIR being prepared by Geoinsite, Inc. for firma. Data from the Geoinsite (2016) report was used as input to our evaluation.

The evaluation consisted of a program of field exploration, laboratory testing, and geotechnical analyses. Field and laboratory data collected for this study are attached. Graphics showing the locations of the field explorations, interpreted subsurface profiles, and conclusions relating to the potential for liquefaction and preliminary considerations for design of earthwork, seismic data, structure foundations, and pipe trenches and backfill are provided.

We appreciate the opportunity to be of service. Please contact Judd King at 805-481-9590 x 285 or jking@yeh-eng.com if you have questions or require additional information.

Sincerely,
YEH AND ASSOCIATES, INC.

Judd J. King, P.E., G.E.
Senior Geotechnical Engineer

Jonathan D. Blanchard, P.E., G.E.
Principal Geotechnical Engineer

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1. PURPOSE AND SCOPE OF STUDY

Yeh and Associates was retained by firma to provide geotechnical services as input to geologic hazards evaluation and portions of the EIR being prepared by Geoinsite for the planned Cayucos Sustainable Water project in Cayucos, California. Toro Site 5 is located approximately ¾ miles east of Highway 1 on Toro Creek Road at south end of the community of Cayucos. The approximately location of the site is shown on Figure 1. This report addresses the Toro Site 5 and does not address the influent and recycled water pipelines that will traverse to and from the plant.

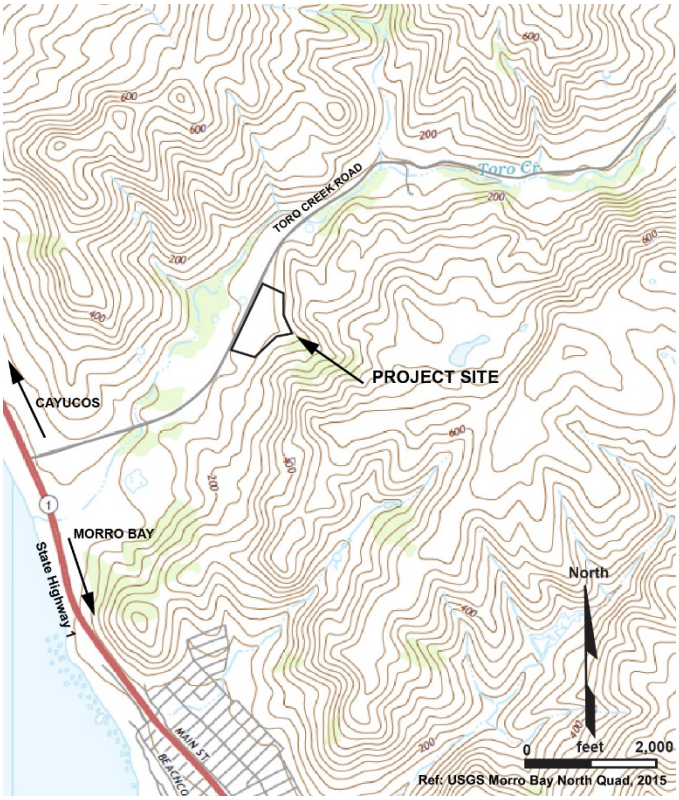

Figure 1: Vicinity Map

2. PROJECT UNDERSTANDING

The project generally consists of a geotechnical evaluation as input to the EIR and site development for the Cayucos Sanitary District's new wastewater treatment facility. Geoinsite, Inc. (2015) performed a geologic hazards evaluation for five proposed plant sites being considered by the District and summarized their findings in a screening-level engineering geologic report. Tore Site 5 has been identified as the preferred site for the project. This report focuses on assessing potential liquefaction related hazards and evaluating preliminarily geotechnical considerations for the Toro Site 5.

Existing Site Description. Toro Site 5 is located within a southwest trending coastal valley along Toro Creek as shown on Figure 2. The site is approximately 10 acres of agricultural land on the southeast side of Toro Creek Road. Toro Creek flows southwest to the Pacific Ocean along the north side of the road, and approximately 400 feet beyond the site. Ridgelines rise approximately 700 feet above the valley floor. The site is located near the base of the slope that forms the southerly wall of the valley.

The site is used for agricultural purposes and was fallow at the time of our April 2016 field investigation. The existing site grade slopes toward Toro Creek at approximately 2 to 4 percent. The ground surface ranges from approximately elevation (el.) 70 feet along Toro Creek Road to approximately el. 110 feet at the mouth of a drainage that runs from base of the slope along the east side of the property. A channelized swale runs west from the mouth of the drainage to a culvert at Toro Creek Road. This channel was about 3 to 5 feet deep and was dry at the time of the investigation.

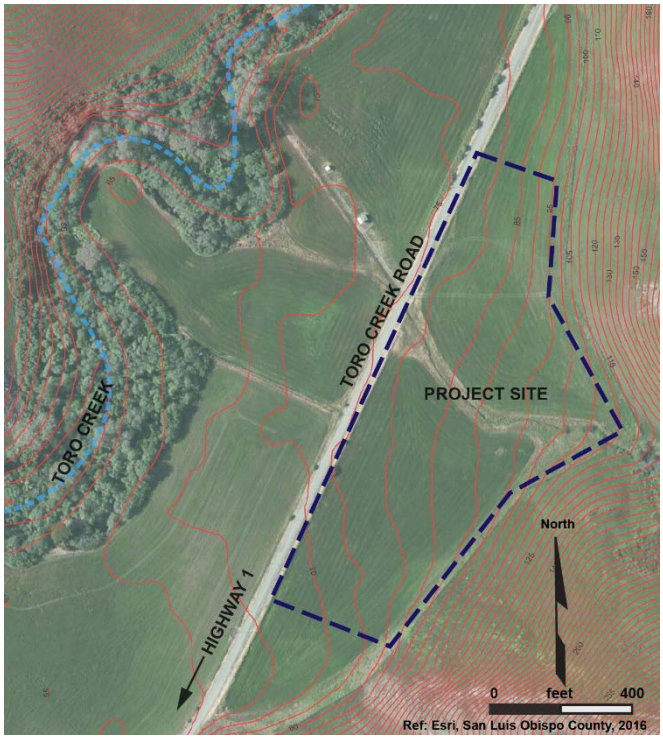

Figure 2: Project Site

Proposed Project. The new treatment facility will be a full tertiary treatment plant. Recycled water is planned to be used for beneficial reuse. Anticipated structures include headworks, primary clarifiers, activated sludge basins, secondary clarifiers, solids dewatering, pump structures, a mechanical control center building, administration building, and other maintenance facilities. Associated piping, flow diverters, roadways, parking areas, utilities, landscaping and other improvements will also be constructed.

Components of the treatment system typically include relatively large reinforced concrete structures that could be ether fully or partially buried below existing site grades. Influent and recycled water piping will follow Toro Creek Road to connect with existing pipelines. It is our experience that the main structures and piping for a plant are typically buried up to about 15 feet below the ground surface. If the influent pump or receiving station needs to be deeper, provisions to lift influent to the elevation of the plant would typically be provided. Buildings at the site are anticipated to be 1 to 2-stories tall. Equipment or vehicle building may consist of a single high story, up to about 25 to 35 feet tall.

3. Field Exploration and Testing

The field exploration program consisted of performing seven (7) cone penetrometer test (CPT) soundings and drilling one boring at the site in April 2016. This work included project

coordination, obtaining well permits from San Luis Obispo County, preparing a health and safety plan for the field work, marking the exploration locations in the field and contacting Underground Services Alert in advance of the field work, and laboratory testing of selected samples recovered from the boring. The locations of the boring and soundings are shown on Plate-1, Field Exploration Plan.

3.1 Hollow Stem Auger Drilling

The drilling subcontractor was S/G Drilling Company of Lompoc, California. S/G used a CME-75 truck-mounted drill rig equipped with hollow-stem augers to drill one boring to approximately 50 feet below the ground surface on April 19, 2016. A log of the boring showing a description of the condition encountered, sample intervals, field data and selected laboratory test results is presented in Appendix A.

The boring was sampled by collecting bulk samples of subgrade materials from the auger flights, driving 2-inch standard penetration test (SPT) or 3-inch modified California split spoon samplers into the soils, or by pushing a thin-walled tube (Shelby tube) sampler at the various intervals during drilling shown on the logs. The modified California sampler contained 1-inch high brass liners. The SPT sampler was used without liners. The samplers were driven into the ground at the bottom of the boring using a 140-pound automatic trip hammer in accordance with ASTM 1586, the Standard Penetration Test. Tube samples were obtained by pushing a 30-inch long by 3-inch diameter steel tube into the ground using the rigs hydraulics. Tubes had a 1/16-inch wall thickness and a slightly smaller diameter mandrelled cutting shoe to help reduce disturbance to the soil during sampling.

Yeh measured prepared a log of the subsurface conditions encountered, collected and secured bulk and drive samples for subsequent laboratory testing, recorded blow counts (N-values) for drive samples, and prepared a log of subsurface conditions encountered. The boring was backfilled with 2-sack sand/cement slurry to within 5 feet of the surface and then topped with soil cuttings after drilling. Backfill was performed in compliance with the permit issued by San Luis Obispo County Environmental Health Services.

3.2 Laboratory Testing

Laboratory tests for classification and selected geotechnical properties were performed on samples recovered from the field exploration program in our lab in Grover Beach, California. Tests for moisture content, unit weight, compacted maximum dry unit and optimum moisture

content (Proctor test), soil pH and resistivity, Atterberg limits, grain size analyses, and one-dimensional swell potential were performed on selected samples. Consolidation tests were performed on selected samples provided to the GEO-E lab at the Cal Poly Civil Engineering Department in San Luis Obispo, California. The results of laboratory tests are presented in Appendix B. The testing was performed in general accordance with applicable procedures of ASTM.

3.3 CONE PENETRATION TESTING

The CPT subcontractor was California Push Technologies, Inc. (CPT, Inc.) of San Leandro, California. CPT, Inc. advanced seven soundings using a hydraulic ram mounted inside a 30-ton truck on April 5, 2016. CPT soundings were advanced to depths ranging from approximately 30 to 73 feet below the ground surface, which totaled approximately 322 lineal feet in depth. Each sounding was terminated once refusal was encountered as indicated when the push load became excessive or tilting was noted to avoid damaging the cone. Logs of the CPT soundings are presented in Appendix C.

Soundings were performed in general accordance with ASTM D-5778 using an electric piezocone penetrometer. The piezocone penetrometer had a diameter of approximately 1.7 inches with a tip area of 15 square centimeters (cm^2) and a sleeve area of 225 cm^2. The cone tip resistance (q_c), sleeve friction (f_s), and penetration pore water pressures measured behind the tip (in the u2 location) were recorded at approximately 3-centimeter intervals during penetration using an on-board computer. The friction ratio (FR, the ratio of the sleeve friction to the tip resistance in percent) was computed for each value of q_c and f_s recorded. The data and soil behavior type classifications were used in subsequent geotechnical analyses and to evaluate soil types and boundaries for analyses. Upon removal of the CPT rod, the soil generally collapsed to near the groundwater level encountered. The void above that depth was filled with approved native material.

4. SUBSURFACE CONDITIONS

The plowed field revealed soils with some gravel and cobbles. Rock outcrops were present along the ascending slopes to the east. Below the surface, the predominant geologic units are undifferentiated units of colluvium and alluvium. The colluvium (noted Qcol) are materials that were deposited at the site by erosion and downslope gravitational movements from the adjacent hillsides. The alluvium (Qal) is associated with sediments deposited in valley bottom along Toro

Creek. These units appear to be interbedded and sporadic within the explorations, and therefore were not differentiated from each for the purposes of this report and colluvium was used as the subsurface unit. Interpreted subsurface profiles (A-A' and B-B') are shown on Plates 2 and 3. The undifferentiated colluvium encountered at the site generally consisted of clay with varying amounts of sand and gravel. The colluvium was subdivided into the five units described below and shown on Plates 2 and 3 for the purposes of characterizing the subsurface conditions encountered. A summary of selected geotechnical properties for the soil samples tested and used for this evaluation is presented below:

Table 1 – Summary of Selected Geotechnical Properties

Unit (Plates 2 and 3)	Encountered in Boring/CPT Numbers:	Predominant Soil Type	Dry Unit Weight (pcf)	Moisture Content (%)	% Gravel % Sand % fines (passing #200 sieve)
$Qcol_1$	16E-01 CPT 01 to 07	Medium stiff fat CLAY (CH). Soils disturbed by agricultural activities, maybe fissured and voided	101-109	15-21	3 - 11 39 – 22 58 - 67
$Qcol_2$	16E-01 CPT 01 to 07	Stiff to hard fat CLAY (CH) with pockets of clayey GRAVEL (GC). Overconsolidated soils (OCR 4+)	86-113	12-33 12 -13 above GWS 20-33 below GWS	43-63 3-31 27-33
$Qcol_3$	16E-01 CPT 01, 04, 06	Stiff to hard lean CLAY (CL) and fat CLAY (CH), slightly overconsolidated soils			
$Qcol_4$	16E-01 CPT 01 to 07				
$Qcol_5$	CPT 01, 03, 04, 07	Dense to very dense Clayey GRAVEL (GC)			

GWS = groundwater surface

Groundwater. Groundwater was encountered at a depth of 32 feet in the boring and was estimated to range from 22 to 32 feet in CPT soundings 01, 02, 04, 05, and 07. Groundwater was not founding CPTs 03 and 06. Perched layers of groundwater were encountered at various depths in the boring and soundings. Groundwater levels and soil moisture conditions will vary seasonally, and as a result of local runoff and streamflow, groundwater pumping, irrigation, and rainfall.

5. Conclusions and Preliminary Geotechnical Considerations

The following conclusions and geotechnical considerations are based on preliminary geotechnical analyses and evaluation of the project site as input to the assessment of geologic hazards and environmental impacts associated with the conceptual development of the site for the treatment plant. A geotechnical report should be prepared for the design of the project. The

design-level report should provide additional field exploration for specific structures, and final recommendations applicable to the specific types of structures, buried pipes and pump stations, loading conditions and codes and regulations at the time of work.

5.1 SEISMIC CONSIDERATIONS

5.1.1 LIQUEFACTION, SEISMIC SETTLEMENT AND LATERAL SPREADING

The site is located on young alluvium deposited along Toro Creek. The alluvial site is recognized by the San Luis Obispo County online GIS mapping (San Luis Obispo County 2016) as an area that has a moderate potential for having soil conditions that may be vulnerable to liquefaction. Liquefaction hazards were evaluated using NCEER procedures (Youd and Idriss (2001). The design earthquake used for the analysis (as discussed in Section 5.1.2 of this report) is estimated as a magnitude (M_w) 6.5 earthquake resulting in a peak horizontal ground acceleration of 0.48g at the site. Liquefaction can occur in response to earthquakes when young, loose to medium dense granular soils or sensitive clay soils are subject to the ground motions depending on the strength and duration of the ground shaking. The potential for liquefaction is dependent on site-specific properties such as the soil's relative density, soil plasticity, groundwater conditions, and geologic history. Potentially liquefiable soils may be vulnerable to loss of strength and foundation support, seismic settlement, slope instability or lateral spreading depending on the severity of the liquefaction hazard.

The site is underlain by stiff to hard fine grained clay soil that is not considered vulnerable to liquefaction. Liquefaction is therefore not a consideration for this project, and no special recommendations are need for design to address liquefaction, seismic settlement or lateral spreading.

5.1.2 PRELIMINARY SEISMIC DATA

Structures should be designed to resist lateral forces generated by earthquake shaking in accordance with the current building code and applicable design practice. Seismic data were estimated for use with the 2013 California Building Code (CBC). The 2016 CBC should be adopted by local agencies, such as the County of San Luis Obispo, in 2017. The site is classified as Class D based on the subsurface conditions encountered and is not considered vulnerable to liquefaction or loss of strength in response to the design earthquake. The design-level geotechnical report should include recommendations for seismic data for design that may be updated for the new code requirements, additional subsurface information, or further site-

specific analyses. For preliminary design, Table 2 presents seismic data estimated for Seismic Risk Categories I, II or III, applicable to the new treatment plant and estimated ground motions considered in the liquefaction analysis. The earthquake magnitude and peak horizontal ground acceleration were estimated using the 2008 USGS deaggregation web site (USGS 2015) for an earthquake having a 2 percent exceedance probability in 50 years.

Table 2: Preliminary Seismic Data

Seismic Parameter	Value
Latitude, degrees	35.4199
Longitude, degrees	-120.8631
Site Class	D, stiff soil
Earthquake Magnitude	6.5
Peak ground acceleration 2% in 50 years	0.48
S_s, Seismic Factor for Site Class B at 0.2 seconds	1.128
S_1, Seismic Factor for Site Class B at 1 second	0.415
F_a, Site Specific Site Coefficient	1.049
F_v, Site Specific Site Coefficient	1.585
S_{MS}, Site Specific Response Parameter at 0.2 seconds	1.183
S_{M1}, Site Specific Response Parameter at 1 seconds	0.658
$S_{DS} = 2/3\ S_{MS}$	0.789
$S_{D1} = 2/3\ S_{M1}$	0.438

The site is classified as Class D based on penetration resistances recorded in the boring and CPT soundings. The closest known major active fault to the site is the Hosgri-San Simeon fault zone which is situated about 13 kilometers west-southwest of the site. This fault is the causative source for the design earthquake magnitude and peak ground acceleration. Additional nearby active or potentially active faults include the Cambria, Oceanic, Los Osos faults, and San Andreas Fault; however, their contribution to the shaking at the site is less than the Hosgri-San Simeon (Geoinsite 2015).

5.2 Expansive Soil Conditions

Near-surface samples of fat clay recovered from the site are considered expansive based on the general classification and one-dimensional swell tests. Samples that were remolded to 90 and 95 percent relative compaction swelled 3 to 7 percent of their height when dried to the shrinkage limit and then flooded with water. Expansive soil conditions can cause differential movement and damage to foundations, slabs, flatwork, and other improvements due to shrinking and swelling of the soil in response to moisture fluctuations. These movements are

most common in near surface soils, between the interior and exterior of buildings, and near the edge of slabs or pavements where seasonal moisture contents in the soil fluctuate the most.

Various design provisions can be used to reduce the effect of expansive soils on improvements, although they cannot be entirely avoided. These include increasing the depth of shallow foundations into soil less prone to moisture fluctuations, placing a mat of nonexpansive soil (typically sand) below slabs and flatwork, chemical treatment using lime or cement to reduce the expansion potential below pavement or slabs, providing positive drainage away from foundations and flatwork, providing liners and drainage provisions below planters, connecting roof drainage to gutters and downspouts that direct runoff away from the building, and providing additional reinforcement within foundation and floor slabs to better accommodate movement associated with heaving and swelling movements of the soil.

The design-level geotechnical study should provide specific recommendations to address expansive soil conditions for the design of foundations, flatwork, pavement and site work.

5.3 Site Preparation and Grading

5.3.1 Subexcavation

The soils encountered at the site are predominantly medium stiff to stiff clay. CPT soundings encountered 4 to 5 feet of soil that is relatively soft, voided, fissured and disturbed by farming activities. Subexcavation to a depth of 4 to 5 feet below existing grade to remove those soils and replace that soil with properly compacted fill would provide relatively uniform and better support for shallow foundations supporting lightly loaded 1- to 2-story structures such as a maintenance or operations building.

Deeper structures bearing more than 5 feet below existing site grade can likely be supported on undisturbed soil provided the soil is firm and stable. A thin layer of aggregate base placed on the undisturbed subgrade, or a one- to two-foot mat of compacted gravel or crushed rock placed on a wet subgrade are commonly included below buried structures to provide a working mat for construction and/or to stabilize wet subgrade conditions.

5.3.2 Reuse of On-Site Soil

Soil encountered within the anticipated depths of excavation was predominantly medium stiff to stiff fat clay. Samples of the clay that were tested are considered expansive. The clay soil is considered suitable for reuse as compacted fill below structures or as trench backfill when

properly placed and compacted. Shallow foundations, concrete flatwork, and pavements placed on compacted fill should consider expansive soil conditions, as previously discussed in this report.

The clay soil encountered at the site is likely to be sensitive to changes in moisture content and relatively difficult to compact. Clay typically will need to be placed within a relatively narrow range of moisture contents to achieve the minimum specified relative compaction. Control of moisture content, compaction layer thickness, and the use of kneading type compaction equipment, such as sheepsfoot rollers, will likely be needed to achieve the necessary compaction.

Near surface soil samples taken during our April 2016 field exploration plan had moisture contents near 20 percent, above the optimum moisture content needed for compaction. The moisture content is likely to vary seasonally and with ongoing agricultural land use and irrigation schedules. Drying of or adding water to the soil may be necessary to make the soil suitable for compaction. Rainfall and coastal fog can impact the rate or ability to dry the soil.

Excavated on-site soil is not considered suitable for use as select material or aggregate, such as may be needed for pipe bedding, pipe zone material, retaining wall backfill and structure backfill due to their clayey nature. Aeration or treatment of excavated soils may be needed to reduce the water content of the excavated material and make the material suitable for compaction. The quality of and need for fill material should be considered in the design-level geotechnical study.

5.3.3 GRADED SLOPES

Slopes should be graded to a stable inclination suitable for the type of soil or rock where the slope is made. Cut and fill slopes are typically graded to an inclination 2h:1v (horizontal to vertical) or flatter. If necessary, slopes may be able to be graded to steeper inclinations, particularly in areas underlain by rock along the southerly border of the site. Fill slopes can be steepened by using internal geosynthetic reinforcements and/or select backfill, if needed. The final inclination for graded slopes should be recommended in the design-level geotechnical report based on an evaluation of the specific slope conditions associated with the site grading, and any further geotechnical analyses that may be needed as a basis for those recommendations.

Newly graded slopes are vulnerable to erosion. Providing suitable vegetation, erosion control mats and surface drainage can help to reduce the potential for erosion to impact the slope and to assist in establishing suitable vegetation on the slope. Slope maintenance and irrigation can be used to help establish vegetation and to repair areas where gullies or erosion occur on the slope. Concentrated flows of runoff should not be allowed to run across or onto slopes without proper erosion control such as lined ditches, culverts and energy dissipation of water discharging from pipes.

5.3.4 SITE DRAINAGE

Surface drainage should be provided to reduce the potential for water to pond on pavements, adjacent to foundations or flatwork, or for concentrated flows of run across or over the tops of slopes. Downspouts should be provided to collect roof drainage and direct water to drainage pipes or areas away from buildings and flatwork. Roadways should be designed with a cross slope to shed water to the edge of the pavement, gutters or drain inlets. Curb and gutter or gravelly material (aggregate base or shoulder backing material) can be placed along the edge of pavement to help reduce the potential for erosion as water flows off the pavement.

The drainage channel that traverses through the site is fed from the watershed and slopes that border the site to the south and east. This drainage from the slope appears to have been channelized, likely in association with farming operations to prevent water from flowing and fanning out across the fields. The channel currently is about 4 to 6 feet deep and outlets to a culvert on the west side of the site that flows under Toro Creek Road. The drainage channel should be considered in the design of the plant to prevent the channel from uncontrollably overflowing causing flooding, erosion or other impacts to the plant.

5.3.5 STORMWATER INFILTRATION

Stormwater collection, conveyance and discharge at the site will be considered in design. The site soils are clay and will provide only limited percolation and infiltration of storm water as their permeability is limited compared to sandy soils. The design-level report should provide field percolation testing and further recommendations for infiltrating stormwater, if needed.

5.4 FOUNDATION DESIGN CONSIDERATIONS

5.4.1 STATIC SETTLEMENT

The soils encountered are not considered vulnerable to seismic settlement or strength loss due to seismic shaking. Structures should be designed with consideration of static settlement that

will occur in response to foundation loads applied to the soil. Consolidation type settlement refers to a reduction in the void space of a soil that can occur relatively slowly. Long term consolidation settlement, that can occur over a period of months or years after a structure is constructed, are common in saturated soft clay. Immediate settlement refers to a reduction in void space that occurs at nearly the same rate that a foundation load is applied. Immediate settlement predominantly occur in sand, unsaturated clay or overconsolidated[1] clay, or rock.

Medium stiff to very stiff clay was encountered in the boring and CPT soundings. CPT correlations and consolidation test results indicate that the clay has a variable stress history with differing degrees of overconsolidation and compressibility. Depending on foundation loads certain layers within the subsurface profile may be prone to consolidation type settlement (particularly unit $Qcol_2$ on Plates 2 and 3). Subexcavation and replacement of surficial soils at the site would likely provide uniform and adequate support for shallow foundations supporting one and two-story buildings.

5.4.2 SHALLOW FOUNDATIONS

Lightly-loaded 1 to 2-story structures with column loads up to 75 kips and wall loads up to 5 kips per foot can likely be supported by conventional spread and continuous foundations supported on compacted fill. An allowable bearing pressure of 3,000 pounds per square foot can be used to estimate footing sizes for preliminary design of buildings and retaining walls. Shallow foundations should typically be designed to accommodate at least 1 inch of total settlement, and at least ¾ inch of differential settlement in 30 feet.

5.4.3 VESSELS AND BURIED STRUCTURES

Heavier structures such as clarifiers, tanks, and aeration basins could be prone to static settlement depending on whether or not they are constructed above or below grade and specific loading conditions. For example, we preliminarily estimate that a 50- by 50-foot vessel bearing near existing side grades could settle approximately 6 to 9 inches for a range of bearing pressures of 2,000 to 3,000 psf. More than half of the estimated settlement is associated with the medium stiff clay ($Qcol_3$ layer) shown on Plates 2 and 3. If the same structure was

[1] Overconsolidation refers to the vertical stress that a soil is currently under relative to the maximum past vertical pressure that has been applied to a soil at anytime in the past. Settlement is greatest when the foundation load exceeds that maximum past pressure that the soil has consolidated under.

embedded to 15 feet below existing site grades, the estimated settlement is only 0.5 to 1.5 inches. Most of the estimated settlement of those structures would be post-construction settlement associated with consolidation of the clay in the $Qcol_3$ layer.

Large above grade structures or tanks could require mitigation for settlement depending on the final loading and embedment of those structures. Surcharging the soil with an earth fill near or greater than the anticipated load of the vessel could be used to reduce the estimated settlement to within tolerable limits (typically less than 1 to 2 inches) in advance if their construction.

Alternate foundation systems such as deep foundations (driven piles, drilled shafts, mats with micropiles, etc.) bearing below compressible soil layers could also be used to support above grade structures. Deep foundations will typically limit the estimated settlement to less than ½ inch. The design-level geotechnical report can provide specific recommendations for foundation support and need to mitigate settlement based on the actual layout and loading conditions associated with a various structures.

5.5 Construction Considerations

5.5.1 Dewatering

Groundwater was encountered at approximately 32 feet below the existing ground surface in the boring and wet soil conditions, seepage and perched groundwater were noted at various depths of approximately 20 to 25 feet below the ground surface. Dewatering to lower groundwater levels for construction are likely not needed for excavation depths that are 25 feet or less. The anticipated maximum depth of excavation for the project is 15 feet below existing grade with some structures such as conveyance pipes between structures or pump stations deeper up to 20 feet.

Excavations 20 feet or deeper could encounter wet soil, perched groundwater or seepage that will need to be addressed relative to maintaining temporary slopes, shoring systems and suitable subgrade and working conditions for construction. Seepage may be found in shallower excavations and may be addressed using localized dewatering procedures such as gravel wells with sump pumps.

5.5.2 Excavations and Shoring

The soils encountered are predominantly considered to be Type B clayey soils based on Cal OSHA guidelines for the design of temporary slopes and shoring systems. Per OSHA

guidelines, Type B soils should be excavated no steeper than 1h:1v. Shoring systems such as trench shields or slide rail shoring systems that provide positive support for excavated slopes are considered suitable to supporting excavations during construction. Depending on excavation configurations, proximity to adjacent excavations and structures the guidelines may need to be reconsidered. Competent personnel at the time of construction should review the excavations and augment sloping and shoring as needed.

5.6 Soil Corrosivity Data

Tests for pH and electrical resistivity were performed on selected samples from the site. The test results are presented in Appendix B. The pH for the two samples tested ranged from 8 to 8.3. The minimum soil resistivity was 1,036 to 1,104 ohm-centimeters at the site. The resistivity and pH suggest that site soils tested are not overly corrosive to reinforced concrete based on the test results, however further testing should be provided as the work progresses. The use of fertilizer and pesticides at the site could influence the soil corrosivity. Steel pipes and metals exposed to the ground and the environment are always vulnerable to corrosion and should be designed with considerations for corrosion and provisions for coatings and/or metal losses when applicable.

6. Limitations

This study has been conducted in general accordance with currently accepted geotechnical practices in this area for use by the client for preliminary design and conceptual planning purposes. The conclusions and recommendations submitted in this report are based upon the data obtained from field reconnaissance, drilling and sampling, and our understanding of the proposed project and type of construction described in this report. If there are any changes in the project or site conditions, Yeh should review those changes and provide additional recommendations, if needed. Any modifications to the recommendations of this report or approval of changes made to the project should not be considered valid unless they are made in writing. The report and drawings contained in this report are intended for design-input; and are not intended to act as construction drawings or specifications.

Site conditions will vary between points of observation or sampling, seasonally, and with time. The nature and extent of subsurface variations across the site may not become evident until excavation is performed. If during construction, fill, soil, or water conditions appear to be different from those described herein, Yeh should be advised and provided the opportunity to

evaluate those conditions and provide additional recommendations, if necessary. The geotechnical professional should observe portions of the construction and site conditions, such as excavations, exposed subgrades and earthwork, to evaluate whether or not the conditions encountered are consistent with those assumed for design, and to provide additional recommendations during construction, if needed.

7. REFERENCES

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Youd, T. L. and Idriss, I.M. (2001), “Liquefaction Resistance of Soils: Summary Report from the1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils”, Co-chairs Youd, T.L. and Idriss, I.M., *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 127, No. 10, pp. 817-833.

Legend:

- CPT sounding
- Boring
- Toro Site 5 Boundaries (approx)
- A A' Profiles (See Plates 2 and 3)

Toro Creek Road

Toro Creek

CPT-05

CPT-06

CPT-04

CPT-01

16E-01

CPT-07

CPT-03

CPT-02

A

A'

B

B'

North

0 feet 400

Basemap from San Luis Obispo County 2016

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AE

Yeh and Associates, Inc.
Consulting Engineers & Scientists

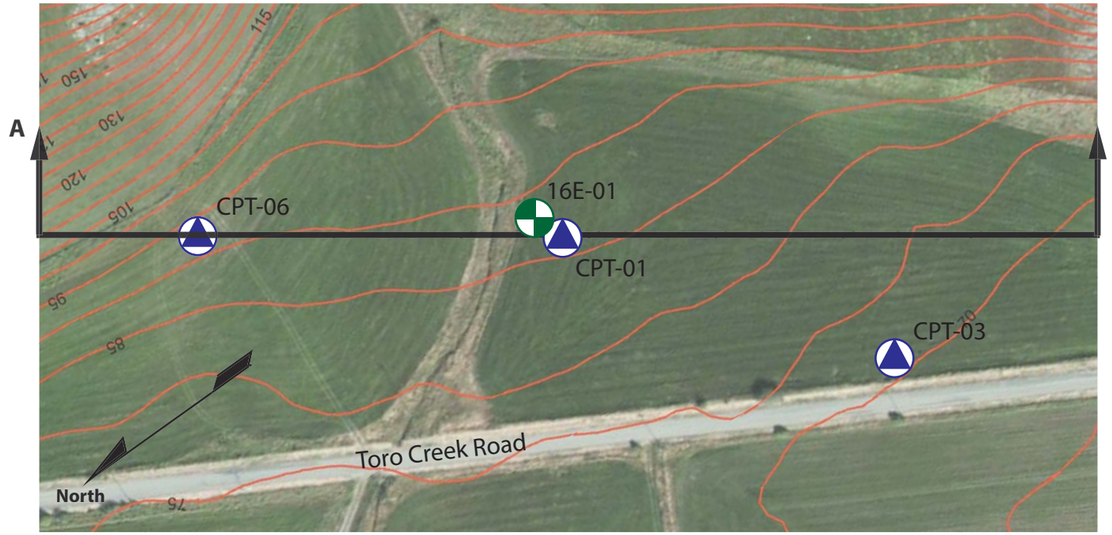
Field Exploration Plan

PROJECT NAME: Cayucos Sustainable Water Project
Toro Site 5
Toro Creek Road
Cayucos, San Luis Obispo County, CA

PROJECT NUMBER: 216-112

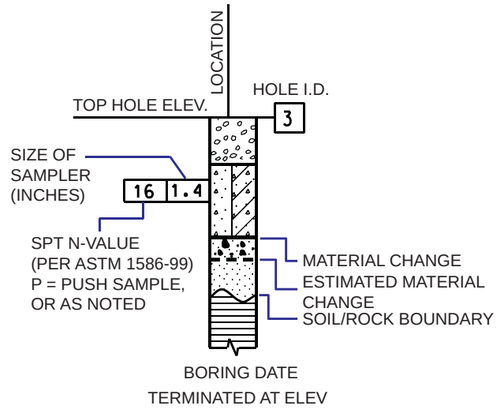
DATE: May 2016

PLATE 1

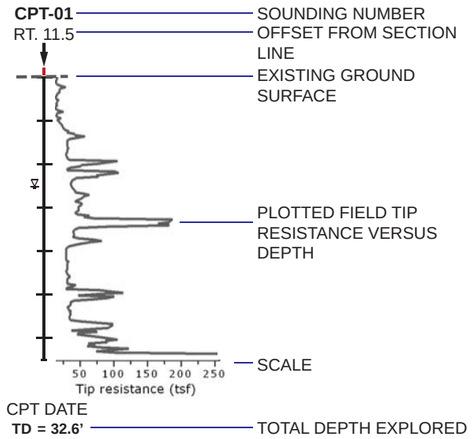


PLAN

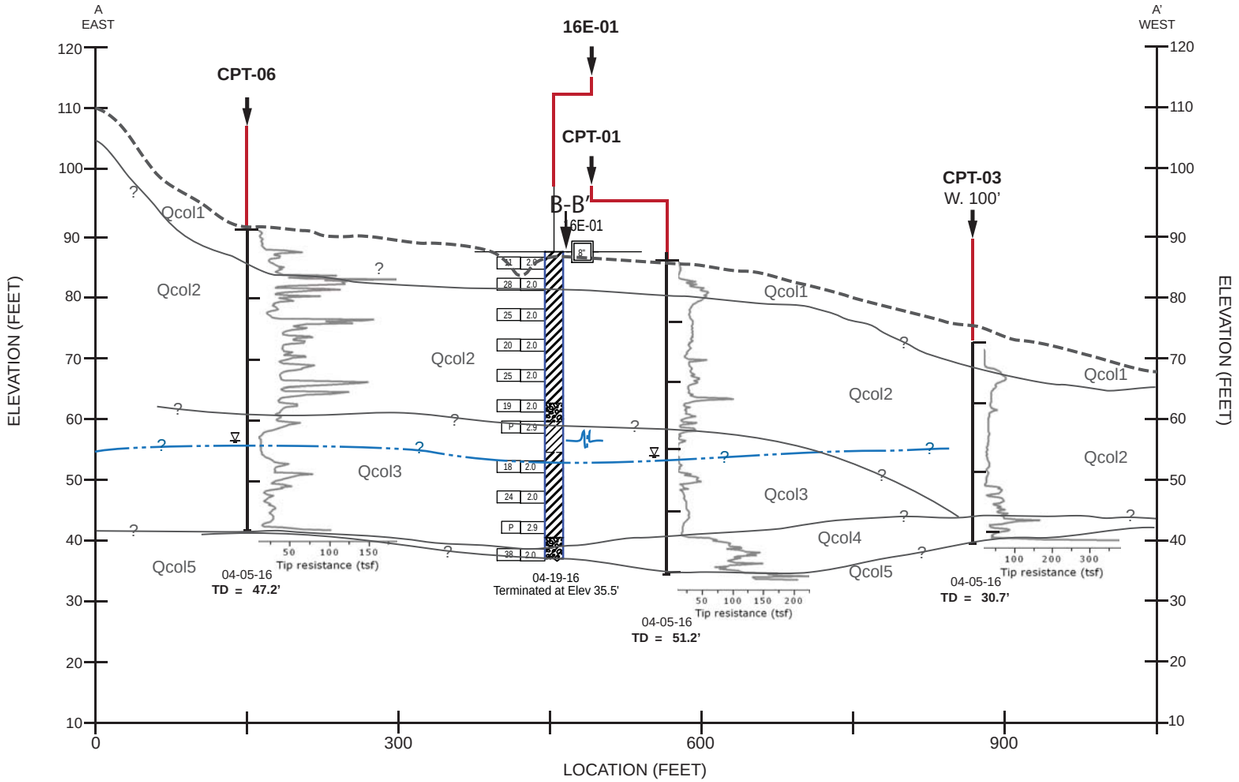
1 in. = 150 ft.



DRILL HOLE DIAGRAM



CPT SOUNDING DIAGRAM



PROFILE

1 in. = 25 ft. vertical
1 in. = 150 ft. horizontal

LEGEND:

Qcol1	**Colluvium:** Fat CLAY (CH)
Qcol2	**Colluvium:** Fat CLAY (CH), Clayey GRAVEL (GC)
Qcol3	**Colluvium:** Lean CLAY (CL), Fat CLAY (CH)
Qcol4	**Colluvium:** Clayey GRAVEL (GC)
Qcol5	**Colluvium:** Clayey GRAVEL (GC)

Geologic Contact, queried where uncertain

Interpreted Groundwater Surface, queried where uncertain

Groundwater Level Encountered

Wet soil and/or Seepage Encountered

SEE TEXT AND LOGS OF EXPLORATION FOR DESCRIPTION OF SUBSURFACE CONDITIONS

Yeh and Associates, Inc.
Consulting Engineers & Scientists

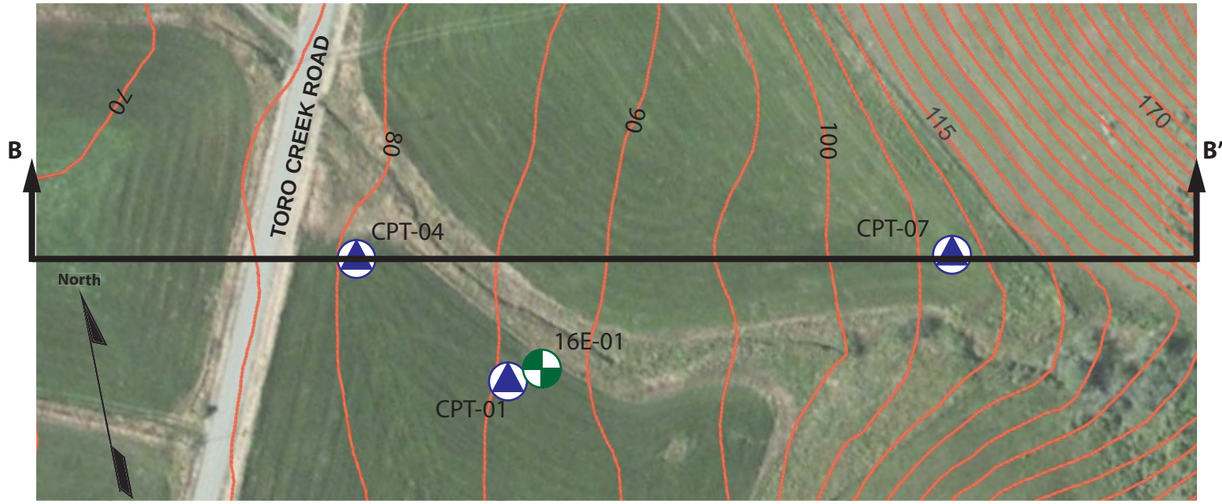
Profile A-A'

PROJECT NAME: Cayucos Sustainable Water Project
Toro Site 5
Toro Creek Road
Cayucos, San Luis Obispo County, CA

PLATE **2**

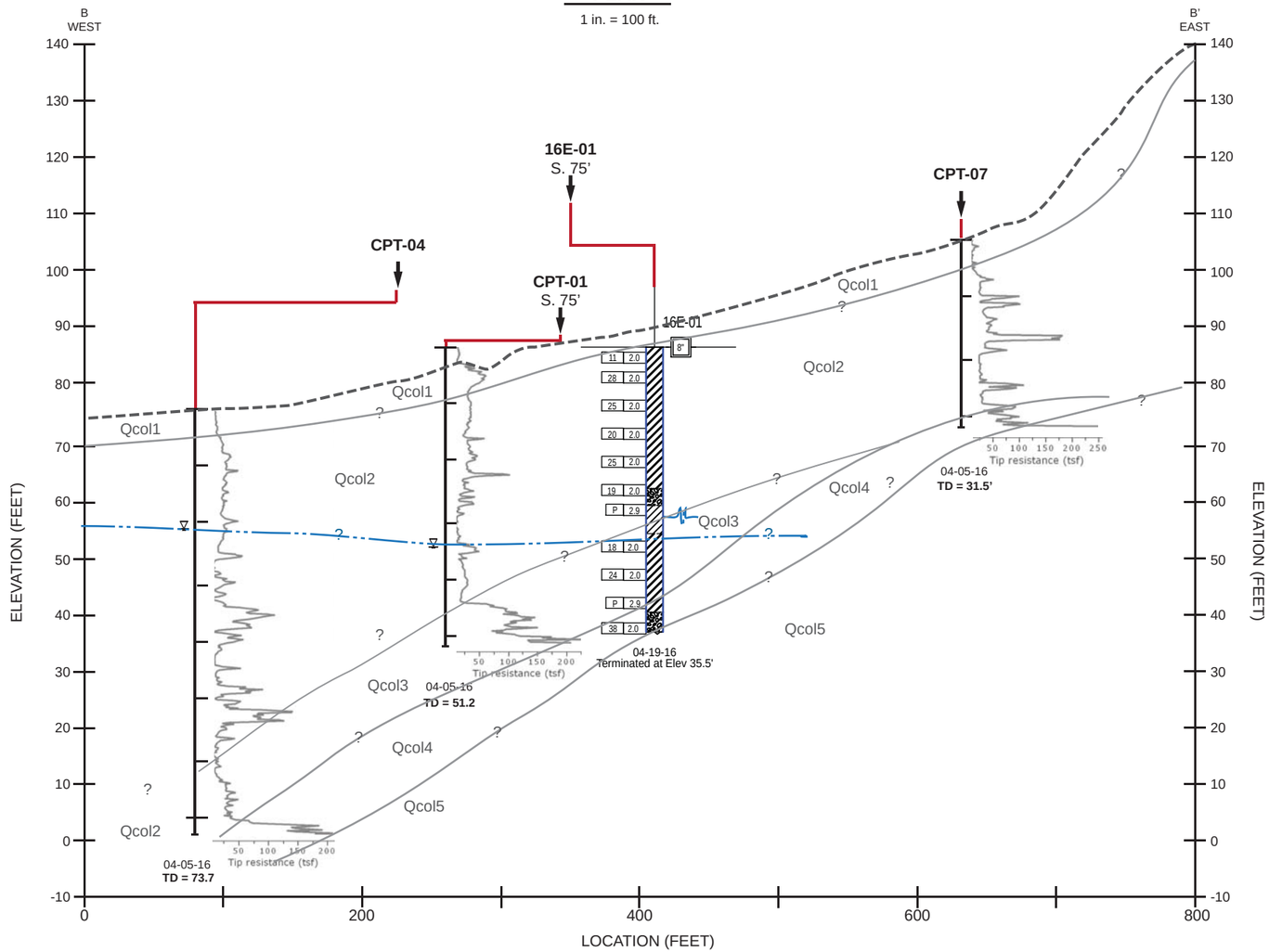
PROJECT NUMBER: 216-112

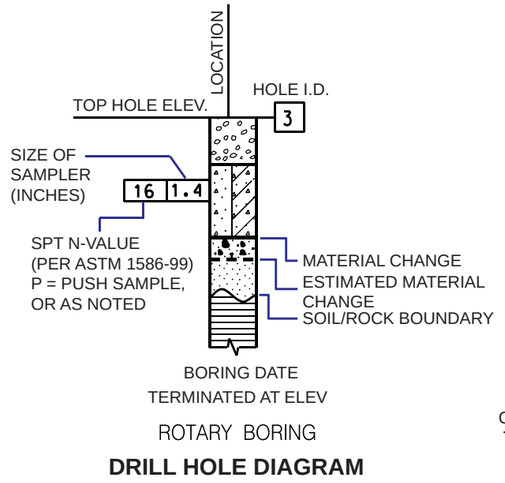
DATE: May 2016



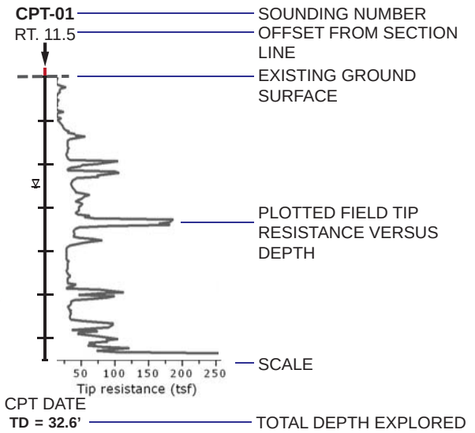
PLAN

1 in. = 100 ft.





DRILL HOLE DIAGRAM



CPT SOUNDING DIAGRAM

LEGEND:

Qcol1	**Colluvium:** Fat CLAY (CH)
Qcol2	**Colluvium:** Fat CLAY (CH), Clayey GRAVEL (GC)
Qcol3	**Colluvium:** Lean CLAY (CL), Fat CLAY (CH)
Qcol4	**Colluvium:** Clayey GRAVEL (GC)
Qcol5	**Colluvium:** Clayey GRAVEL (GC)

Geologic Contact, queried where uncertain

Interpreted Groundwater Surface, queried where uncertain

Groundwater Level Encountered

Wet soil and/or Seepage Encountered

SEE TEXT AND LOGS OF EXPLORATION FOR DESCRIPTION OF SUBSURFACE CONDITIONS

PROFILE

1 in. = 25 ft. vertical
1 in. = 100 ft. horizontal

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Profile B-B'

PROJECT NAME: Cayucos Sustainable Water Project
Toro Site 5
Toro Creek Road
Cayucos, San Luis Obispo County, CA

PLATE **3**

PROJECT NUMBER: 216-112

DATE: May 2016

APPENDIX A - BORING LOGS

GROUP SYMBOLS AND NAMES

Graphic / Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)
GM	SILTY GRAVEL SILTY GRAVEL with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL
SP	Poorly graded SAND Poorly graded SAND with GRAVEL
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)
SM	SILTY SAND SILTY SAND with GRAVEL
SC	CLAYEY SAND CLAYEY SAND with GRAVEL
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL
PT	PEAT
	COBBLES COBBLES and BOULDERS BOULDERS

Graphic / Symbol	Group Names
CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND

FIELD AND LABORATORY TESTS

C	Consolidation (ASTM D 2435-04)
CL	Collapse Potential (ASTM D 5333-03)
CP	Compaction Curve (CTM 216 - 06)
CR	Corrosion, Sulfates, Chlorides (CTM 643 - 99; CTM 417 - 06; CTM 422 - 06)
CU	Consolidated Undrained Triaxial (ASTM D 4767-02)
DS	Direct Shear (ASTM D 3080-04)
EI	Expansion Index (ASTM D 4829-03)
M	Moisture Content (ASTM D 2216-05)
OC	Organic Content (ASTM D 2974-07)
P	Permeability (CTM 220 - 05)
PA	Particle Size Analysis (ASTM D 422-63 [2002])
PI	Liquid Limit, Plastic Limit, Plasticity Index (AASHTO T 89-02, AASHTO T 90-00)
PL	Point Load Index (ASTM D 5731-05)
PM	Pressure Meter
PP	Pocket Penetrometer
R	R-Value (CTM 301 - 00)
SE	Sand Equivalent (CTM 217 - 99)
SG	Specific Gravity (AASHTO T 100-06)
SL	Shrinkage Limit (ASTM D 427-04)
SW	Swell Potential (ASTM D 4546-03)
TV	Pocket Torvane
UC	Unconfined Compression - Soil (ASTM D 2166-06) Unconfined Compression - Rock (ASTM D 2938-95)
UU	Unconsolidated Undrained Triaxial (ASTM D 2850-03)
UW	Unit Weight (ASTM D 4767-04)
VS	Vane Shear (AASHTO T 223-96 [2004])
-200	200 Wash (ASTM D1140-14)

SAMPLER GRAPHIC SYMBOLS

- Standard Penetration Test (SPT) (2" O.D.)
- Standard California Sampler (2.5" O.D.)
- Modified California Sampler (3" O.D.)
- Shelby Tube
- Piston Sampler
- NX Rock Core
- HQ Rock Core
- Bulk Sample
- Other (see remarks)

DRILLING METHOD SYMBOLS

- Auger Drilling
- Rotary Drilling
- Dynamic Cone or Hand Driven
- Diamond Core

WATER LEVEL SYMBOLS

- First Water Level Reading (during drilling)
- Static Water Level Reading (short-term)
- Static Water Level Reading (long-term)

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REPORT TITLE
BORING RECORD LEGEND

PROJECT NAME
Cayucos Sustainable Water Project

DATE
4/19/2016

SHEET
1 of 1

LOGGED BY	BEGIN DATE	COMPLETION DATE	HAMMER TYPE	BORING NUMBER
S. Boone	**4-19-16**	**4-19-16**	**140-lb Automatic Trip**	**16E-01**
FINAL BY			BOREHOLE LOCATION (Lat/Long or North/East and Datum)	SURFACE ELEVATION
J. King			**35° 25' 14.16" / -120° 51' 45.36"**	**86.0 ft**
DRILLING METHOD			BOREHOLE LOCATION (Offset, Station, Line)	WEATHER NOTES
8" O.D. Hollow-Stem Auger			**225 ft Southeast of Toro Creek Road**	**Partly cloudy**
DRILLER			LOCATION DESCRIPTION	BACKFILLED WITH
S/G Drilling			**Plowed field**	**Sand/cement**
DRILL RIG			GROUNDWATER READINGS DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Truck Mounted CME 750			**46.0 ft**	**32.5 ft on4-19-16**	**50.5 ft**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (ksf)	Drilling Method	Casing Depth	Remarks
	0		SANDY fat CLAY (CH); medium stiff; dark brown; moist; trace gravel (Alluvium).		8					20					
	1				1	2 4 7	11	89		21	102	PP =2.8			-200 (11% G, 22% S, 67% F) PI (54 LL, 23 PL, 31 PI) CR (pH = 8.08, r = 1036 ohm-cm) CP (W = 13.5%, UW = 115.7 pcf)
84	2		Very stiff.												
	3														
82	4														
	5		Hard; mottled with yellow, trace gravel.		2	4 10 18	28	89		16	111	PP => 4.5			
80	6														
	7														
78	8														
	9														
76	10		SANDY fat CLAY (CH); hard; dark brown; moist; mottled with light brown; trace gravel; rust stains (Colluvium).		3	5 10 15	25	100		20	109	PP =4.5			-200 (3% G, 39% S, 58% F) CR (pH = 8.36, r = 1104 ohm-cm)
	11														
74	12														
	13														
72	14														
	15		Stiff.		4	5 9 11	20	89		18	108	PP =4.0			
70	16														
	17														
68	18														
	19														
66	20				5	7 11 14	25	94				PP =4.25			
	21														
64	22														
	23														
62	24														
	25				6		19	100		12	113				-200 (43% G, 31% S, 27% F)

(continued)

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PROJECT NAME	
Cayucos Sustainable Water Project	
PROJECT NUMBER	
216-112	
BORING NUMBER	
16E-01	
DATE	SHEET
4/19/2016	**1 of 2**

5 BR - STANDARD 216-112 CAYUCOS SWP BORING LOGS.GPJ CALTRANS LIBRARY (FEB 2013) - NORMAL.GLB 5/13/16

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (ksf)	Drilling Method	Casing Depth	Remarks
	25		CLAYEY GRAVEL with SAND (GC); medium dense; dark brown; moist; mottled with light brown; rock fragments to 1 inch (Serpentinite); trace fine gravel.		6	4 8 11	19	100		12	113	PP =4.5			PI (39 LL, 21 PL, 18 PI)
60	26														
	27														
58	28		Lean CLAY (CL); stiff; brown; moist.		7					33	86				
	29														
56	30														
	31														
54	32														▼
	33		Fat CLAY (CH); very stiff; brown; moist to wet.												
52	34														
	35		Wet (perched water); mottled with yellow and red.		9	6 10 8	18	89		26	103	PP =3.0			
50	36														
	37														
48	38														
	39														
46	40		Hard; moist; trace coarse sand; possible water seeped or perched.		10	5 9 15	24					PP =4.25			
	41														
44	42														
	43														
42	44														
	45		Very stiff.		11			90		20	107	PP =3.0			
40	46		Wet.												▽
	47		CLAYEY GRAVEL (GC); dense; brown; wet; angular gravel clasts in a matrix of fat CLAY (CH). (Colluvium).												
38	48														
	49				12	7 17 21	38			11	127				-200 (63% G, 3% S, 33% F)
36	50														
	51		Bottom of borehole at 50.5 ft bgs												
34	52		This Boring Record was developed in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010) except as noted on the Soil or Rock Legend or below.												
	53														
32	54														
	55														

5 BR - STANDARD 216-112 CAYUCOS SWP BORING LOGS.GPJ CALTRANS LIBRARY (FEB 2013) - NORMAL.GLB 5/13/16

Yeh and Associates, Inc.
Consulting Engineers & Scientists

PROJECT NAME
Cayucos Sustainable Water Project

PROJECT NUMBER
216-112

BORING NUMBER
16E-01

DATE
4/19/2016

SHEET
2 of 2

APPENDIX B - RESULTS OF LABORATORY TESTING

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Summary of Laboratory Test Results

Project No.	216-112	Project Name	Cayucos Sustainable Water Project	Date	5/2/2016

Sample Location			Moisture Content (%)	Dry Unit Weight (pcf)	Gradation			Atterberg		Corrosion				Compaction		R-Value	USCS Classification	AASHTO Classification
Boring No.	Depth (ft)	Sample Type			Gravel > #4 (%)	Sand (%)	Fines < #200 (%)	LL	PI	pH	R (ohm-cm)	SO_4^{2-} (mg/kg)	Cl^- (mg/kg)	Max. Unit Weight (pcf)	Optimum Water Content (%)			
16E-01	0-5	Bulk	19.8	--	11	22	67	54	31	8.08	1036	--	--	115.7	13.5	--	Sandy fat CLAY (CH)	--
16E-01	1	Cal	20.9	101.5	--	--	--	--	--	--	--	--	--	--	--	--	Sandy fat CLAY (CH)	--
16E-01	4.5	Cal	15.5	111.0	--	--	--	--	--	--	--	--	--	--	--	--	Sandy fat CLAY (CH)	--
16E-01	10	Cal	19.5	109.0	3	39	58	--	--	8.36	1104	--	--	--	--	--	Sandy fat CLAY (CH)	--
16E-01	15	Cal	18.3	108.3	--	--	--	--	--	--	--	--	--	--	--	--	Fat CLAY with sand (CH)	--
16E-01	25	Cal	12.1	113.3	43	31	27	39	18	--	--	--	--	--	--	--	Clayey GRAVEL with sand (GC)	--
16E-01	28	Tube	33.0	86.0	--	--	--	--	--	--	--	--	--	--	--	--	Lean CLAY (CL)	--
16E-01	35	Cal	25.6	103.4	--	--	--	--	--	--	--	--	--	--	--	--	Fat CLAY (CH)	--
16E-01	44	Tube	20.3	107.0	--	--	--	--	--	--	--	--	--	--	--	--	Fat CLAY (CH)	--
16E-01	49	Cal	11.1	127.2	63	3	33	--	--	--	--	--	--	--	--	--	Clayey GRAVEL (GC)	--

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Atterberg Limits

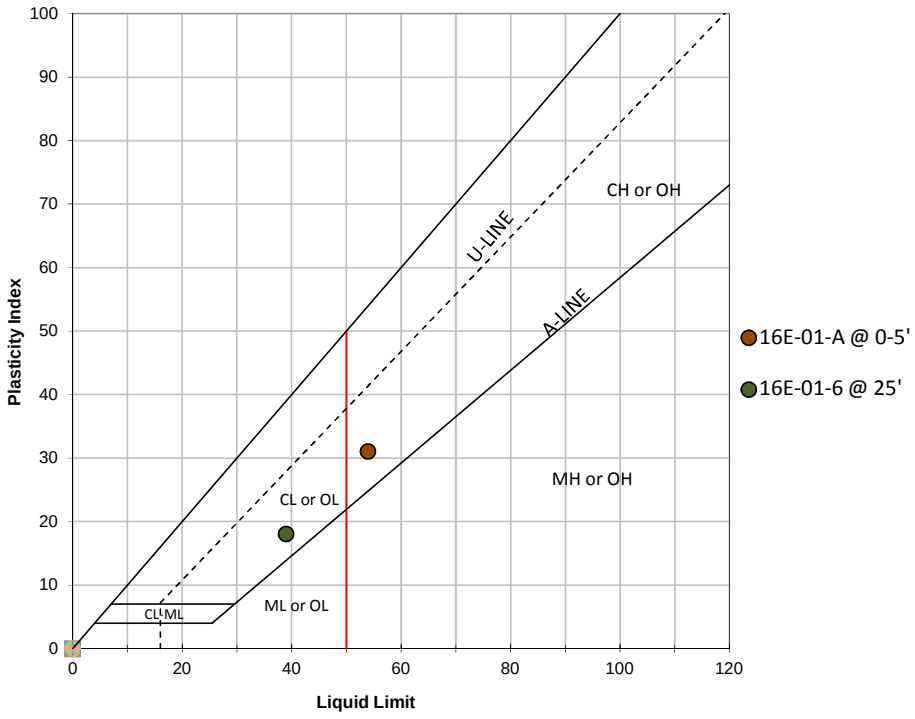
Test Methods: ASTM D4318

Project Name	Cayucos Sustainable Water Project			**Project No.**	216-112
Tested By	J. Cravens	**Checked By**	J. King	**Testing Date**	4/29/2016

SUMMARY OF RESULTS

Boring No.	Sample No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	USCS Classification & Soil Description	AASHTO Classification
16E-01	A	0-5	54	23	31	Sandy fat CLAY (CH), dark brown, moist, some organics, trace gravel	--
16E-01	6	25	39	21	18	Clayey GRAVEL with sand (GC), dark brown, moist, with rust stains	--

Plasticity Chart



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Percent Passing No. 200 Sieve

Test Method: ASTM D1140, D2487

Project Name	Cayucos Sustainable Water Project			Project No.	216-112
Tested By	J. Cravens	Checked By	J. King	Testing Date	4/25/2016

SPECIMEN ID AND MEASUREMENTS

							Prewash			Washed						
Boring	Sample No.	Depth (ft)	USCS Classification & Soil Description	AASHTO Classification	Tin ID	Tin Mass (g)	Tin + Soil (g)	Tin + Dry Soil (g)	Tin + Dry Soil Minus No. 4	Tin + Dry Soil (g)	Passing No. 4	Passing No. 200	% Gravel	% Sand	% Fines	Water Content (%)
16E-01	A	0-5	Sandy fat CLAY (CH), dark brown, moist, some organics, trace gravel	--	105B	134.8	411.0	365.3	338.9	202.3	89%	67%	11%	22%	67%	19.8%
16E-01	3	10	Sandy fat CLAY (CH), dark brown, moist, mottled with light brown, trace fine gravel, with rust stains	--	106B	134.6	415.4	372.1	365.6	231.3	97%	58%	3%	39%	58%	18.2%
16E-01	6	25	Clayey GRAVEL with sand (GC), dark brown, moist, with rust stains	--	101R	135.1	359.2	332.7	248.0	218.0	57%	27%	43%	31%	27%	13.4%
16E-01	12	49	Clayey GRAVEL (GC), brown, moist	--	107C	134.9	613.5	540.8	283.2	233.9	37%	33%	63%	3%	33%	17.9%

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pH and Resistivity

Test Methods: ASTM D4972, ASTM G187

Project Name	Cayucos Sustainable Water Project			**Project Number**	216-112
Tested By	J. Cravens		**Checked By**	J. King	
Testing Date	4/26/2016	**Meter Used**	Miller 400A Analog	**Soil Box Factor**	0.693263

pH & RESISTIVITY MEASUREMENTS

Boring No.	Sample No.	Depth (ft)	USCS Classification & Soil Description	AASHTO Classification	pH in Water	Soil Temperature, T (°C)	Measured Resistance (Ω)	Corrected Resistance (Ω)	Calculated Resistivity (Ω-cm)
16E-01	A	0-5	Sandy fat CLAY (CH), dark brown, moist, some organics, trace gravel	--	8.08	21.5	1300	1495	1036
16E-01	3	10	Sandy fat CLAY (CH), dark brown, moist, mottled with light brown, trace fine gravel, with rust stains	--	8.36	21.0	1400	1593	1104

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Proctor Compaction

Test Method: ASTM D698, D1557

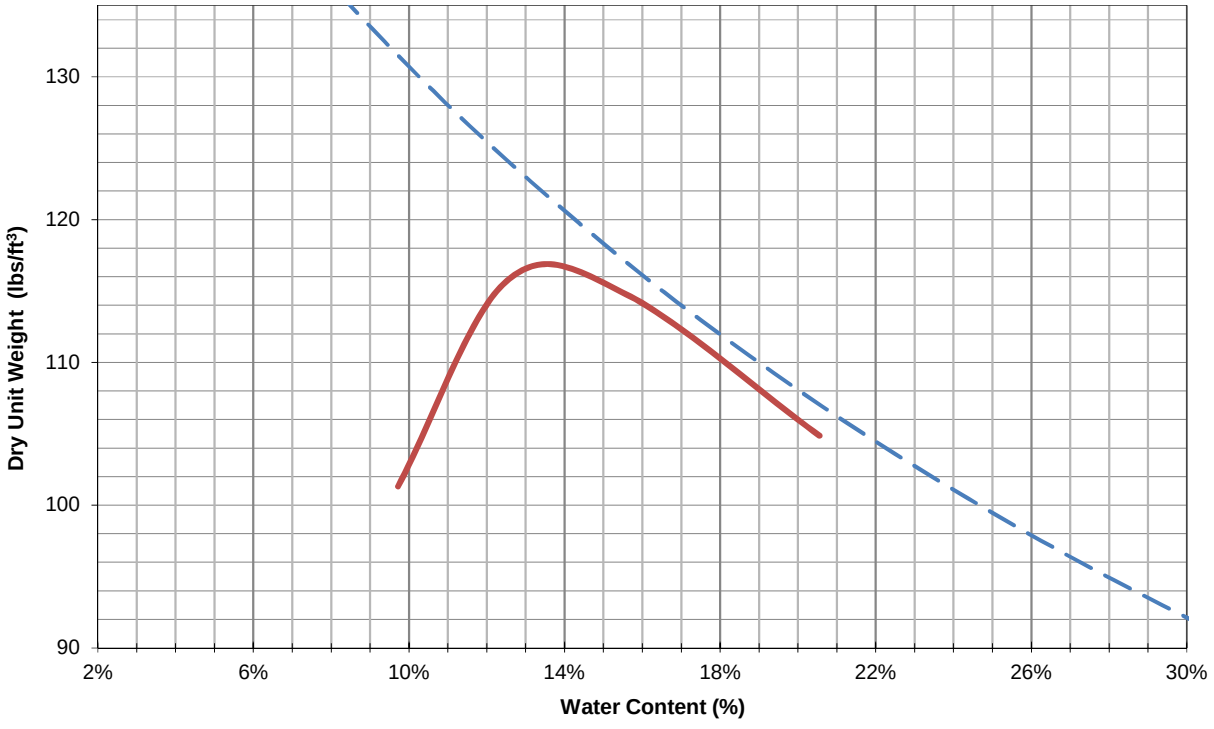
Project Name	Cayucos Sustainable Water Project			**Project No.**	216-112
Tested By	J. Cravens	**Checked By**	J. King	**Testing Date**	4/29/2016

SPECIMEN ID AND CLASSIFICATION					
Boring No.	16E-01	**Sample No.**	A	**Depth (ft)**	0-5
USCS Classification & Soil Description	Sandy fat CLAY (CH), dark brown, moist, some organics, trace gravel			**AASHTO Classification**	--

EQUIPMENT AND PROCEDURE					
Test Method (D698 or D1557)	D1557 B	**Ram. Mass (g)**	10	**# of Lifts**	5
Mold Volume (cm^3)	949	**Mold Mass(g)**	2014	**Blows/ Lift**	25

DENSITY AND MOISTURE MEASUREMENTS					
Mass of Soil + Mold (g)	3704.5	3994.2	4031.7	3936.6	
Dish ID	105B	101B	103A	104A	
Mass of Dish (g)	134.8	134.8	134.7	134.8	
Mass of Moist Soil + Dish (g)	380.9	206.7	249.0	348.3	
Mass of Dry Soil + Dish (g)	359.1	198.7	233.6	311.9	

RESULTS					
Water Content	9.7%	12.5%	15.6%	20.6%	
Dry Density (Mg/m^3)	1.624	1.854	1.840	1.681	
Dry Unit Weight (lbs/ft^3)	101.3	115.7	114.8	104.9	
Lab Max. Dry Density (Mg/m^3)	1.854		**Optimum Water Content (%)**		13.5%
Lab Max. Dry Unit Wt. (lbs/ft^3)	115.7				



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One-Dimensional Swell or Collapse

Test Method: ASTM D4546

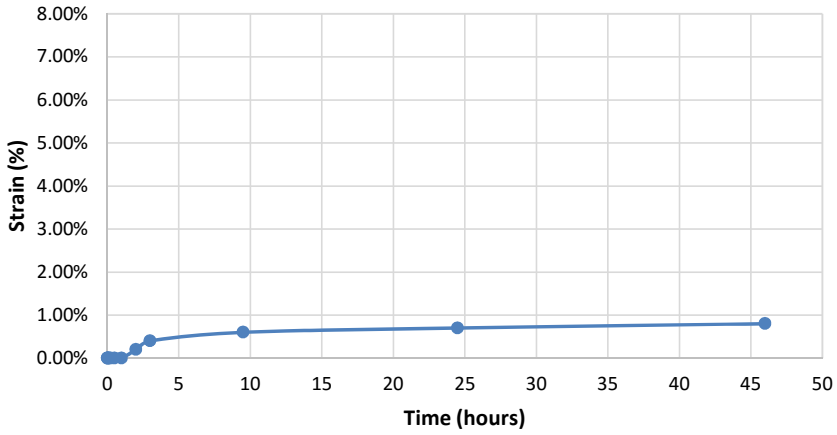
Project Name	Cayucos Sustainable Water Project			**Project No.**	216-112
Tested By	J. Cravens	**Checked By**	J. King	**Testing Date**	4/30/2016

SPECIMEN ID AND CLASSIFICATION					
Boring No.	16E-01	**Sample No.**	1	**Depth (ft)**	1
USCS Classification & Soil Description	Sandy fat CLAY (CH), dark brown, moist, trace gravel			**AASHTO Classification**	--

MEASUREMENTS		
	Initial	**Final**
Ring Diameter (mm)	61.4	61.4
Total Ring Height (mm)	25.4	25.4
Total Ring Volume (mm^3)	75	75
Total Mass of Ring (g)	45.4	45.4
Mass of Soil + Ring(s) (g)	193.9	197.5
Dish ID	1D	1Q
Mass of Dish (g)	24.1	24.3
Mass of Moist Soil + Dish (g)	73.8	176.4
Mass of Dry Soil + Dish (g)	65.2	142.7
Dial Reading, h_1 (in)	0.003	
Load + Porous Disk (lb)	4.115	
Porous Disk Diameter (in)	2.38	
Disk Area (ft^2)	0.0308	
Applied Vertical Stress (lbs/ft^2)	133.8	

RESULTS		
	Initial	**Final**
Water Content	20.9%	28.5%
Dry Density (Mg/m^3)	1.63	1.57
Dry Unit Weight (lbs/ft^3)	101.9	98.2
Dial Reading, h_2 (in)	0.011	
Δh (in)	0.008	
Final Strain, ε (%)	0.80%	

DIAL READINGS			
Intended Time	**Actual Time**	**Reading (0.001 in)**	**Strain (%)**
0 min	0 min	0.003	0.00%
0.5 min	0.5 min	0.003	0.00%
1 min	1 min	0.003	0.00%
2 min	2 min	0.003	0.00%
4 min	4 min	0.003	0.00%
8 min	8 min	0.003	0.00%
15 min	15 min	0.003	0.00%
30 min	30 min	0.003	0.00%
1 hour	1 hour	0.005	0.20%
2 hours	2 hours	0.007	0.40%
4 hours	3 hours	0.009	0.60%
8 hours	9.5 hours	0.010	0.70%
24 hours	24.5 hours	0.011	0.80%
48 hours	46 hours	0.011	0.80%



Yeh and Associates, Inc.
Consulting Engineers & Scientists

One-Dimensional Swell or Collapse

Test Method: ASTM D4546

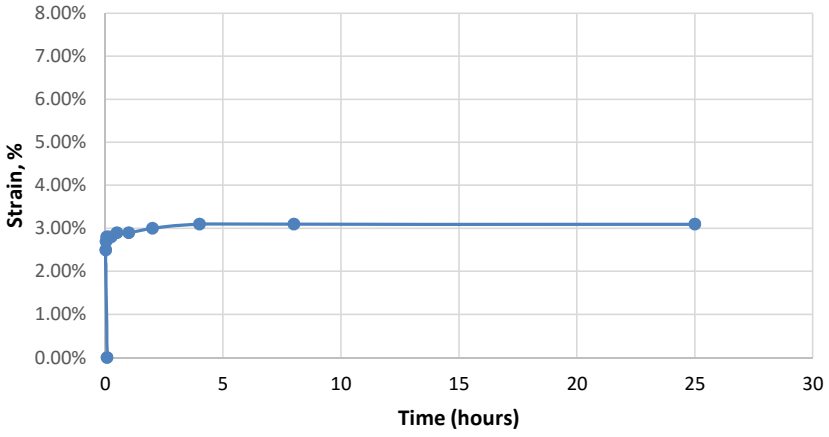
Project Name	Cayucos Sustainable Water Project			**Project No.**	216-112
Tested By	J. Cravens	**Checked By**	J. King	**Testing Date**	4/30/2016

SPECIMEN ID AND CLASSIFICATION					
Boring No.	16E-01	**Sample No.**	1 (90% Remold)	**Depth (ft)**	0-5
USCS Classification & Soil Description	Sandy fat CLAY (CH), dark brown, moist, trace gravel			**AASHTO Classification**	--

MEASUREMENTS		
	Initial	**Final**
Ring Diameter (mm)	61.4	61.4
Total Ring Height (mm)	25.4	25.4
Total Ring Volume (mm^3)	75	75
Total Mass of Ring (g)	45.9	45.9
Mass of Soil + Ring(s) (g)	160.3	182.9
Dish ID	3D	1Y
Mass of Dish (g)	21.1	24.5
Mass of Moist Soil + Dish (g)	39.3	157.9
Mass of Dry Soil + Dish (g)	37.2	119.3
Dial Reading, h_1 (in)	0.089	
Load + Porous Disk (lb)	4.115	
Porous Disk Diameter (in)	2.38	
Disk Area (ft^2)	0.0308	
Applied Vertical Stress (lbs/ft^2)	134	

RESULTS		
	Initial	**Final**
Water Content	13.0%	40.7%
Dry Density (Mg/m^3)	1.35	1.29
Dry Unit Weight (lbs/ft^3)	84.0	80.8
Dial Reading, h_2 (in)	0.120	
Δh (in)	0.031	
Final Strain, ε (%)	3.10%	

DIAL READINGS			
Intended Time	**Actual Time**	**Reading (0.001 in)**	**Strain (%)**
0 min	0 min	0.089	0.0%
0.5 min	0.5 min	0.114	2.50%
1 min	1 min	0.116	2.70%
2 min	2 min	0.117	2.80%
4 min	4 min	0.117	2.80%
8 min	8 min	0.117	2.80%
15 min	15 min	0.118	2.90%
30 min	30 min	0.118	2.90%
1 hour	1 hour	0.119	3.00%
2 hours	2 hours	0.120	3.10%
4 hours	4 hours	0.120	3.10%
8 hours	8 hours	0.120	3.10%
24 hours	25 hours	0.120	3.10%



Yeh and Associates, Inc.
Consulting Engineers & Scientists

One-Dimensional Swell or Collapse

Test Method: ASTM D4546

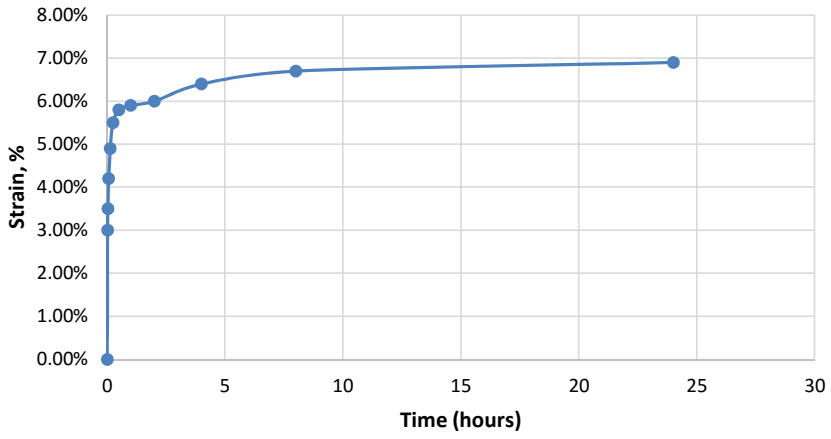
Project Name	Cayucos Sustainable Water Project			**Project No.**	216-112
Tested By	J. Cravens	**Checked By**	J. King	**Testing Date**	4/30/2016

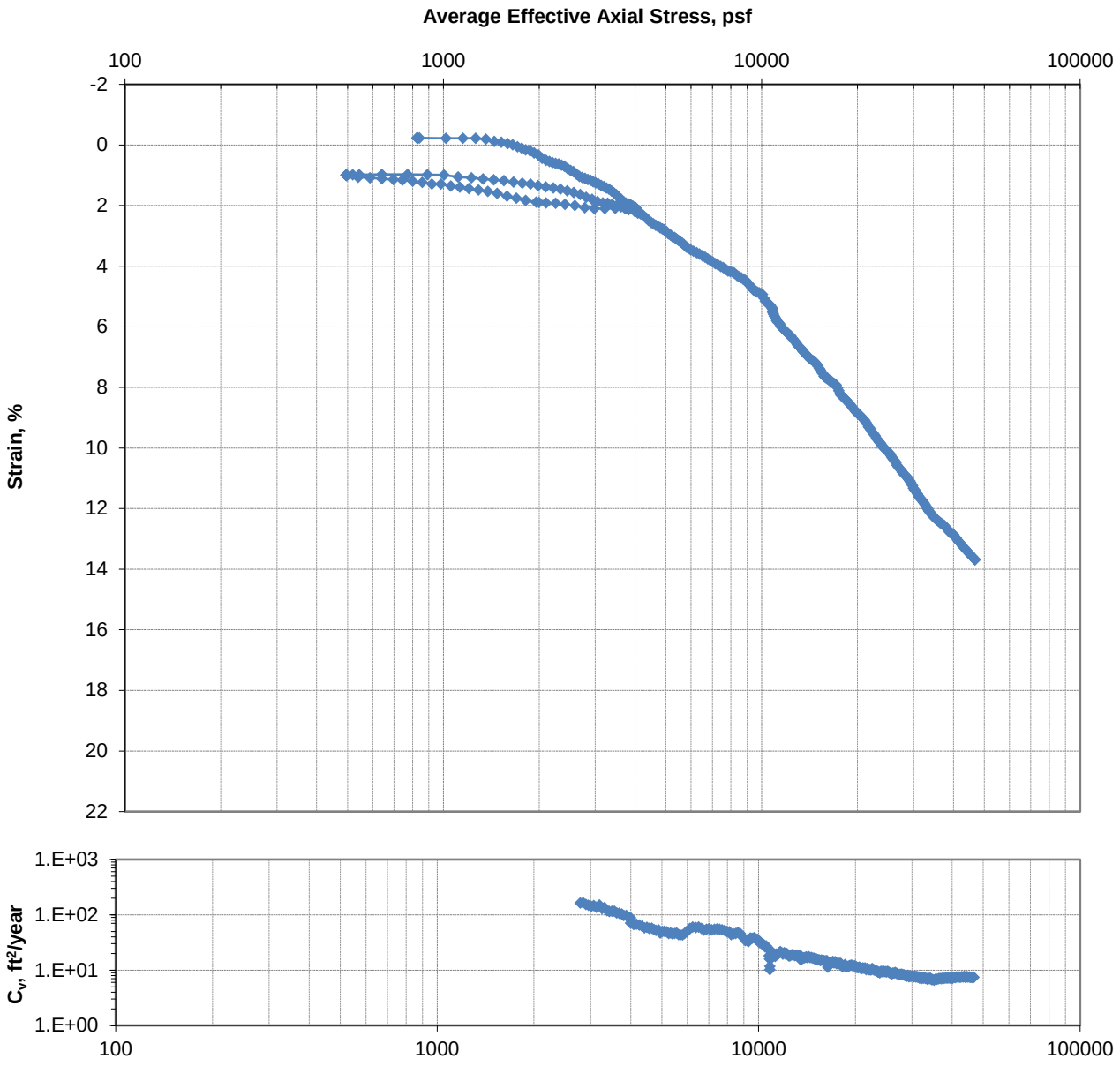
SPECIMEN ID AND CLASSIFICATION					
Boring No.	16E-01	**Sample No.**	1 (95% Remold)	**Depth (ft)**	0-5
USCS Classification & Soil Description	Sandy fat CLAY (CH), dark brown, moist, trace gravel			**AASHTO Classification**	--

MEASUREMENTS		
	Initial	**Final**
Ring Diameter (mm)	61.4	61.4
Total Ring Height (mm)	25.4	25.4
Total Ring Volume (mm^3)	75	75
Total Mass of Ring (g)	45.9	45.9
Mass of Soil + Ring(s) (g)	165.9	188.7
Dish ID	2M	1L
Mass of Dish (g)	20.8	24.1
Mass of Moist Soil + Dish (g)	45.3	163.0
Mass of Dry Soil + Dish (g)	42.1	125.8
Dial Reading, h_1 (in)	0.048	
Load + Porous Disk (lb)	4.115	
Porous Disk Diameter (in)	2.38	
Disk Area (ft^2)	0.0308	
Applied Vertical Stress (lbs/ft^2)	133.8	

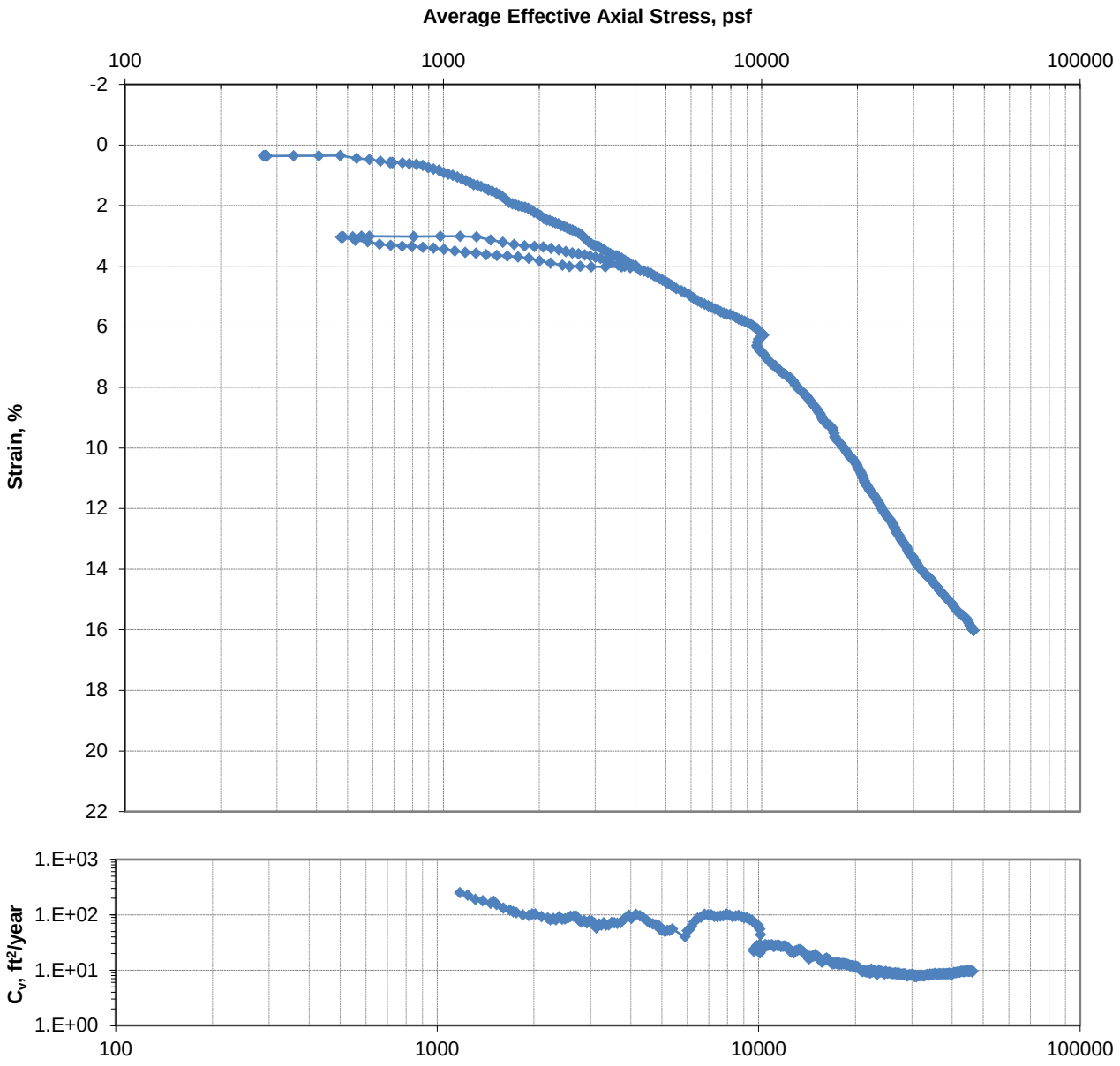
RESULTS		
	Initial	**Final**
Water Content	15.0%	36.6%
Dry Density (Mg/m^3)	1.39	1.39
Dry Unit Weight (lbs/ft^3)	86.6	86.8
Dial Reading, h_2 (in)	0.120	
Δh (in)	0.072	
Final Strain, ε (%)	7.20%	

DIAL READINGS			
Intended Time	**Actual Time**	**Reading (0.001 in)**	**Strain (%)**
0 min	0 min	0.048	0.00%
0.5 min	0.5 min	0.078	3.00%
1 min	1 min	0.083	3.50%
2 min	2 min	0.090	4.20%
4 min	4 min	0.097	4.90%
8 min	8 min	0.103	5.50%
15 min	15 min	0.106	5.80%
30 min	30 min	0.107	5.90%
1 hour	1 hour	0.108	6.00%
2 hours	2 hours	0.112	6.40%
4 hours	4 hours	0.115	6.70%
8 hours	8 hours	0.117	6.90%
24 hours	25 hours	0.120	7.20%

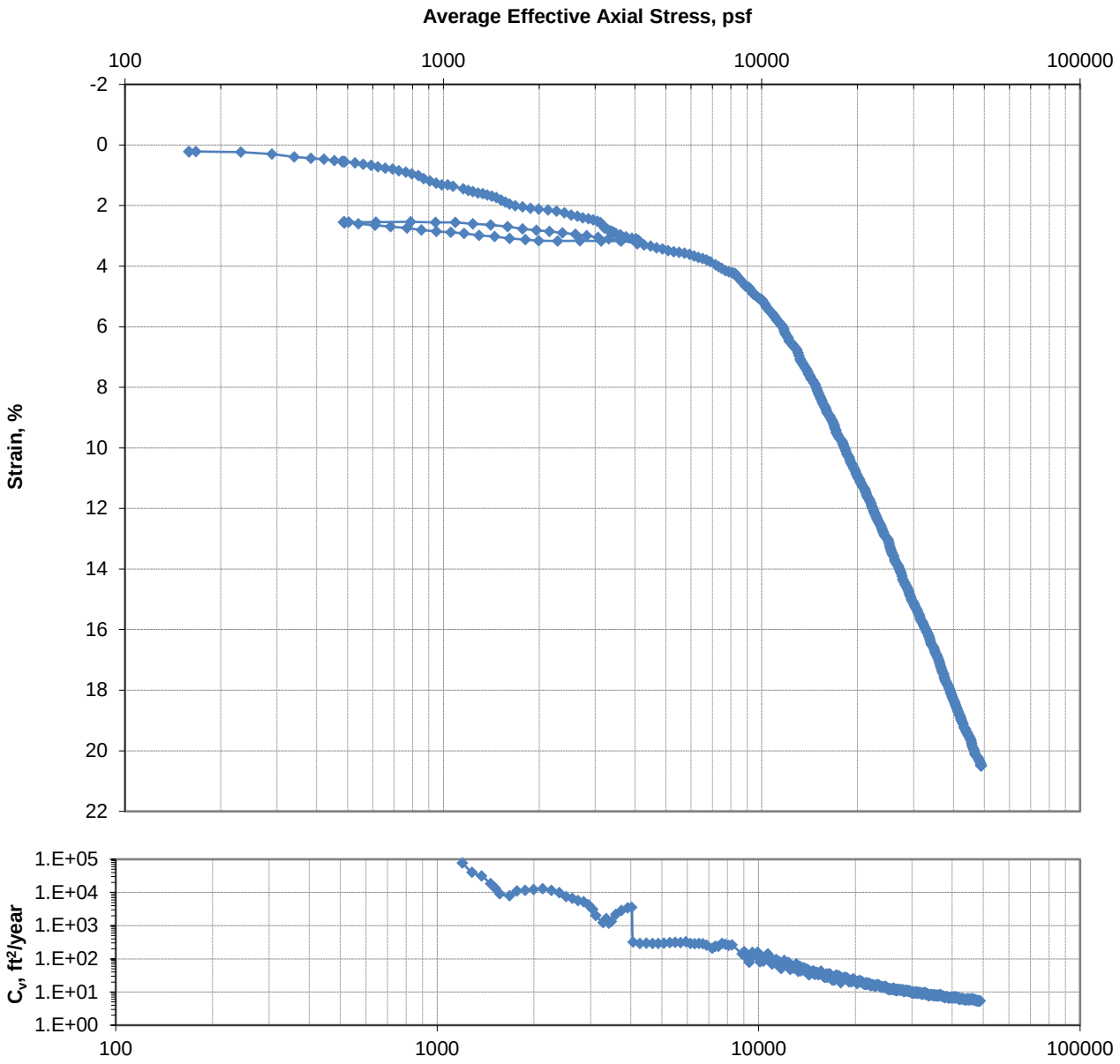




SAMPLE ID	Boring, Sample #, Depth	16E-01 , #2 , 4.5 ft		SUMMARY	Strain Rate, %/hr 2.0
	USCS Classification:	Sandy fat CLAY (CH): brown, moist, trace angular gravel			Liquid Limit, % ---
					Plastic Limit, % ---
					Plasticity Index, % ---
					Passing #200 ---
					Estimated Gs 2.7
PROPERTIES		Initial	Final		
	Water Content, %	15.5%	16.8%		
	Dry Unit Weight, pcf	111.0	115.9		
	Saturation, %	81%	100%	REMARKS	Test Method: D4186
	Void Ratio	0.52	0.45		Test by: Cal Poly GEO-E Lab, SLO, CA
	Diameter, in	2.42	2.42		Checked by: Judd King, Yeh and Associates
	Height, in	0.75	0.72		



SAMPLE ID	Boring, Sample #, Depth	16E-01 , #4 , 15.0 ft		SUMMARY	Strain Rate, %/hr 3.0
	USCS Classification:	Fat CLAY with sand (CH): brown, moist, trace angular gravel			Liquid Limit, % ---
					Plastic Limit, % ---
					Plasticity Index, % ---
					Passing #200 ---
					Estimated Gs 2.7
PROPERTIES		Initial	Final		
	Water Content, %	18.3%	17.3%		
	Dry Unit Weight, pcf	108.3	114.9		
	Saturation, %	89%	100%	REMARKS	Test Method: D4186
	Void Ratio	0.56	0.47		Test by: Cal Poly GEO-E Lab, SLO, CA
	Diameter, in	2.42	2.42		Checked by: Judd King, Yeh and Associates
	Height, in	0.75	0.71		



SAMPLE ID			
	Boring, Sample #, Depth	16E-01 , #7 , 29.8 ft	
	USCS Classification:	Lean CLAY (CL): brown, moist	
PROPERTIES		Initial	Final
	Water Content, %	33.3%	27.2%
	Dry Unit Weight, pcf	86.3	97.1
	Saturation, %	94%	100%
	Void Ratio	0.95	0.74
	Diameter, in	2.42	2.42
	Height, in	0.75	0.67

SUMMARY		
	Strain Rate, %/hr	3.0
	Liquid Limit, %	---
	Plastic Limit, %	---
	Plasticity Index, %	---
	Passing #200	---
	Estimated Gs	2.7

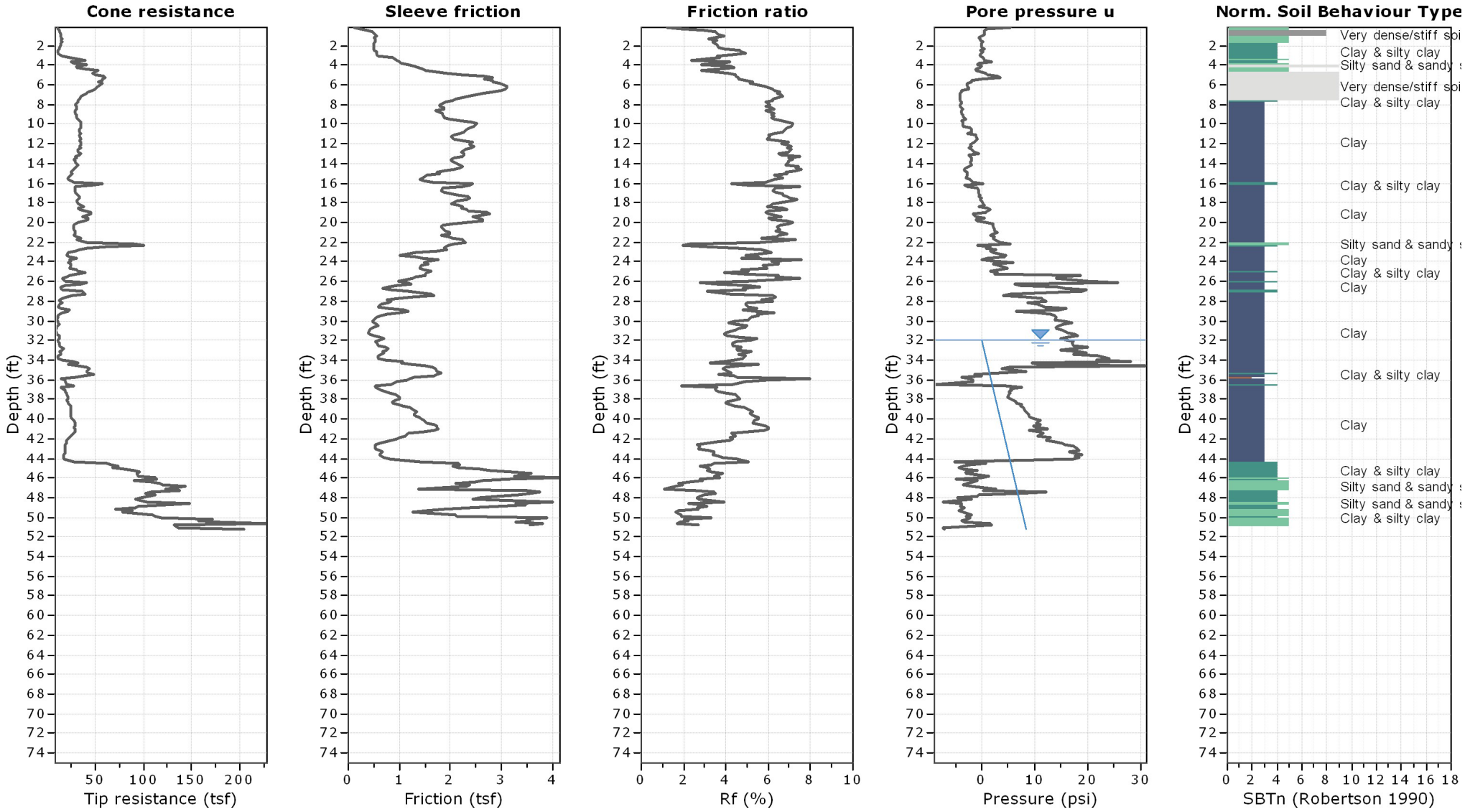
REMARKS	
Test Method: D4186	
Test by: Cal Poly GEO-E Lab, SLO, CA	
Checked by: Judd King, Yeh and Associates	

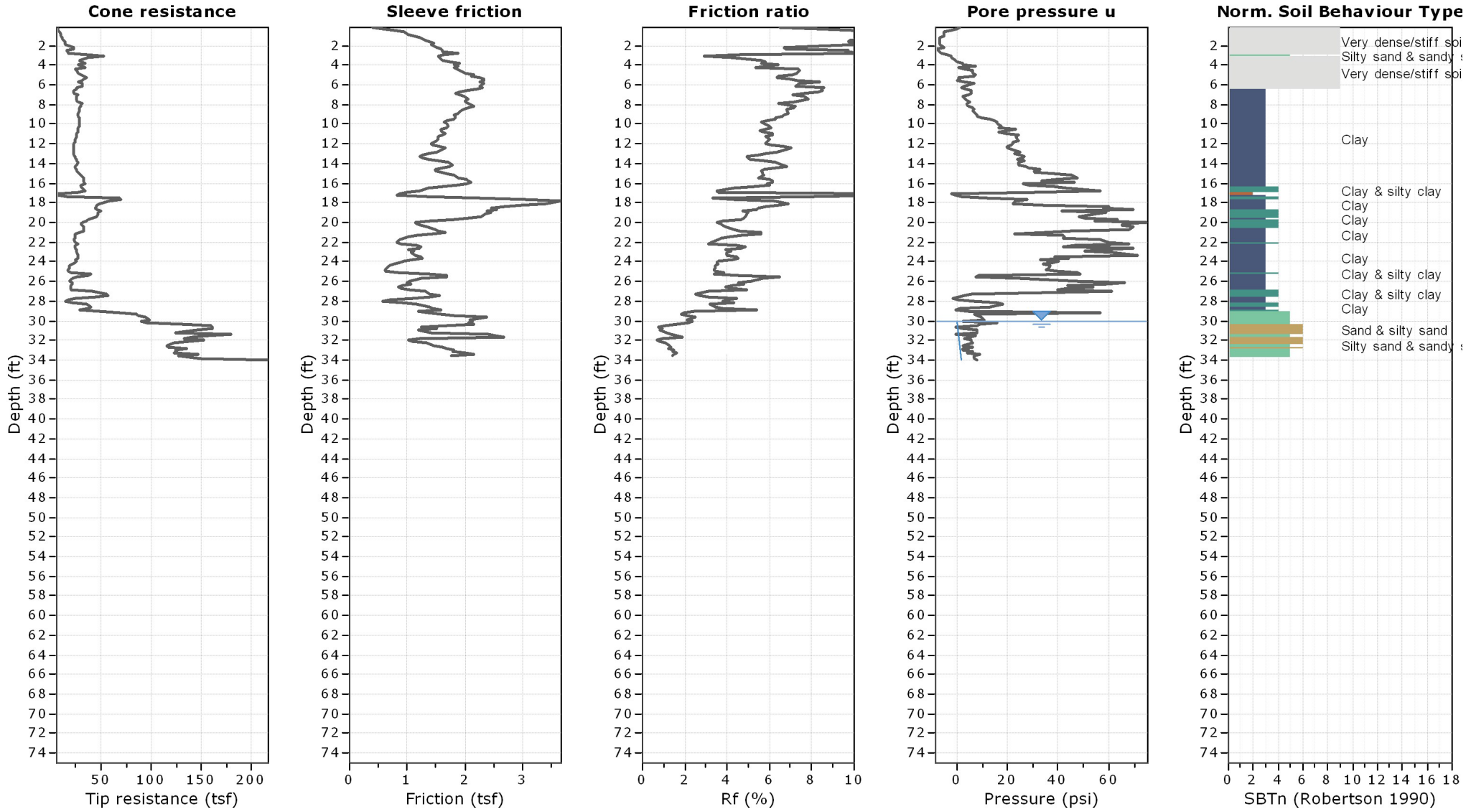
APPENDIX C - LOGS OF CONE PENETRATION TEST SOUNDINGS

Yeh and Associates, Inc.
Engineer: J. King
CPT Subcontractor: CPT, Inc.

CPT: CPT-01
Total depth: 51.18 ft, Date: 4/5/2016
Surface Elevation: 86.00 ft
Coords: N 3921785, E 694047
Cone Type: 391:T1500F15U500
Cone Operator: JROG MMCC

Project: **Cayucos Sustainable Water Project**
Location: **Cayucos, CA**

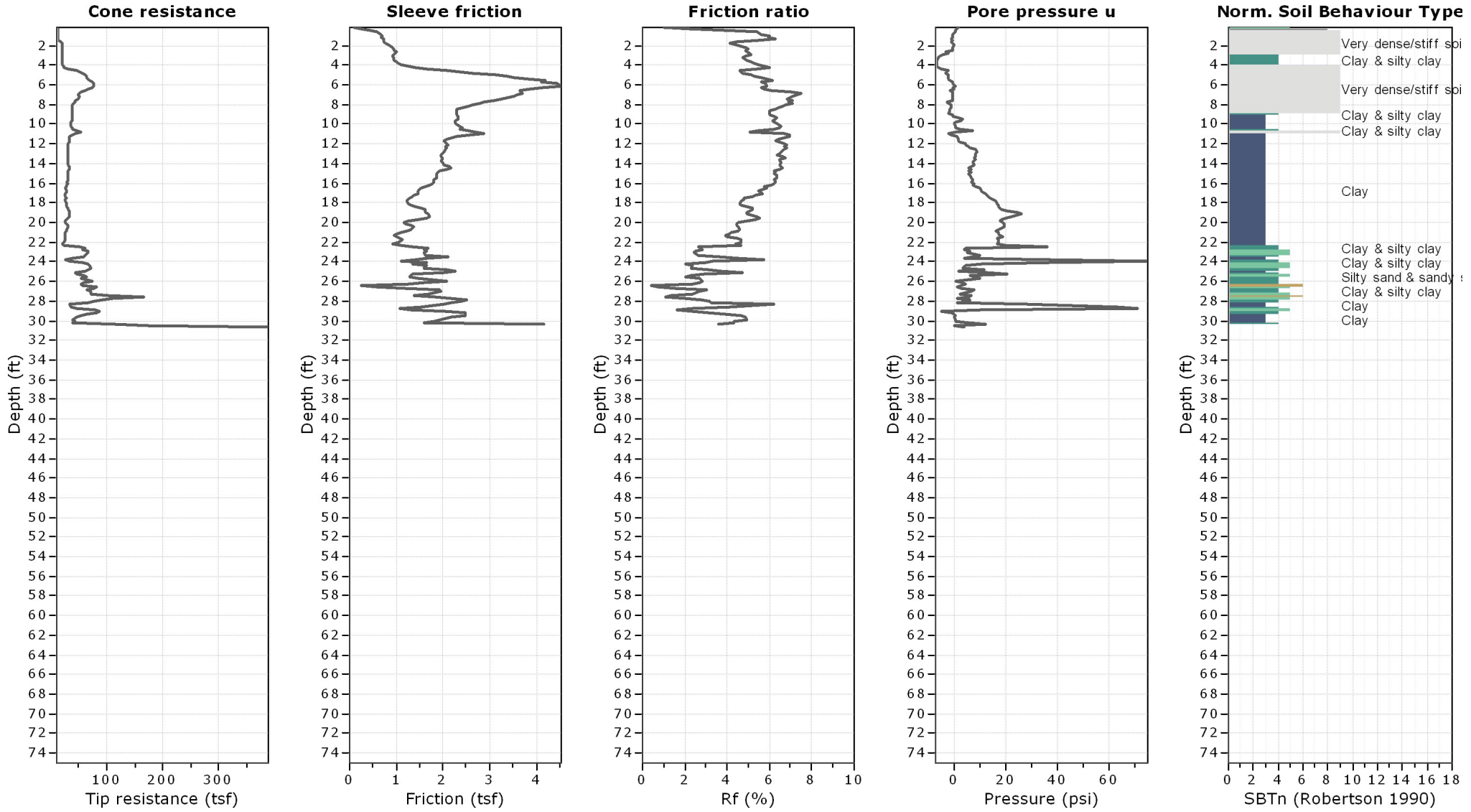


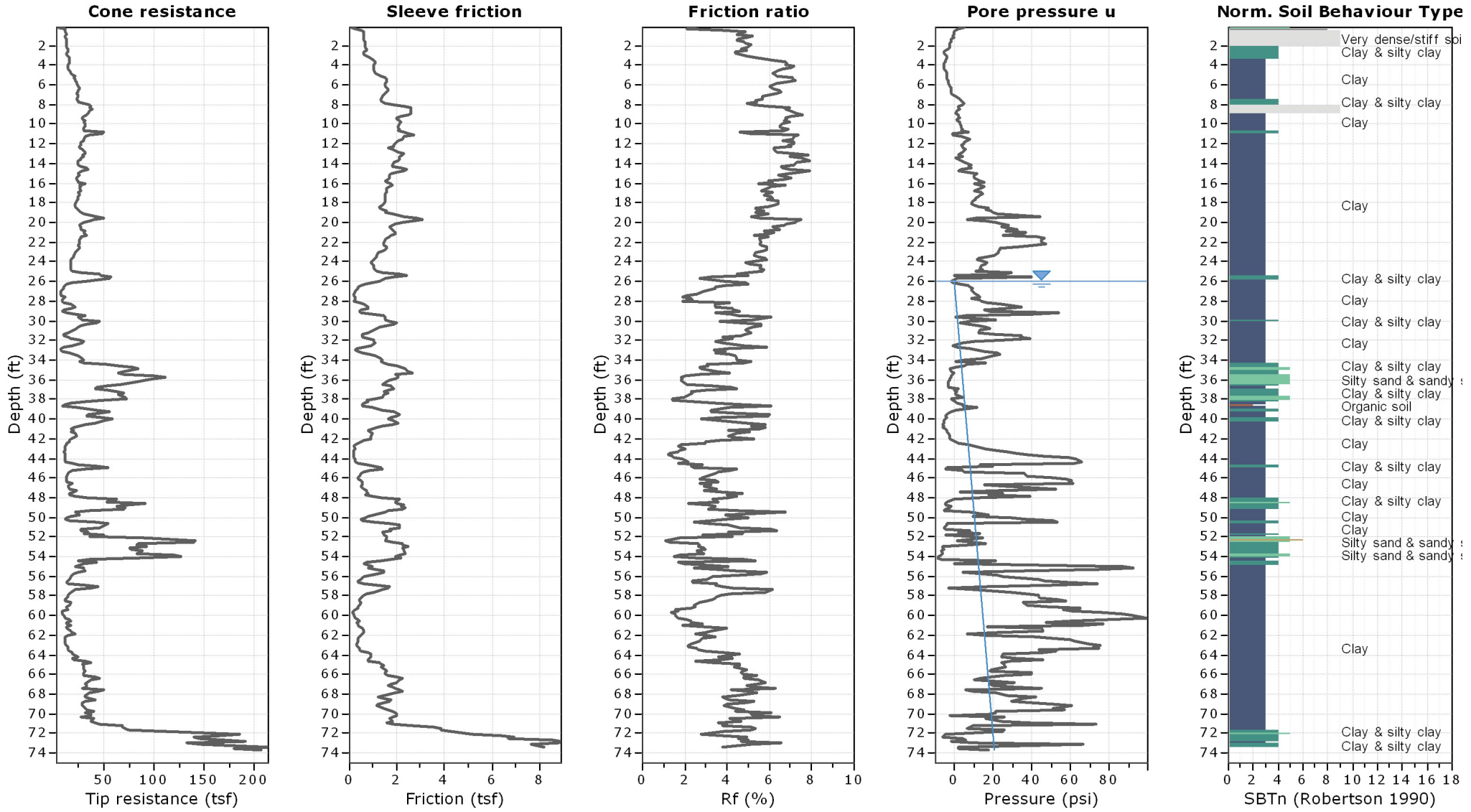

Cone resistance
Sleeve friction
Friction ratio
Pore pressure u
Norm. Soil Behaviour Type
Depth (ft)
Tip resistance (tsf)
Friction (tsf)
Rf (%)
Pressure (psi)
SBTn (Robertson 1990)
Very dense/stiff soi
Silty sand & sandy
Very dense/stiff soi
Clay
Clay & silty clay
Clay
Clay
Clay
Clay
Clay & silty clay
Clay & silty clay
Clay
Sand & silty sand
Silty sand & sandy

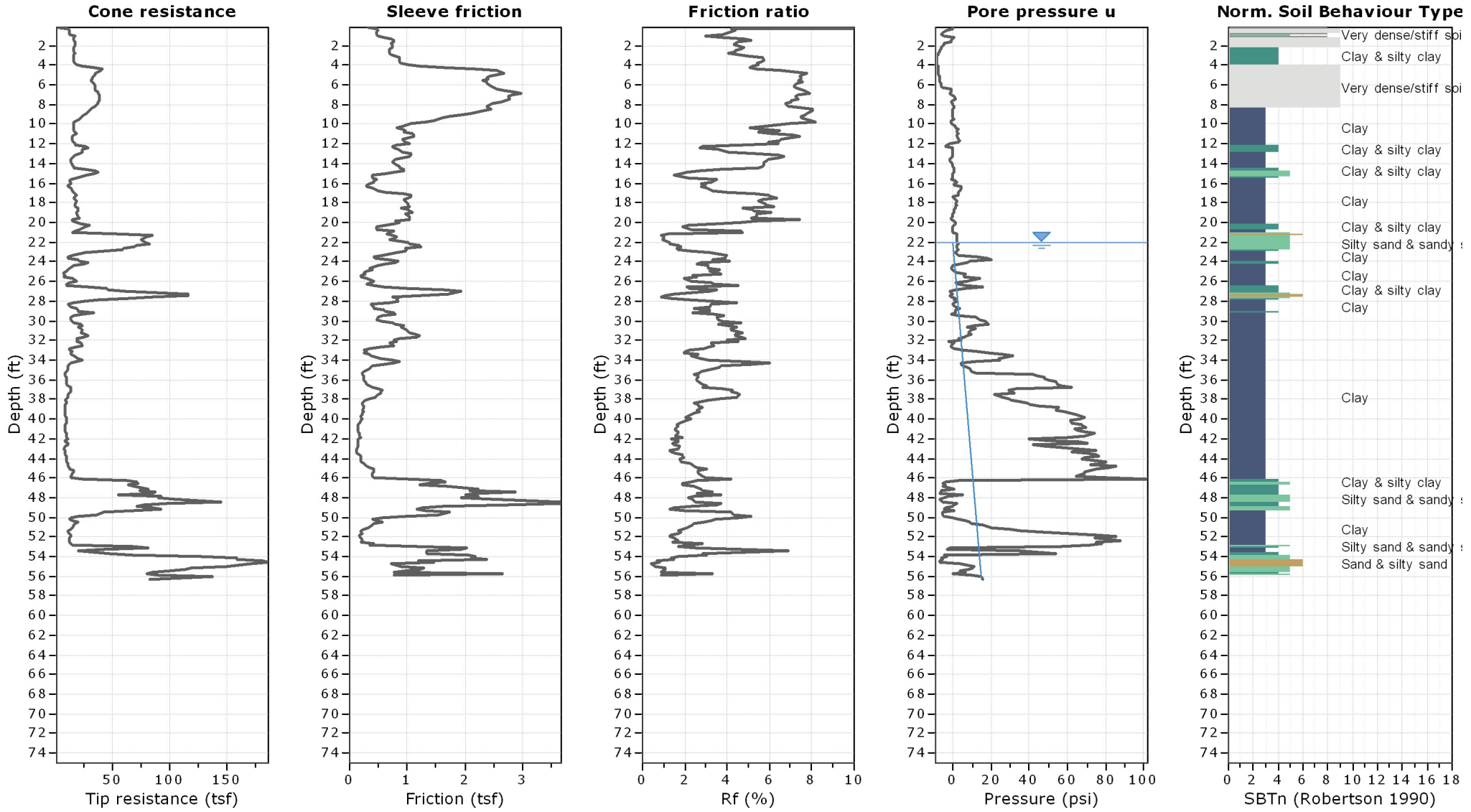
Yeh and Associates, Inc.
Engineer: J. King
CPT Subcontractor: CPT, Inc.

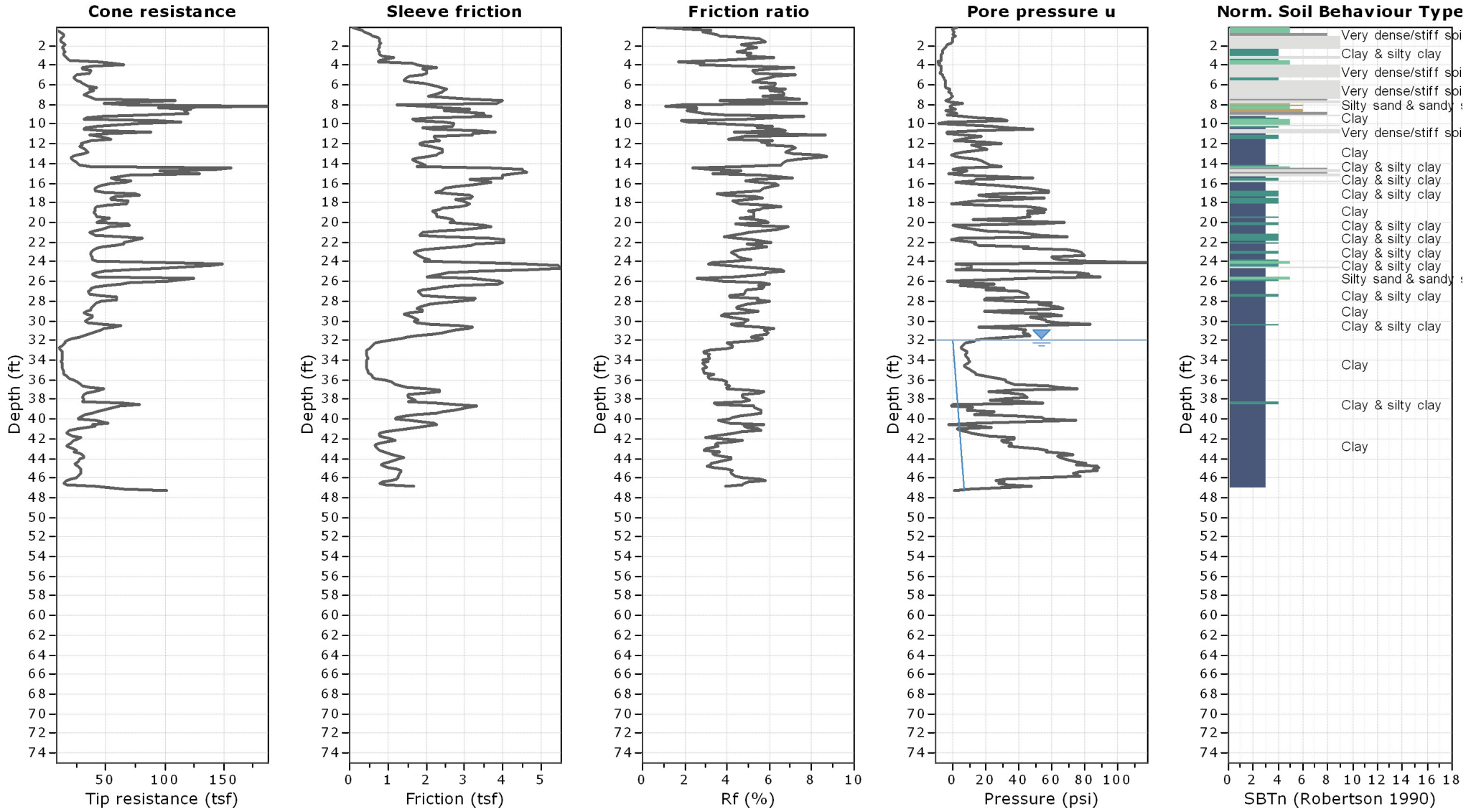
CPT: CPT-03
Total depth: 30.68 ft, Date: 4/5/2016
Surface Elevation: 72.00 ft
Coords: N 3921698, E 693958
Cone Type: 391:T1500F15U500
Cone Operator: JROG MMCC

Project: **Cayucos Sustainable Water Project**
Location: **Cayucos, CA**




Cone resistance
Depth (ft)
Tip resistance (tsf)
Sleeve friction
Friction (tsf)
Friction ratio
Rf (%)
Pore pressure u
Pressure (psi)
Norm. Soil Behaviour Type
SBTn (Robertson 1990)
Very dense/stiff soi
Clay & silty clay
Clay
Silty sand & sandy
Organic soil

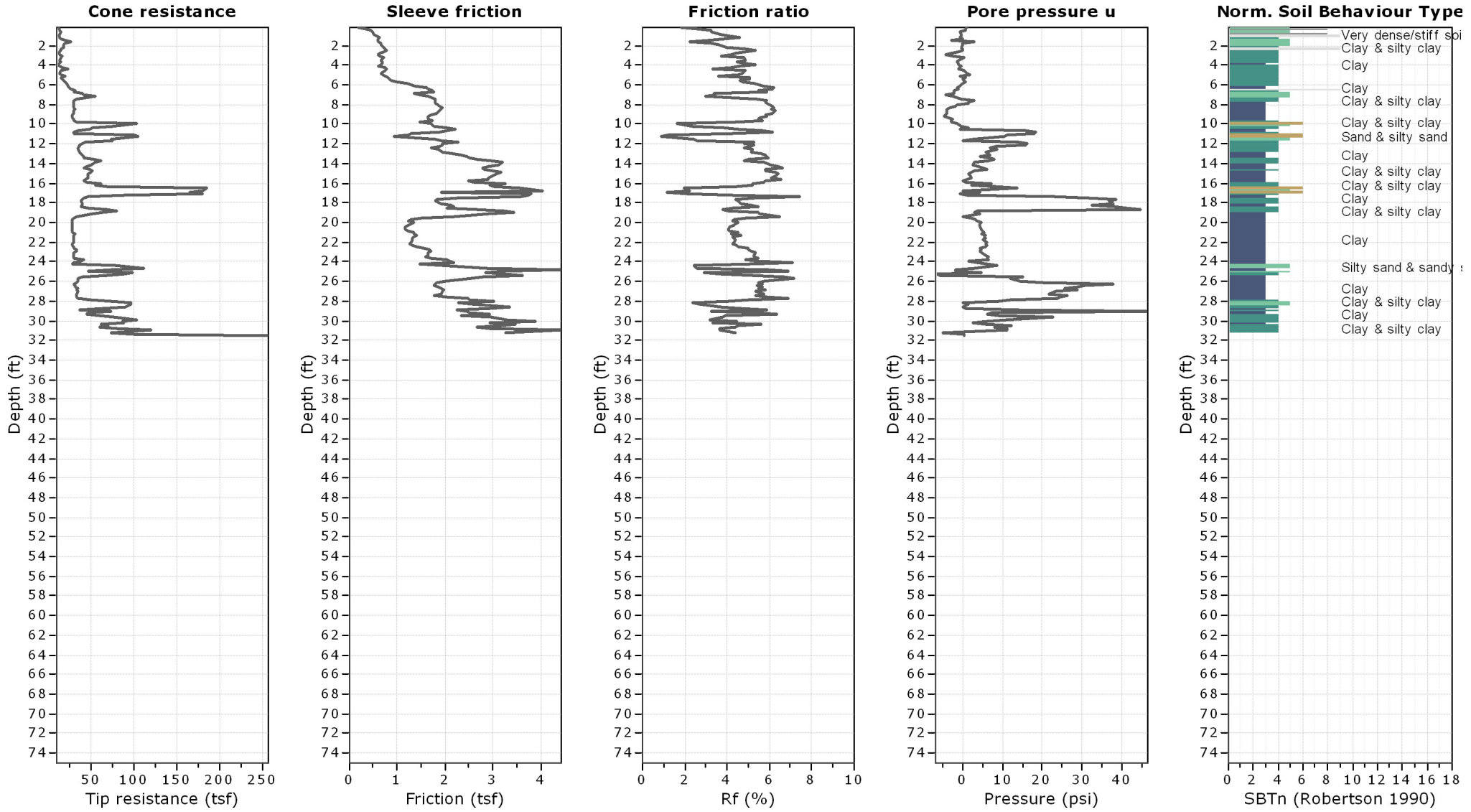

Cone resistance
Depth (ft)
Tip resistance (tsf)
Sleeve friction
Friction (tsf)
Friction ratio
Rf (%)
Pore pressure u
Pressure (psi)
Norm. Soil Behaviour Type
SBTn (Robertson 1990)
Very dense/stiff soi
Clay & silty clay
Very dense/stiff soi
Clay
Clay & silty clay
Clay & silty clay
Clay
Clay & silty clay
Silty sand & sandy
Clay
Clay
Clay & silty clay
Clay
Clay
Clay & silty clay
Silty sand & sandy
Clay
Silty sand & sandy
Sand & silty sand


Cone resistance
Depth (ft)
Tip resistance (tsf)
Sleeve friction
Friction (tsf)
Friction ratio
Rf (%)
Pore pressure u
Pressure (psi)
Norm. Soil Behaviour Type
SBTn (Robertson 1990)
Very dense/stiff soi
Clay & silty clay
Very dense/stiff soi
Very dense/stiff soi
Silty sand & sandy
Clay
Very dense/stiff soi
Clay
Clay & silty clay
Clay & silty clay
Clay & silty clay
Clay
Clay & silty clay
Clay & silty clay
Clay & silty clay
Clay & silty clay
Silty sand & sandy
Clay & silty clay
Clay
Clay & silty clay
Clay
Clay & silty clay
Clay

Yeh and Associates, Inc.
Engineer: J. King
CPT Subcontractor: CPT, Inc.

CPT: CPT-07
Total depth: 31.50 ft, Date: 4/5/2016
Surface Elevation: 103.00 ft
Coords: N 3921790, E 694132
Cone Type: 391:T1500F15U500
Cone Operator: JROG MMCC

Project: **Cayucos Sustainable Water Project**
Location: **Cayucos, CA**



Draft Technical Memorandum

Date: 6/10/2016

To: Mr. Rick Koon
Cayucos Sanitary District
200 Ash Avenue,
Cayucos, CA 93430

CC:

Prepared by: Adam Rianda, E.I.T.

Reviewed by: Jeroen Olthof, P.E., Dan Heimel, P.E.

Project: Cayucos Sustainable Water Project

SUBJECT: **PRELIMINARY WORKING DRAFT: TECHNICAL MEMORANDUM – TORO CREEK FLOOD ANALYSIS**

Introduction

As discussed in the Comparative Analysis, the preferred and alternate sites for the Cayucos Sustainable Water Project (CSWP) are adjacent to Toro Creek and Willow Creek, both of which are recognized by the Federal Emergency Management Agency (FEMA) in the Flood Insurance Study (FIS) for San Luis Obispo County. While both sites are still being evaluated as part of the Facilities Plan, this technical memorandum focuses specifically on the Toro Creek project site and the potential flood hazard in the event of a 100-year storm.

The San Luis Obispo (SLO) County FIS report identifies a 1% Annual Chance (100-year) Flood Hazard Zone within Toro Creek, extending from the mouth of the creek at the Pacific Ocean to just past Negranti Road, an approximate 3.5-mile span. Of the 3.5 miles mapped by FEMA, only 670 feet, located at State Highway 1, is based on a detailed study. In an effort to assess the validity of the 100-year mapped flood zone adjacent to the project site, Water Systems Consulting (WSC) constructed a hydraulic model of the creek segment of interest. This memorandum reviews our technical approach, summarizes the input parameters and assumptions, and discusses the findings of the analysis.

Technical Approach

The steady-state hydraulic model of the Toro Creek segment was constructed using the U.S. Army Corps of Engineers HEC-RAS software package, a readily available platform adopted by FEMA as the fundamental floodplain modeling tool.

Input Parameters and Assumptions

Design Flow Rate

For the purpose of this analysis, WSC assumed the 100-year flow rate of 11,900 cubic feet per second (cfs) attributed to the mouth of Toro Creek in Table 5 of the SLO County FIS report, Vol 1. It is important to note that WSC did not perform a hydrologic analysis to verify FEMA flow rates for the Toro Creek watershed.

Cross-Sections

Cross-sections were generated using the 2013 LiDAR collected by Pacific Gas and Electric (PG&E) as part of the Diablo Canyon Power Plant (DCPP) Long-Term Seismic Program. This topographic data was recognized by WSC as the highest resolution dataset allowing for visualization of Toro Creek contours at 1-foot intervals. The Toro Creek hydraulic model begins approximately 980 feet downstream of the second Toro Creek Road crossing and extends down to approximately 1,500 feet upstream of the first Toro Creek Road bridge crossing, a total distance of 3,595 feet. See Figure 1 to view the extent of the model. A total of thirty (30) cross-sections span from Toro Creek Road to the hillside opposite of the creek at sufficient horizontal distance to capture the entire floodplain, under a 100-year storm event.

Roughness Coefficient

HEC-RAS uses the Manning's equation to evaluate energy losses due to friction. Utilizing manning's n reference tables in both the HEC-RAS Reference Manual and the SLO County FIS report, manning's n roughness coefficients were selected based on WSC's understanding of the horizontal variance in vegetation and channel irregularities and were applied to the individual Toro Creek cross-sections. Assumed roughness coefficients for the Toro Creek model range from 0.03 to 0.1, as shown in the table below.

Table 1. Assumed Manning's n Values

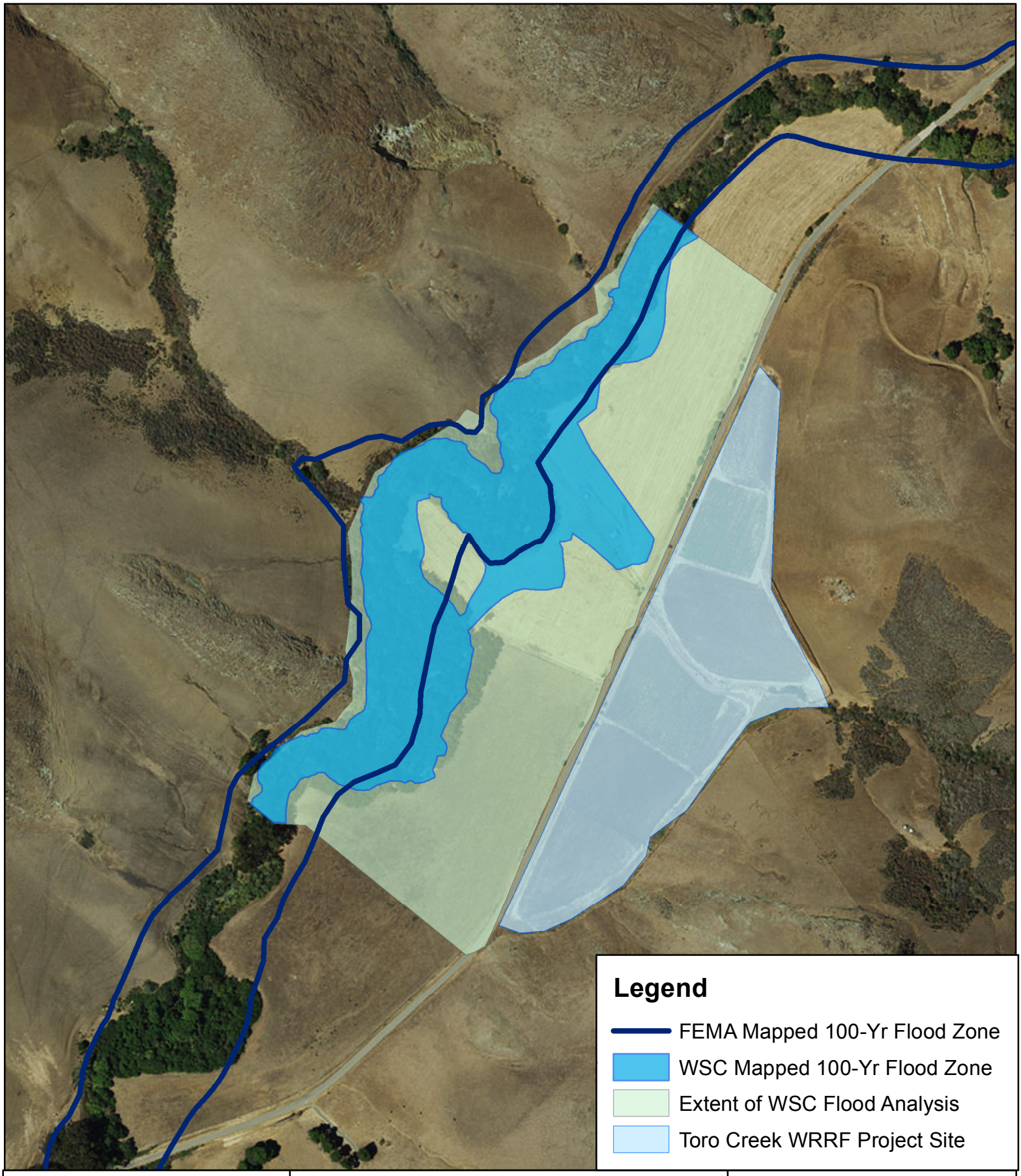
Type	Manning's n value
Channel	0.04
Overbank	0.10
Flood Plain	0.03

Boundary Conditions

Normal depth boundary conditions were applied to both the upstream and downstream cross-sections assuming a constant slope at both ends.

Findings

Figure 1 displays the results of the Toro Creek hydraulic analysis. Per the model, the 100-year water surface elevation is contained within the floodplain west of Toro Creek Road and ultimately remains outside of the project site. Figure 1 also displays the FEMA mapping as depicted in the FIS report for SLO County. As shown, the two mapped flood zones vary horizontally, however, this is not uncommon primarily given that the FEMA mapping for the Toro Creek segment of interest is not based on a detailed hydraulic study. Additionally, the level of effort and methodology used by FEMA to delineate the flood zone is not discussed in the FIS report. That said, both the FEMA map and the map resulting from this analysis depict the 1% Annual Chance Flood Hazard Zone entirely outside of the project area.



CAYUCOS SANITARY DISTRICT
805-995-3290

Figure 1.
Cayucos Sanitary District
Facilities Plan
Toro Creek 100-Year Flood Hazard Zone

0 0.0425 0.085
Miles

N

WSC
Water Systems Consulting, Inc.

Biological Technical Report

for

Cayucos Sustainable Water Project

Cayucos, San Luis Obispo County

Prepared for

Cayucos Sanitary District
200 Ash Ave.
Cayucos, CA 93430

by

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES
1602 Spring Street
Paso Robles, CA 93446
(805) 237-9626

December 2016

907.01

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Cover Page: Agricultural farmland and riparian habitat at Proposed Project Study Area, Toro Creek, facing northwest, April 15, 2016.

Synopsis

- This biological report examines two project Study Areas (Proposed Project Study Area and Alternative Project Study Area) located in the community of Cayucos, in San Luis Obispo County, California. The Proposed Project Study Area is within APN 073-092-003. The Alternative Project Study Area is within APN 073-093-011.
- Habitat types identified and mapped in the Proposed Project Study Area consist of agriculture, California annual grassland, developed, ruderal vegetation, and willow riparian. Habitat types identified and mapped in the Alternative Site Study Area consist of agriculture, developed, and willow riparian. There are no sensitive natural communities listed by the California Natural Diversity Database (CNDDB) within the vicinity of the Proposed or Alternative Study Areas.
- Botanical surveys conducted in April, May, and June 2016 identified 102 species, subspecies, and varieties of vascular plants within the Study Areas. Appropriate habitat and soil conditions are suitable for 6 special status plants in the Proposed Project Study Area. One special status plant species, club-haired mariposa lily (*Calochortus clavatus* ssp. *clavatus*), was observed in the Proposed Project Study Area. No special status plant species were observed in the Alternative Project Study Area.
- Wildlife species detected at the Proposed and Alternative Project Study Areas include one fish, one amphibian, one reptile, 27 birds, and three mammals. Appropriate habitat is present at the Study Areas for 17 special status animals. One federally listed animal, steelhead (*Oncorhynchus mykiss irideus*), was detected in the Proposed Project Study Area. No state or federally listed species were detected at the Alternative Project Study Area.
- No significant impacts will occur to special status plant or wildlife species or any Environmentally Sensitive Habitat Areas (ESHA) in the Proposed Project Study Area with implementation of recommended avoidance and minimization measures.

1.0 Introduction

1.1 Purpose

This biological report provides information regarding biological resources associated with two properties being evaluated as potential location sites of the Cayucos Sustainable Water Project in San Luis Obispo County. Results are reported for botanical and wildlife surveys of the project sites conducted in 2015 and 2016. A habitat inventory and results of database and literature searches of special status species reports within an eight 7.5-minute quadrangle search area of the project sites are also included. Special status species that could occur in the project sites or be affected by the proposed project are discussed, and lists of plant and animal species that were identified in the Proposed Project Study Area and Alternative Project Study Area also provided.

We provide agencies and stakeholders with information regarding biological resources in the project sites, and assess potential impacts to biological resources that could occur from the proposed project. An evaluation of the effect of the proposed project on biological resources is included, and mitigation measures are provided.

1.2 Project Location

Two properties in unincorporated areas of San Luis Obispo County are evaluated in this document: Toro Creek site and Willow Creek site. The Proposed Project Study Area is in Toro Creek Valley, the Alternative Project Study Area is in Willow Creek Valley.

The Toro Creek site (Proposed Project Study Area) is located along Toro Creek Road approximately 0.6 mile inland from State Route 1 (Figure 1). The parcel is 769 acres (APN 073-092-003) owned by the Cayucos Sanitary District (CSD). The CSD would create a public lot within this parent parcel for the WRRF. The Proposed Project Study Area is surrounded by agricultural land used for farming and grazing (Figure 2). The City of Cayucos is to the northwest while the City of Morro Bay is to the south. Approximate coordinates for the center of the Proposed Project area are N35° 25’ 11” / W120° 51’ 47” (WGS84) in the Morro Bay North United States Geological Survey (USGS) 7.5’ topographic quad. Elevation ranges from approximately 60 to 100 feet above mean sea level. The zoning is Agriculture. The facility site is outside the Coastal Zone.

The Willow Creek site (Alternative Project Study Area) is located in the Willow Creek Valley approximately 1.0 mile inland from State Route 1, and one watershed north of Toro Creek (Figure 1). The parent parcel is 215 acres owned by the Molnar Family (APN 073-093-011). Under this alternative, the CSD would create a public lot within this parent parcel for the WRRF. The Alternative Project Study Area is surrounded by agricultural land used for farming and grazing (Figure 2). The City of Cayucos is to the west and southwest while the City of Morro Bay is to the south. Whale Rock Reservoir is less than half a mile to the north. Approximate coordinates for the center of the Alternative Project area are N35° 26’ 36” / W120° 52’ 11” in the Morro Bay North United States Geological Survey (USGS) 7.5’ topographic quad. Elevation ranges from 165 to 180 feet above sea level. The zoning is Agriculture. The facility site is outside the Coastal Zone.

The conveyance infrastructure will lie within public rights of way along Toro Creek Road (Proposed Project Study Area), Montecito Drive and Old Creek Road (Alternative Project Study

Area), State Route 1, Ocean Boulevard, Main Street in Morro Bay, Highway 41 in Morro Bay, and any others that are deemed necessary.

1.3 Project Description

The Proposed Project, the Cayucos Sustainable Water Project (CSWP), is construction of a Water Resource Recovery Facility (WRRF) and related conveyance infrastructure to serve the community of Cayucos. The WRRF site will include water treatment process infrastructure as well as supporting facilities including offices, portable water system, laboratory, generator building, fences, solar panels, spill prevention structures, a spill containment basin, landscape screening, and on-site storage for tertiary treated water for agricultural irrigation. The collection and conveyance infrastructure will consist of pipelines conveying influent, treated wastewater, and effluent.

In the Proposed Project Study Area, construction laydown areas for the WRRF will be located on the east side of Toro Creek Road, within the area that will ultimately have solar arrays installed. The arrays will be installed after the staging area is no longer needed. Construction will not impact the existing seasonal drainage which was historically modified into an agricultural ditch that flows across the Study Area. This drainage will not be filled or modified. Equipment used for the construction of the conveyance pipelines along Toro Creek Road and across Toro Creek will be staged on paved road areas or along road shoulders. The pipelines will be hung from a bridge in a pipe conduit. The conduit will be mounted on concrete abutments on each side of the creek outside the top-of bank of the channel. The conduit will be placed with crane equipment; no ground disturbing work will take place within the channel. The pipe will be placed as close to the existing bridge as practical. Tertiary treated water for agricultural use will be stored in a tank located within the WWRF footprint, or piped to an existing adjacent agricultural pond.

In the Alternative Project Study Area, an access road will be constructed from Montecito Road to the WRRF, approximately 230 feet upstream from the existing creek crossing. As part of this road, a clear span bridge will be constructed from top of bank to top of bank over Willow Creek. The pipelines will be hung from the access bridge in a pipe conduit. The construction laydown area for the WRRF will be located on the east side of the proposed access road, approximately 50 feet from Willow Creek. Equipment used for construction of the conveyance pipelines along the access road, Montecito Road, and Old Creek Road will be staged in the construction laydown or on paved road areas or along road shoulders. Tertiary treated water for agricultural use will be stored in an agricultural pond located approximately 1,000 feet east of the access road, on the north side of Willow Creek. The agricultural pond is a separately permitted project and is not a part of this action.

The conveyance infrastructure that will be constructed in Cayucos and Morro Bay will be constructed within Caltrans right of way and in the CSD easement. From Toro Creek Road south to the intersection of Island Street and Main Street in Morro Bay, treated wastewater will be conveyed by existing force main in Caltrans right of way and Main Street, or within the existing previously disturbed trench. From this intersection south to Atascadero Road and the existing Morro Bay WWTP, wastewater will be conveyed via a new force main or modifications to the existing gravity pipeline. From Toro Creek Road north to Chaney Street in Cayucos, a pipeline will be constructed on the east side of State Route 1 within the CSD easement in the right of way. The pipeline will then run along Ocean Boulevard, along Cabrillo Street, and then

to the CSA 10 Water Treatment Facility. The conveyance infrastructure will cross three creeks: Old Creek in Cayucos (via Cabrillo Street), Willow Creek in Cayucos (via State Route 1), and Alva Paul Creek in Morro Bay (via State Route 1). The pipeline will be constructed adjacent to existing road bridges outside top of bank and no ground disturbing activities will occur in any of the creek channels.

1.4 Responsible Parties

TABLE 1. RESPONSIBLE PARTIES. Applicant, biological consultant, and lead agency are provided.

Applicant	Biological Consultant
Cayucos Sanitary District 200 Ash Avenue Cayucos, CA 93430 Contact: Rick Koon	**Althouse and Meade, Inc.** 1602 Spring Street Paso Robles, CA 93446 (805) 237-9626 Contact: Pat Mock, Ph.D.
Lead Agency	**Agent**
Cayucos Sanitary District 200 Ash Avenue Cayucos, CA 93430 Contact: Rick Koon	**Firma** 187 Tank Farm Road Suite 230 San Luis Obispo, CA 93401 Contact: David Foote, ASLA

2.0 Methods

The Proposed Project and Alternative Project Study Areas were surveyed for biological resources on October 9, 2015 and April 15, May 25, and June 14, 2016. Althouse & Meade, Inc. biologists Greg Salas, Matthew Beyers, Jeremy Pohlman, and Kristen Andersen conducted the surveys. Biological surveys were conducted on foot, in order to compile species lists, to search for special status plants and animals, to map habitats, and to photograph the project sites. Both project sites were entirely surveyed.

Each habitat type occurring in the Study Areas was inspected, described, and catalogued (Section 3.3). All plant and animal species observed in the project sites were identified and recorded (Sections 3.5 and 3.6). Intuitively controlled pedestrian transects were conducted throughout the sites, with an emphasis on locating habitat appropriate for special status plants. Transects were utilized to map boundaries of different vegetation types, describe general conditions and dominant species, compile species lists, and evaluate potential habitat for special status species. Identification of botanical resources included field observations and laboratory analysis of collected material (Table B-1). Botanical surveys were conducted from April to June of 2016 according to agency guidelines (USFWS 2000, California Department of Fish and Game [CDFG] 2009, and CNPS 2001). Botanical surveys were appropriately timed to identify all

special status plant species known from the region (refer to Section 3.4, and Table 5) that have potential to occur in the project sites. Botanical nomenclature used in this document follows the Jepson Manual, Second Edition (Baldwin et al. 2012). We also provide Jepson Manual First Edition names in brackets where nomenclature has recently changed.

Wildlife documentation included observations of animal presence, nests, tracks, and other wildlife sign. Observations of wildlife were recorded during field surveys in all areas of the project sites (Table B-2). Birds were identified by sight, using 10-power binoculars, or by vocalizations. Reptiles and amphibians were identified by sight, often using binoculars, and by hand-captures; traps were not used. Mammals recorded in the project sites were identified by sight, tracks, or other sign.

Mapping efforts utilized hand notation on recent land survey and aerial photos. Maps were created using aerial photo interpretation, field notation, and GPS data imported to ArcGIS 10, a Geographic Information System (GIS) software program. Data were overlaid on a 2012 National Agriculture Imagery Program (NAIP) aerial of San Luis Obispo County (USDA 2012). Biological resource constraints were mapped in the field on site. Hand notation on field maps was incorporated into point and polygon layers and overlaid on high resolution aerial photographs.

We conducted a search of the California Natural Diversity Database (CNDDB October 19, 2016 data) and the California Native Plant Society (CNPS) On-line Inventory of Rare and Endangered Plants of California for special status species known to occur in nine USGS 7.5-minute quadrangles surrounding the project sites: Atascadero, Cambria, Cayucos, Cypress Mountain, Morro Bay North, Morro Bay South, San Luis Obispo, Templeton, and York Mountain.

Additional special status species research consisted of reviewing previous biological reports for the area and searching online museum and herbarium specimen records for locality data within San Luis Obispo County. We reviewed online databases of specimen records maintained by the Museum of Vertebrate Zoology at the University of California, Berkeley, the California Academy of Sciences, and the Consortium of California Herbaria. Additional special status species with potential to occur on or near the project sites were added to our special status species list (refer to Table 5 and Table 6).

Special status species lists produced by database and literature searches were cross-referenced with the described habitat types in the project sites to identify all potential special status species that could occur on or near the project sites. Each special status species that could occur on or near the project sites is individually discussed (refer to Sections 3.4.4 and 3.4.6).

TABLE 2. BIOLOGICAL SURVEYS. Biological survey dates, times, weather observations, and biologist(s) are provided.

Survey Date	Start Time	Stop Time	Weather Observations	Biologist(s)
October 9, 2015	1:30 PM	4:20 PM	Sunny, clear; 75-80 °F	G. Salas
April 15, 2016	9:50 AM	3:30 PM	Sunny, clear; 70-75 °F	G. Salas, M. Beyers
May 25, 2016	10:00 AM	1:00 PM	Sunny, clear; 70-75 °F	G. Salas, J. Pohlman
June 14, 2016	08:45 AM	12:10 PM	Sunny, clear; 70-75 °F	G. Salas, K. Andersen

3.0 Results

3.1 Environmental Setting

The Proposed Project Study Area is approximately 0.6 miles east of State Route 1 along Toro Creek Road. The site is bordered on the west by Toro Creek Road. Approximately 300 feet west of Toro Creek Road lies Toro Creek, a perennial stream. The land east of Toro Creek Road is composed of active agricultural land bordered by ruderal vegetation, dominated by non-native annual grasses such as ripgut brome (*Bromus diandrus*) and non-native forbs. The field is surrounded by barbed wire fence. Rock outcroppings on the adjacent hill indicate a serpentine influence in the soils in the site. At the southern tip of the field, on the toe of the slope, there is a small patch of transitional habitat that shows similarities to the uphill native grassland habitat. In this area, more native plant species were observed than the adjacent ruderal vegetation, and club-haired Mariposa lily (*Calochortus clavatus* var. *calavatus*), a species of concern, was detected. Additionally, this agricultural field is bisected by an agricultural ditch which conveys storm flows from an existing natural drainage on the slope above the site in a northwest direction toward Toro Creek. There is no riparian habitat in the agricultural ditch, which likely only holds water during heavy rain events. Because the ditch is a historic modification of a natural drainage, it may be considered potential waters of the U.S. There is a small patch of riparian habitat at the eastern edge of the agricultural field where the natural drainage flows into the ditch. On the west side of Toro Creek Road, the land is split into two separate fields divided by a barbed wire fence. The field to the south shows signs of recent grazing and is made up entirely of annual grassland dominated by non-native grasses. The field to the north is an active agricultural field. Access to the Proposed Project Study Area is from Toro Creek Road, which crosses Toro Creek by bridge southwest of the site.

The Alternative Project Study Area is situated in a valley along Willow Creek, approximately one mile northeast of State Route 1. The site consists of active cropland with a small shed, water tanks, and an operational well on the southern edge. Willow Creek, a seasonal stream, is adjacent to the site on the south side. An unnamed tributary, also seasonal, is adjacent to the site on the west side. The drainages vary in distance from the Study Area, from approximately 10 feet to 50 feet. There was no water in either drainage during any of our site visits. Riparian habitat in Willow Creek is composed of arroyo willow (Salix lasiolepis) and California sycamore (Platanus racemosa) canopy. Riparian habitat in the western drainage is degraded from cattle grazing.

Access to the Alternative Project Study Area is currently off Montecito Road, on a private 12 foot based road over Willow Creek. Two culverts (2 and 6 foot diameters) convey Willow Creek beneath the bridge.

3.2 Soils

The United States Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) data (2007) and Soil Survey of San Luis Obispo County, California, San Luis Obispo Coastal Part (1984) and USDA SSURGO Data (Tabular data version 4, Spatial data version 1, 2008) delineate two soil map units that intersects the Proposed Project WRRF footprint (128, 183), and two soil map units that intersect the Alternative Project WRRF footprint (128, 133) (Figure 3). This soil survey was not meant to be applied at the acre-scale, but does indicate the soil map units in the vicinity of small properties.

Soil map units typically encompass one or two dominant soils that cover more than 50 percent of the mapped area, and one to several soils that occur in small patches not differentiated in mapping at the 1 to 24,000 scale used for Natural Resource Conservation Service (NRCS) soil maps. Due to the procedures followed in making a soil survey, users of soil survey data are cautioned that not all areas included within a soil survey are closely sampled using soil pits and site descriptions, and a specific site may not have been sampled at all. Therefore, care must be taken in drawing conclusions regarding site-specific soil resources based solely on NRCS soil survey work. Digitized spatial data from the San Luis Obispo Coastal Part are shown as an overlay of soil map units on an aerial photo of the region.

Cropley clay, 2 to 9 percent slopes (128) consists of very deep and moderately well-drained soils on alluvial fans and plains, having been formed in alluvium weathered from sedimentary rocks. The permeability is slow, the available water capacity high, and the erosion hazard is low. Included in these map units are small areas of Los Osos loam and Salinas silty clay loam. This soil is in capability units IIs-5 (14), irrigated and IIIs-5 (14), non-irrigated. Cropley soils are Vertisols, characterized by large amounts of clay minerals that shrink and swell with changes in moisture content. During dry months, Vertisol soils shrink, forming deep, wide cracks. During wet months, these soils swell, sealing cracks. These soils are typically sticky when wet. A typical Cropley soil profile has clay textures to depths of about 50 inches, underlain by sandy clay loam or clay loam textures with carbonate ("lime") accumulations along ped faces. Typical profiles often have very dark "mollic" colors (value/chroma of 3/3 or less) to depths of over 50 inches. These very dark colors can mask the appearance of redox features that indicate hydric conditions. The entirety of the Proposed Project Study Area and the majority of the Alternative Project Study Area are underlain by this soil type.

Diablo-Lodo complex, 15 to 50 percent slopes (133) consists of deep and well drained soils. This complex is about 45 percent Diablo soil and 35 percent Lodo soil, with small areas of Cibo clay, Lopez very shaly clay loam, Los Osos loam, Millsap loam, and Obispo clay. Diablo soil is deep, with a clay texture, and is formed in material weathered from sandstone, shale, or mudstone. The surface layer is typically dark gray clay to a depth of approximately 38 inches thick. Permeability is slow, while available water capacity is moderate to very high. Lodo soil is shallow, formed in residual material weathered from sandstone, red rock, or shale. The surface layer is typically dark brown clay loam to a depth of approximately 12 inches. The Diablo-Lodo soil complex is characterized as having high shrink-swell potential, low permeability, and

hardness to pack. It also has severe erosion potential due to the steep slopes. This soil type underlies the northeast corner of the construction laydown area in the Alternative Project Study Area.

Obispo-Rock outcrop complex, 15 to 75 percent slopes (183) is a moderately steep to very steep soil and rock outcrop comples on mountain ridges and side slopes. This complex is about 50 percent Obispo soil and 30 percent rock outcrop. Some areas have as much as 35 percent serpentine gravel and cobbles throughout the profile. The Obispo soil is shallow and well drained. Permeability of the Obispo soil is slow, and the available water capacity is very low or low. Surface runoff is rapid or very rapid and the hazard of water erosion is high or very high. The rock outcrop is exposed, hard serpentine at or near the soil surface. Included in this complex are a few small areas of Diablo clay, which is commonly in swales, and Henneke clay loam. This complex is in capability subclass VIIe (15), non-irrigated. This soil type underlies the eastern edge of the Proposed Project Study Area.

3.3 Habitat Types

Five habitat types are present in the Proposed Project Study Area: agriculture, California annual grassland, developed, ruderal vegetation, and willow riparian. Three habitat types are present in the Alternative Project Study Area: agriculture, developed, and willow riparian. Approximate acreages for each habitat type present during the 2016 surveys are provided (Table 3). Habitat maps provided in Exhibit A indicate the locations of each habitat type (Figures 4 and 5).

TABLE 3. HABITAT TYPES. The approximate acreage is provided for all habitat types occurring in the Proposed Project Study Area and Alternative Project Study Area.

Habitat Type	Proposed Site	Alternative Site
Agriculture	10.82	7.17
California annual grassland	0.22	0.0
Developed	0.39	0.01
Ruderal vegetation	3.40	0.0
Willow Riparian	0.10	0.04

In addition to these five habitat types within the Proposed and Alternative Study Areas, the conveyance infrastructure passes through eucalyptus forest. Descriptions of all six habitat types are below.

3.3.1 Agriculture

Agricultural land in the Proposed Project Study Area currently consists entirely of flat oat/barley hay fields. During the October 2015, the field on the southeast side of Toro Creek Road was being used to grow a variety of crops.

Agricultural land in the Alternative Project Study Area is divided into two separate fields. The larger field on the west side of the property is an oat/barley hay field. The smaller field to the east is being used to grow fava beans.

3.3.2 California annual grassland

California annual grassland in the Proposed Project Study Area consists of a toe slope leading down to the southern end of the agricultural field on the southeast side of the road, as well as non-native grassland habitat next to Toro Creek Road along the conveyance route. On the toe slope, vegetation is dominated by non-native grasses, primarily ripgut brome, but there is a stronger presence of native bunchgrass, Nevada bluegrass (*Poa secunda*), and native forbs, including club-haired Mariposa lily, a CRPR 4.3 species of concern. This habitat is a transitional zone between the ruderal, weedy habitat bordering the agricultural field and the native grassland upslope.

There is no California annual grassland in the Alternative Project Study Area. Along the conveyance pipeline route, all annual grassland habitat is along State Route 1 and dominated by weedy non-native grasses and forbs.

3.3.3 Developed

Developed habitat in the Proposed Project Study Area includes Toro Creek Road, where the conveyance pipelines will be installed between the Water Resource Recovery Facility and State Route 1. Developed habitat in the Alternative Project Study Area includes Montecito Road and Old Creek Road, where pipelines will be installed between the Water Resource Recovery Facility and State Route 1. Along the conveyance pipeline route, developed habitat includes State Route 1, roads, residential interface, and existing water treatment facilities in Cayucos and Morro Bay.

3.3.4 Eucalyptus

A stand of blue gum eucalyptus (*Eucalyptus globulus*) is located in the riparian corridor where Toro Creek Road crosses Toro Creek, along the conveyance pipeline route between the Proposed Project Study Area and State Route 1. The stand is bisected by the road. There is little to no understory vegetation.

3.3.5 Ruderal Vegetation

Ruderal Vegetation in the Proposed Project Study Area consists of weedy, non-native vegetation bordering the agricultural field on the southeast side of Toro Creek Road and along Toro Creek Road itself. This habitat is dominated by non-native grasses and forbs with scattered California coffeeberry (*Frangula californica*) shrubs. There is a man-made ditch that bisects the agricultural field which conveys storm water during large rain events from the historic drainage upslope to Toro Creek, across the road. This drainage displays the same ruderal vegetative characteristics as the bordering habitat.

There is no ruderal vegetation present in the Alternative Project Study Area. Along the conveyance pipeline route, this habitat consists of weedy, non-native roadside vegetation and ornamental species in the residential areas.

3.3.6 Willow Riparian

Willow riparian habitat in the Proposed Project Study Area is found on the far eastern side of the site. At this point, a historic drainage from the slope above the agricultural field enters the field. The canopy is dominated by arroyo willow with a sparse understory. A deep cut from past flows is visible underneath the canopy and dissipates at the point of transition from willow riparian to ruderal vegetation in the agricultural ditch. Conyeyance pipelines will cross Toro Creek via a bridge adjacent to Toro Creek Road. Toro Creek, at the bridge location, is dominated by arroyo willow and Fremont's cottonwood (*Populus fremontii*). The understory is a dense mixture of poison oak, stinging nettle (*Urtica dioica* ssp. *holosericea*), and California mugwort (*Artemisia douglasiana*), along with other shrubs and forbs. The creek is flowing and has a mix of cobblestone and sandy bottom.

The Alternative Project Study Area is bordered on the south and west sides by willow riparian habitat. On the west side, the canopy is dominated by arroyo willow and the understory consists of patchy clusters of coyote bush (*Baccharis pilularis*). This drainage has been grazed by cattle (observed in October 2015), and the sparse understory is evidence of that. The drainage on the southern side has a dense arroyo willow canopy. The southern bank is dominated by a thick poison oak understory, while the northern bank understory is dominated by poison hemlock (*Conium maculatum*) and other non-natives. Neither drainage had water in it at the time of site visits. Conveyance pipelines within the Alternative Project Study Area will cross Willow Creek via a new access road from Montecito Road, and via a bridge adjacent to Old Creek Road.

Along the main conveyance pipeline route, willow riparian habitat is present where the pipeline crosses Old Creek via Cabrillo Street in Cayucos. Old Creek is dominated by a dense arroyo willow canopy and poison oak understory. Water is flowing in the creek along a sandy bottom.

3.4 Environmentally Sensitive Habitat Areas

ESHAs are defined by the California Coastal Act as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments." Under this definition, and based on the designations in the Morro Bay LCP, we consider wetlands and jurisdictional waters, riparian habitat, designated critical habitat, and CNDDB special communities to be ESHAs.

3.4.1 Potential Wetlands and Jurisdictional Waters

The Proposed Project Study Area is bisected by an agricultural ditch that conveys storm water from an existing natural drainage on the slope above the site to the east. The drainage was straightened into a channel that flows northwest across the field, under Toro Creek Road, and in a straight line northwest to Toro Creek. Because this ditch is a historic modification of a natural drainage, it may be considered potential waters of the U.S./State. The conveyance infrastructure will cross four creeks: Toro Creek (via Toro Creek Road), Old Creek in Cayucos (via Cabrillo Street), Willow Creek in Cayucos (via State Route 1), and Alva Paul Creek in Morro Bay (via State Route 1). There are no wetlands in the Proposed or Alternative Project Study Areas or along the conveyance route.

3.4.2 Riparian Habitat

Riparian habitat is present in the Proposed Project Study Area and the Alternative Site Study Area. See Section 3.3 above for further discussion.

3.4.3 Critical Habitat

Three federally protected species have designated critical habitat within the immediate project vicinity. Lower Toro Creek has been designated as critical habitat for tidewater goby (*Eucyclogobius newberryi*). The entirety of Toro Creek is designated as critical habitat for steelhead (*Oncorhynchus mykiss irideus*). The entire Toro Creek watershed north of the first Toro Creek Road crossing has been designated as critical habitat for California red-legged frog (*Rana draytonii*). For further discussion of these species, see Section 3.5.

3.4.4 Potential Sensitive Communities

The CNDDB reports eight sensitive natural communities in the Atascadero, Cambria, Cayucos, Cypress Mountain, Morro Bay North, Morro Bay South, San Luis Obispo, Templeton, and York Mountain quadrangles. None of the sensitive natural communities listed in Table 4 below are found in the Proposed or Alternative Project Study Areas.

TABLE 4. POTENTIAL SENSITIVE NATURAL COMMUNITIES.

	Common Name	Potential Habitat?	Effect of Proposed Activity
1	**Central Dune Scrub**	No. Dune habitat is not found on either project site.	No Effect
2	**Central Maritime Chaparral**	No. Chaparral is not present on either project site.	No Effect
3	**Coastal and Valley Freshwater Marsh**	No. Wetland habitat is not present on either project site.	No Effect
4	**Coastal Brackish Marsh**	No. Wetland habitat is not found on either project site.	No Effect
5	**Monterey Pine Forest**	No. Monterey pine forest is not found on either project site	No Effect
6	**Northern Coastal Salt Marsh**	No. Wetland habitat is not found on either project site.	No Effect
7	**Northern Interior Cypress Forest**	No. Cypress forest is not found on either project site.	No Effect
8	**Valley Oak Woodland**	No. Oak woodland is not found on either project site.	No Effect

3.5 Special Status Species

The CNDDB and the CNPS On-line Inventory of Rare and Endangered Plants of California contain records for 142 special status species within the designated search area. The search area includes the following nine USGS 7.5-minute quadrangles surrounding the project sites: Atascadero, Cambria, Cayucos, Cypress Mountain, Morro Bay North, Morro Bay South, San Luis Obispo, Templeton, York Mountain. Appropriate habitat and soil conditions are present in the Study Areas for 6 special status plants and 17 special status animals (Tables 5 and 6). One special status plant species, club-haired mariposa lily, was detected in the Proposed Project Study Area. Figures 6 and 7 depict the current GIS data for special status species and critical habitat mapped in the vicinity of the Study Areas by the CNDDB and the U.S. Fish and Wildlife Service (USFWS).

3.5.1 Introduction to California Rare Plant Ranks (Formerly CNPS lists)

Plant species are considered rare when their distribution is confined to localized areas, when there is a threat to their habitat, when they are declining in abundance, or are threatened in a portion of their range. The California Rare Plant Rank (CRPR) categories range from species with a low threat (CRPR 4) to species that are presumed extinct (CRPR 1A). The plants of CRPR 1B are rare throughout their range. All but a few species are endemic to California. All of them are judged to be vulnerable under present circumstances, or to have a high potential for becoming vulnerable.

3.5.2 Introduction to CNDDB Definitions

"Special Plants" is a broad term used to refer to all the plant taxa inventoried by the CNDDB, regardless of their legal or protection status (CDFW October 2016). Special Plants include vascular plants and high priority bryophytes (mosses, liverworts, and hornworts).

"Special Animals" (SA) is a general term that refers to all of the animal taxa inventoried by the CNDDB, regardless of their legal or protection status (CDFW October 2016). The Special Animals list is also referred to by the California Department of Fish and Wildlife (CDFW) as the list of “species at risk” or “special status species.” These taxa may be listed or proposed for listing under the California and/or Federal Endangered Species Acts, but they may also be species deemed biologically rare, restricted in range, declining in abundance, or otherwise vulnerable by one or more resource agency.

Each species included on the Special Animals list has a corresponding Global and State Rank (refer to Table 6). This ranking system utilizes a numbered hierarchy from one to five following the Global (G-rank) or State (S-rank) category. The threat level of the organism decreases with an increase in the rank number (e.g., 1=Critically Imperiled, 5=Secure). In some cases where an uncertainty exists in the designation, a question mark (?) is placed after the rank. More information is available at www.natureserve.org.

Animals listed as California Species of Special Concern (CSSC) may or may not be listed under the Federal Endangered Species Act (FESA). They are considered rare or declining in abundance in California. The Special Concern designation is intended to provide regulatory agencies, biologists, land planners, and managers with lists of species that require special consideration during the planning process to avoid continued population declines and potentially costly listing under federal and state endangered species laws. For many species of birds, the

primary emphasis is on the breeding population in California. For some species that do not breed in California, but winter here, emphasis is on wintering range. The CSSC designation thus may include a comment regarding the specific protection provided such as specific nesting or wintering habitats or areas.

Animals listed as "Watch List" (WL) species are either: 1) not on the current Special Concern list, but were on previous lists and they have not been state listed under the California Endangered Species Act (CESA); or 2) were previously state or federally listed and now are on neither list; or 3) are on the list of "Fully Protected" species.

The classification of "Fully Protected" Species was the State's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles, birds and mammals. 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 provision of the Fish and Game Code authorizes the issuance of permits or licenses to take any Fully Protected species.

3.5.3 Potential Special Status Plants

Table 5 lists six special status plant species reported from the region which have the potential to occur within the Proposed or Alternative Project Study Areas. Federal and California State status, global and State rank, and CNPS rank status for each species are given. Typical blooming period, habitat preference, potential habitat evaluation, and whether or not the species was observed are also provided.

TABLE 5. SPECIAL STATUS PLANT LIST. Six special status plants reported from the region are listed for which appropriate or potentially suitable habitat is present. All six of the sensitive species have potential to occur at the Proposed Project Study Area at Toro Creek. No sensitive species have potential to occur at the Alternative Project Study Area at Willow Creek.

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
1.	**Miles' Milk-vetch** *Astragalus didymocarpus* var. *milesianus*	None/None 1B.2	March - June	Clay or serpentine soils in coastal scrub, grassy areas near coast. 0-90 m. Endemic to SLO County.	Yes. Appropriate grassland habitat and serpentine soils are present.	No. Appropriate habitat is not present.	No	No	No Effect
2.	**Round-leaved Filaree** *California macrophylla*	None/None 1B.2	March - May	Clay soils in cismontane woodland, valley and foothill grassland; 15-1200 m. ScV, n SnJV, CW, SCo	Yes. Suitable soils and potentially suitable grassland habitat are present.	No. Appropriate habitat is not present.	No	No	No Effect
3.	**Club-haired Mariposa Lily** *Calochortus clavatus* var. *clavatus*	None/None 4.3	April – June	Generally serpentine; <1300m. s SCoRO, n SCoRI, WTR, SnGb	Yes. Appropriate grassland habitat and serpentine soils are present.	No. Appropriate habitat is not present.	Yes	No	No Effect
4.	**La Panza Mariposa Lily** *Calochortus simulans*	None/None 1B.3	April - May	Grassland, oak woodland & pine forest, on sand, granite, or serpentine; <1100 m. Endemic to SLO County	Yes. Suitable soils and potentially suitable grassland habitat are present.	No. Appropriate habitat is not present.	No	No	No Effect
5.	**Cambria Morning-glory** *Calystegia subacaulis* ssp. *episcopalis*	None/None 4.2	April - May	Dry, open scrub, woodland, or grassland; <500 m. c SCoRO Endemic to SLO County	Yes. Potentially suitable grassland habitat is present.	No. Appropriate habitat is not present.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
6.	**Obispo Indian Paintbrush** *Castilleja densiflora* var. *obispoensis*	None/None 1B.2	April	Coastal grassland, <100 m. Endemic to SLO County.	Yes. Potentially suitable grassland habitat is present.	No. Appropriate habitat is not present.	No	No	No Effect

California Geographic Subregion Abbreviations:

SCo: South Coast
SCoRO: Outer South Coast Ranges
SCoRI: Inner South Coast Ranges
WTR: Western Transverse Ranges
SnJV: San Joaquin Valley
ScV: Sacramento Valley
SLO: San Luis Obispo
SnGb: San Gabriel Mts
CW: Central West

California Rare Plant Ranks:

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 common elsewhere
CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
CRPR 3: Plants about which more information is needed-A review list
CRPR 4: Plants of limited distribution - a watch list

CRPR Threat Ranks:

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

3.5.4 Special Status Plants Discussion

There are 6 special status plant species that could potentially occur at the Proposed Project Study Area based on an analysis of known ecological requirements of these species and the habitat conditions that were observed at the project sites. We discuss each species and describe habitat, range restrictions, known occurrences, and survey results for the project sites.

1. **Miles' milkvetch** (*Astragalus didymocarpus* var. *milesianus*) is a CRPR 1B.2 subspecies known from Ventura, Santa Barbara and San Luis Obispo Counties. It is an annual species that occurs in clay soils in coastal scrub communities, or in grassland habitat near serpentine outcrops. It blooms from March to June. Potentially suitable serpentine soils and grassland habitat are found at the Proposed Project Study Area at the southern tip of the agricultural field to the east of Toro Creek Road. Most of the CNDDB occurrences are from old collections with poor location and habitat information. CNDDB occurrence #9 is a collection by R. F. Hoover from San Bernardo Creek in the Morro Bay North quadrangle in 1969, located 5 miles from the Proposed Project Study Area. A 1936 collection from 1.3 miles northwest of Cayucos (CNDDB #11) represents the northernmost locality record, and closest to the Study Areas, at 2.6 miles from the Alternative Project Study Area and 3.5 miles from the Proposed Project Study Area. Miles' milkvetch was not found in the Proposed or Alternative Project Study Areas during appropriately timed surveys in spring 2016.
2. **Round-leaved erodium** (*California macrophyllum*) is a CRPR 2.1 species known from sporadic occurrences throughout the interior region of California. It is found in clay soils in woodland and grassland habitats. Potentially suitable grassland habitat is found at the Proposed Project Study Area at the southern tip of the agricultural field to the east of Toro Creek Road. In San Luis Obispo County this species is found from Pozo and eastern Santa Margarita through Creston, Atascadero, Templeton, and eastern Paso Robles. The most recent record of this species in the vicinity was a specimen collected in 1952 by Hoover, east of Atascadero (CNDDB #17), over 14 miles from the Study Areas. This species was not found in the Proposed or Alternative Project Study Areas during appropriately timed surveys in spring 2016.
3. **Club-haired mariposa lily (***Calochortus clavatus* ssp. *clavatus*) is a CRPR 4 subspecies that occurs mainly on serpentine soils. It is a perennial bulb-forming plant that grows primarily in the South Coast Range and South Coast regions of South and Central California. One individual was observed in the Proposed Project Study Area within a small patch of grassland habitat at the southern tip of the agricultural field to the east of Toro Creek Road.
4. **La Panza mariposa lily** (*Calochortus simulans*) is a CRPR 1B.3 species endemic to San Luis Obispo County. La Panza mariposa lily is a perennial bulb-forming plant that blooms in large numbers when conditions are right. Potentially suitable serpentine soils and grassland habitat are found at the Proposed Project Study Area at the southern tip of the agricultural field to the east of Toro Creek Road. It occurs in the City of San Luis Obispo and outlying areas southwest to See Canyon on soils derived from serpentinite. In the Santa Margarita, Creston, and Atascadero areas it occurs on various sandy or gravelly substrates in foothill woodlands, grasslands, and in chaparral. In years with above-average rainfall La Panza mariposa lily can be locally common, and in below-average rainfall years it may only bloom in small patches or not at all. The closest

reported occurrence is from approximately 9 miles east of the Study Areas on the western outskirts of Atascadero (CNDDB #58). La Panza mariposa lily was not found in the Proposed or Alternative Project Study Areas during appropriately timed surveys in the spring of 2016.

5. **Cambria morning glory** (*Calystegia subacaulis* ssp. *episcopalis*) is a CRPR 1B.2 subspecies endemic to San Luis Obispo County. It occurs in coastal grassland, coastal prairie, and open scrub and woodland habitats, blooming from April to June. Its rarity status relates to the limited distribution of this subspecies, although it may be found commonly within its range and preferred habitat type. The plant forms a small rosette and a conspicuous cream colored flower. Potentially suitable grassland habitat is found at the Proposed Project Study Area at the southern tip of the agricultural field to the east of Toro Creek Road. The nearest CNDDB occurrence is located on the north side of State Route 1 just east of Morro Bay, approximately 0.6 miles south of the summit of Black Hill (CNDDB #4), approximately 4 miles south of the Proposed Project Study Area and 5.7 miles south of the Alternative Project Study Area. This species was not found in the Proposed or Alternative Project Study Areas during appropriately timed surveys in spring 2016.
6. **Obispo Indian paintbrush** (*Castilleja densiflora* ssp. *obispoensis*) is a CRPR 1B.2 subspecies endemic to San Luis Obispo County. It is an annual wildflower that occurs in coastal grasslands in sandy or clay soils. It occurs primarily in the San Luis Obispo area, but has historically been found along the coast from Morro Bay to San Simeon. Potentially suitable grassland habitat is found at the Proposed Project Project Study Area at the southern tip of the agricultural field to the east of Toro Creek Road. The most recent CNDDB occurrence in the vicinity is a specimen collected in 2011 approximately 5 miles northwest of the Study Areas at Cayucos Point (#66). Populations of Obispo Indian paintbrush were observed in 2005 on the east side of State Route 1 between Toro Creek Road and Ocean Boulevard, in an area adjacent to the proposed conveyance pipeline. This species was not found in the Proposed or Alternative Project Study Areas nor in the historic area of occurrence adjacent to SR 1 during appropriately timed surveys in spring 2016.

3.5.5 Potential Special Status Animals

Table 6 lists 17 special status animal species reported from the region. Federal and California State status, global and State rank, and CDFW listing status for each species are given. Typical nesting or breeding period, habitat preference, potential habitat on site, and whether or not the species was observed in the Study Areas are also provided.

TABLE 6. SPECIAL STATUS ANIMAL LIST. There are 17 special status animals that could potentially occur within the Proposed Project Study Area at Toro Creek or the Alternative Project Study Area at Willow Creek based on review of preferred habitat types. Species marked with an asterisk (*) are special status species added to the list from our knowledge of the area.

	Common and Scientific Names	Fed/State Status CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential To Occur at Proposed Site?	Potential to Occur at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
1.	**Cooper's Hawk*** *Accipiter cooperii*	None/None SA (nesting)	March 15 - August 15	Oak woodland, riparian, open fields. Nests in dense trees, esp. coast live oak.	Yes. Foraging habitat is present, but appropriate nesting sites are not present.	Yes. Foraging habitat is present, but appropriate nesting sites are not present.	No	Yes (not nesting)	No Effect
2.	**Tricolored Blackbird** *Agelaius tricolor*	None/None SSC	March 15 - August 15	Requires open water, protected nesting substrate, & foraging area with insect prey near nesting colony.	Low. Open water lacking at site. Moderately suitable nesting habitat present adjacent to Study Area.	No. No open water or potential nesting habitat near Study Area.	No	No	No Effect
3.	**Pallid Bat** *Antrozous pallidus*	None/None SSC	Spring - Summer	Rock crevices, caves, tree hollows, mines, old buildings, and bridges.	Yes. Appropriate roosting habitat is present under bridges.	Yes. Appropriate roosting habitat is present under bridges.	No	No	No Effect
4.	**Lark Sparrow*** *Chondestes grammacus*	None/None SA (nesting)	March 15 - August 15	Nests on the ground in grassland habitats with adjacent oaks.	Yes. Foraging habitat is present, but appropriate nesting sites are not present.	Yes. Foraging habitat is present, but appropriate nesting sites are not present.	No	Yes	No Effect
5.	**Monarch Butterfly** *Danaus plexippus*	None/none SA (aggregations)	September - March (aggregations)	Roosts located in wind-protected tree groves with nectar and water nearby.	Yes. Known aggregation sites in eucalyptus grove on Toro Creek Road, and small eucalyptus stand across SR1 from the pipeline route.	Unlikely. Appropriate habitat is not present in the Study Area, but a known aggregation site is located across SR1 from the pipeline route.	Yes, springtime migrant	No	No Effect

	Common and Scientific Names	Fed/State Status CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential To Occur at Proposed Site?	Potential to Occur at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
6.	**White-tailed Kite** *Elanus leucurus*	None/None FP	March 15 - August 15	Nests in dense tree canopy near open foraging areas	Yes. Appropriate habitat is present in and around the Study Area.	Yes. Appropriate habitat is present in and around the Alternative Project.	No	No	No Effect
7.	**Western Pond Turtle** *Emys marmorata*	None/None SSC	April - August	Permanent or semi-permanent streams, ponds, lakes.	Yes. Pool habitat is present in Toro Creek along pipeline route.	Yes. Low quality pool habitat is present in creeks along pipeline route.	No	No	No Effect
8.	**Tidewater Goby** *Eucyclogobius newberryi*	FE/None SSC	n/a	Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	Yes. Toro Creek is adjacent to the Proposed Project Study Area and provides adequate aquatic habitat.	Yes. Willow Creek is adjacent to the Alternative Project Study Area and provides adequate aquatic habitat.	No	No	No Effect
9.	**Loggerhead Shrike** *Lanius ludovicianus*	None/None SSC	March 15 - August 15	Open areas with appropriate perches, near shrubby vegetation for nesting.	Yes. Appropriate habitat is present.	Yes. Appropriate habitat is present.	No	Yes	No Effect
10.	**Steelhead - South-central California Coast DPS** *Oncorhynchus mykiss irideus*	FT/None	February - April	Fed listing refers to runs in coastal basins from Pajaro River south to, but not including, the Santa Maria River.	Yes. Appropriate aquatic habitat is present adjacent to Study Area.	Yes. Appropriate aquatic habitat is present adjacent to Study Area.	Yes	No	No Effect
11.	**Nuttall's Woodpecker*** *Picoides nuttallii*	None/None SA (nesting)	March 15 - August 15	Nests in standing snag or hollow tree in oak woodland and oak forest habitats.	Yes. Foraging habitat is present, but appropriate nesting sites are not present.	Yes. Foraging habitat is present, but appropriate nesting sites are not present.	Yes (not nesting)	Yes (not nesting)	No Effect

	Common and Scientific Names	Fed/State Status CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential To Occur at Proposed Site?	Potential to Occur at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
12.	**Purple Martin** *Progne subis*	None/None SSC	March 15 - August 15	In San Luis Obispo County prefers nesting in Sycamore trees along riparian corridors.	Low. Low quality sycamore habitat is present adjacent to the Study Area.	No. No sycamore habitat is present in or around the Study Area.	No	No	No Effect
13.	**Foothill Yellow-legged Frog** *Rana boylii*	None/None SSC	March - September	Partly shaded, shallow streams and riffles with rocky substrate. Min. 15 weeks for larval development.	Low. Appropriate aquatic habitat is present adjacent to the Study Area.	Low. Appropriate aquatic habitat is present adjacent to the Study Area.	No	No	No Effect
14.	**California Red-legged Frog** *Rana draytonii*	FT/None SSC	January - September	Lowlands and foothills in or near sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks for larval development.	Yes. Appropriate aquatic habitat is present adjacent to the Study Area.	Yes. Appropriate aquatic habitat is present adjacent to the Study Area.	No	No	No Effect
15.	**Yellow Warbler*** *Setophaga petechia brewsteri*	None/None SSC	March 15 - August 15	Nests in riparian plant associations, including willows, cottonwoods, etc.	Yes. Appropriate nesting habitat and suitable stop-over habitat are present adjacent to the Study Area.	Yes. Low quality nesting habitat is present. Suitable migration stop-over habitat is present.	No	No	No Effect
16.	**Coast Range Newt** *Taricha torosa torosa*	None/None SSC	December - May	Slow moving streams, ponds, and lakes with surrounding evergreen/oak forests along coast.	Yes. Appropriate aquatic habitat is present adjacent to the Study Area.	Yes. Appropriate aquatic habitat is present adjacent to the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential To Occur at Proposed Site?	Potential to Occur at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
17.	**Two-striped Garter Snake** *Thamnophis hammondii*	None/None SSC	Spring	Coastal California from Salinas to Baja, sea level to 7000', aquatic, in or near permanent water, streams with rocky beds and riparian growth	Yes. Appropriate riparian habitat is present adjacent to the Study Area.	Yes. Appropriate riparian habitat is present adjacent to the Study Area.	No	No	No Effect

Habitat characteristics are from the Jepson Manual and the CDNNB.
*not listed in the CNDDB or CNPS for the search area, but possibly for the location.

Abbreviations:

FE: Federally Endangered	CE: California Endangered	SA: CDFW Special Animal
FT: Federally Threatened	CT: California Threatened	SSC: CDFW Species of Special Concern
PE: Proposed Federally Endangered	Cand. CE: Candidate for California Endangered	FP: CDFW Fully-Protected
PT: Proposed Federally Threatened	Cand. CT: Candidate for California Threatened	WL: CDFW Watch List

3.5.6 Special Status Animals Discussion

There are 17 special status animal species that could potentially occur in the Study Areas based on an analysis of known ecological requirements of these species and the habitat conditions that were observed in the project sites. We discuss each species and describe habitat, range restrictions, known occurrences, and survey results for the Proposed and Alternative Project Study Areas.

1. **Cooper's hawk** (*Accipiter cooperii*) is a Special Animal that occurs regularly in San Luis Obispo County during the winter months and during spring and fall migration. It is generally regarded as a regular but uncommon nesting species in San Luis Obispo County. Cooper's hawks frequent oak and riparian woodland habitats, and increasingly urban areas, where they prey primarily upon small birds. There is no appropriate oak tree nesting habitat present in the Proposed or Alternative Project Study Area, and there are no reports in the CNDDB of Cooper's Hawks nesting in the area. However, in both Study Areas there is foraging habitat and ample prey in the form of small birds. A Cooper's hawk was observed at the Alternative Project Study Area.
2. **Tricolored blackbird** (*Agelaius tricolor*) is a California Species of Special Concern (nesting) that requires open water, protected nesting substrate, and foraging area with insect prey near nesting colony. There are no reports of nesting tricolored blackbirds within 10 miles of the Proposed or Alternative Project Study Areas, and no tricolored blackbirds were observed at either project site during site visits. While moderately appropriate nesting substrate is present in riparian areas adjacent to the Proposed Project Study Area, open water is lacking. It is unlikely that any tricolored-blackbirds are nesting in the area, and therefore unlikely to be impacted. Nesting bird surveys conducted prior to construction would minimize any impacts to the species.
3. **Pallid bat** *(Antrozous pallidus)* is a California Special Concern species. This is a large, long-eared bat occurring throughout the state from deserts to moist forests. Pallid bat is primarily a crevice roosting species and selects roosts where they can retreat from view. They frequently occur in oak woodlands where they roost in tree cavities, and have been observed roosting under bridges. These roosts are generally day or night roosts for one or a few bats. Attics may be used as roosts and during hot days they may emerge from crevices and roost on open rafters. Communal wintering or maternity colonies are more common in rock crevices and caves. This species has been recorded at 22 localities in San Luis Obispo County (Pierson 2002). CNDDB occurrence #286 is from a house in the Morro Bay area, south of the existing Morro Bay wastewater treatment plant. The exact location of the house is unknown, and the occurrence is mapped as a 1-mile radius circle. The occurrence extends to within approximately 200' of the conveyance pipeline location at the intersection of State Route 1 and Atascadero Road. Pallid bat could occur in tree cavities and under bridges along the pipeline route. Bat surveys conducted prior to construction would avoid impacts to roosting bats.
4. **Lark sparrow** (*Chondestes grammacus*) is a Special Animal tracked by the CNDDB due to declining state-wide populations. It remains a fairly common breeder in San Luis Obispo County, nesting on the ground in grassland habitats with adjacent oaks. There is no appropriate nesting habitat present at the Proposed or Alternative Project Study Areas,

but lark sparrows may move into the Study Areas to forage from adjacent grassland areas. Multiple lark sparrows were observed at the Proposed Project Study Area, perched at the edge of the Study Area on the fence along Toro Creek Road. Nesting bird surveys conducted prior to construction would minimize any impacts to the species.

5. **Monarch butterfly** (*Danaus plexippus*) is a Special Animal (CDFW 2015) that winters in the San Luis Obispo area at specific aggregation sites that provide amelioration from winter weather. The eucalyptus grove on Toro Creek Road, along the conveyance pipeline south of the Proposed Project Study Area, is a known aggregation site (CNDDB #118) for monarch butterflies. In November 2016, 110 monarchs were observed at the roost trees (on the south side of Toro Creek Road), while in 2015, 1700 monarchs were observed, and 3200 were documented in 2013. Butterflies are likely present at the site, in varying numbers, from year to year and could be impacted by pipeline construction along Toro Creek Road. A small stand of eucalyptus trees, on the southwest corner of the intersection of State Route 1 and San Jacinto Street, is another known aggregation site (CNDDB #254). This site is across State Route 1 from the conveyance pipeline. Monarchs were last noted at the site in 1991, and this site is no longer suitable for monarchs due to the gradual removal of eucalyptus trees. A survey of the Toro Creek Road grove prior to construction and avoidance of roost trees would minimize impacts to monarchs.

6. **White-tailed kite** (*Elanus leucurus*) is a Fully Protected species that nests primarily in evergreen trees, especially coast live oaks, near meadows, marshes, or grasslands. There are no reports of nesting white-tailed kites within five miles of the Proposed or Alternative Project Study Areas. Appropriate foraging habitat is present adjacent to the pipeline route north of Toro Creek Road and along Old Creek Road. Moderate to poor quality nesting habitat is present in cypress and eucalyptus trees in the vicinity. Kites were not observed in the Study Areas during our surveys in 2015 and 2016. It is unlikely that kites are present in the Proposed or Alternative Project Study Areas, but any work on our near trees in these areas could have impacts on nesting birds. Nesting bird surveys conducted prior to construction would minimize any impacts to the species.

7. **Western pond turtle** (*Emys marmorata*) is a California Species of Special Concern that inhabits ponds and slow moving streams with adequate pools. Pond turtles will move up seasonal streams during the winter months, and can over-summer in underground burrows during dry years when ponds are empty. Moderate to poor habitat is present in Toro Creek, adjacent to the Proposed Project Study Area. The last record from Toro Creek was in 1988 (CNDDB #1049), and no turtles were observed during surveys in 2015 and 2016. Willow Creek, from State Route 1 to approximately 3.5 miles upstream, is the closest known occurrence (CNDDB #1046) to the Alternative Project Study Area. The last record for Willow Creek was in 1989, and no turtles were observed there during our surveys. Another known occurrence (CNDDB #1020) is along Old Creek in the Whale Rock Reservoir spillway and a downstream portion of the creek, less than one mile west of the Alternative Project Study Area and approximately 2 miles northwest of the Proposed Project Study Area. Any work on creek crossings over Toro Creek or Willow Creek could impact turtles or potential habitat. Preconstruction surveys and relocation efforts would minimize impacts to the species. Protective measures and Best

Management Practices (BMPs) would be implemented to avoid affects turtles and their habitat.

8. **Tidewater goby** (*Eucyclogobius newberryi*) is a federally listed endangered species. It lives in brackish water estuaries, lagoons, and the lower reaches of streams before they enter the sea. Tidewater gobies are found in along the California coast from the Smith River near the Oregon border to Agua Hedionda Lagoon in San Diego County. Tidewater gobies have been observed in the lower sections of Old Creek (CNDDB #50), Willow Creek (CNDDB #118), and Toro Creek (CNDDB #95) along the proposed conveyance pipeline routes. The lower section of Toro Creek from the first road crossing south to the ocean is designated as critical habitat for tidewater gobies. No gobies were observed during our surveys, but more intensive surveys would need to be conducted to confirm their presence/absence. Any work on creek crossings in these locations could impact gobies or their habitat. Protective measures and BMPs would be implemented to avoid affects to tidewater goby and designated critical habitat.
9. **Loggerhead shrike** (*Lanius ludovicianus*) is a California Species of Special Concern and resident in arid regions of San Luis Obispo County and elsewhere in California. It requires open areas with appropriate perches for hunting, and shrubby trees or bushes for nesting. Appropriate nesting habitat is present adjacent to the Proposed and Alternative Project Study Areas. There are no reports of nesting loggerhead shrikes within five miles of the Proposed or Alternative Project Study Areas, but one individual was observed on Montecito Drive immediately south of the Alternative Project Study Area. No nesting birds were observed during our 2016 surveys. Any work on or near trees in these habitats could have impacts on nesting birds. Nesting bird surveys, conducted prior to construction would minimize any impacts to the species.
10. **Steelhead - South/Central California Coast ESU** (*Oncorhynchus mykiss irideus*) is a federally listed threatened species known to occur in coastal streams and rivers in San Luis Obispo County, including Toro Creek. Both Toro Creek and Old Creek are designated as critical habitat for steelhead. Steelhead fry were observed in Toro Creek adjacent to the Proposed Project Study Area in our 2015 surveys. The Proposed Project would involve constructing pipeline across Toro Creek. Conveyance pipelines would cross Old Creek. Impacts to steelhead and designated critical habitat will be avoided by minimization measures and BMPs incorporated into the Project design.
11. **Nuttall's woodpecker (***Picoides nuttallii*) is a Special Animal tracked by the CDFW due to statewide reduction in preferred oak woodland habitats. Nuttall's woodpeckers remain fairly common residents in oak woodland habitats throughout San Luis Obispo County. There are no oak trees at the Proposed or Alternative Project Study Areas, and no nesting habitat for Nuttall's woodpecker, but they may venture into the Study Areas from adjacent areas to forage. Nuttall's woodpeckers were observed at both the Proposed and Alternative Project Study Areas, in trees in the riparian areas. Nesting bird surveys conducted prior to construction would minimize any impacts to the species.
12. **Purple martin** (*Progne subis*) is a California Special Concern species with a limited range and low abundance in California. Purple martins nest colonially in abandoned woodpecker and natural cavities in trees, especially Western sycamore (*Platanus racemosa*), and typically return to the same site year after year. There are no reported

nesting localities in the Morro Bay region. No purple martins were observed at either Study Areas during site surveys. Appropriate nesting habitat is present in sycamore trees adjacent to the Proposed Project Study Area. Any work on or near trees in this habitat could have impacts on nesting birds. Nesting bird surveys conducted prior to construction would minimize any impacts to the species.

13. **Foothill yellow-legged frog** (*Rana boylii*) is a California species of Special Concern which ranges from western Oregon south to Los Angeles County in California and east to the foothills of the Sierra Nevada but is absent in the Central Valley. Breeding occurs March through May in streams that have slowed after the winter runoff. The Yellow-legged frog prefers gravelly or sandy streams with sunny banks and open woodlands nearby in locations up to 6,000 feet. Toro Creek, adjacent to the Proposed Project Study Area, provides appropriate habitat for the species. No individuals were observed during our surveys, and there is no record of the species in the Morro Bay region. It is unlikely the species inhabits Toro Creek, but nighttime spotlight surveys would determine presence/absence. Protective measures and BMPs would be implemented to avoid affects to frogs and their habitat.

14. **California red-legged frog** *(Rana draytonii)* is a federally listed threatened species known from sporadic occurrences documented throughout San Luis Obispo County. It generally requires seasonal pools or streams that hold water until late summer for successful breeding. Bullfrogs and introduced fish are detrimental to its breeding success, and have severely reduced many populations in larger watercourses and perennial ponds. The riparian drainages adjacent to the Proposed and Alternative Project Study Areas provide appropriate habitat for the species and should be considered potential habitat. Red-legged frogs have been found in both Toro Creek and Willow Creek. Both the Proposed and Alternative Project Study Areas occur almost entirely in designated critical habitat. No individuals were observed during our surveys. Nighttime spotlight surveys would determine presence/absence. Impacts on frogs and designated critical habitat will be avoided by minimization measures and BMPs incorporated into the Project design.

15. **Yellow warbler** (*Setophaga petechia brewsteri*) is a California Species of Special Concern with a restricted breeding range in Central and Southern California. The status of this subspecies of yellow warbler is described by the CNDDB as "restricted range, rare." They frequent riparian habitats, nesting in sycamores, cottonwoods, willows, and other riparian trees. There are no breeding records in the CNDDB for yellow warbler in San Luis Obispo County; however, yellow warbler is a regular spring and fall migrant that will breed in the County. The riparian habitat in Toro Creek and Willow Creek is low quality nesting habitat, but suitable for foraging. Yellow warblers are highly unlikely to breed at the Proposed or Alternative Project Study Areas, but may stop and forage during migration. Yellow warblers were not detected in either Study Area. Nesting bird surveys conducted prior to construction would minimize any impacts to the species.

16. **Coast Range newt** (*Taricha torosa torosa*) is a California Special Concern (CSC) subspecies that prefers cool, clean coastal streams with access to adjacent upland over-summering habitat. Its range extends from Mendocino County to San Diego County. Toro Creek and Willow Creek, adjacent to both Study Areas, provide appropriate habitat

for the species. No individuals were observed during our surveys, and there is no record of the species in the Morro Bay region. It is unlikely the species inhabits the creeks. Protective measures and BMPs would be implemented to avoid affects to aquatic habitat.

17. **Two-striped garter snake** (*Thamnophis hammondii*) is a California Species of Special Concern. They are highly aquatic, and prefer habitat adjacent to permanent or semi-permanent bodies of water. Moderately appropriate habitat is present in perennial creeks adjacent to both the Proposed and Alternative Project Study Areas. There are no records for this species in the Morro Bay area, and no individuals were observed during our surveys. It is unlikely this species inhabits the creeks. Protective measures and BMPs would be implemented to avoid affects to aquatic habitat.

3.5.7 Special Status Species Not Expected to Occur

Table A-1 in Appendix A lists 95 special status plant species reported from the region which have no potential to occur within the Proposed or Alternative Project Study Areas and for which the project would have no effect. Table A-2 in Appendix A lists 24 special status animal species reported from the region which have no potential to occur within the Proposed or Alternative Project Study Areas and for which the project would have no effect.

3.6 Botanical Survey Results

Botanical surveys conducted in April, May, and June 2016 identified 102 species, subspecies, and varieties of vascular plant taxa within the Proposed and Alternative Project Study Areas. These consist of 40 native species and 62 introduced species. One special status plant species was identified in the Proposed Project Study Area, club-haired mariposa lily, a CRPR 4.3 subspecies (see Section 3.4). A complete list of all plant species found during botanical surveys can be found in Appendix B (Table B-1).

3.7 Wildlife Survey Results

Wildlife species detected at the Proposed and Alternative Project Study Areas include one fish, one amphibian, one reptile, 27 birds, and three mammals. Twenty-six species were observed in the Proposed Project Study Area at Toro Creek and 22 species were observed in the Alternative Project Study Area at Willow Creek. Three special status species were detected in the Proposed Project Study Area: Nuttall's woodpecker, monarch butterfly (aggregation site), and steelhead, a federally listed threatened species. Four special status species were detected in the Alternative Project Study Area: Cooper's hawk, lark sparrow, loggerhead shrike, and Nuttall's woodpecker (see Section 3.4). A complete list of all wildlife species seen during site visits, as well as wildlife species that have potential to occur at the Proposed and Alternative Project Study Areas, is found in Appendix B (Table B-2).

4.0 Regulatory Framework

4.1 Federal Regulations

Endangered Species Act – The federal Endangered Species Act (ESA) provides the legal framework for the listing and protection of species (and their habitats) identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered a 'take' under the ESA, which defines "take" as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Take of a federally listed threatened or endangered species is prohibited without a special permit. The Endangered Species Act allows for take of a threatened or endangered species incidental to development activities once a habitat conservation plan has been prepared to the satisfaction of the USFWS and an incidental take permit has been issued. The Endangered Species Act also allows for the take of threatened or endangered species after consultation has deemed that development activities will not jeopardize the continued existence of the species. The federal Endangered Species Act also provides for a Section 7 Consultation when a federal permit is required, such as a Clean Water Act Section 404 permit.

"Critical Habitat" is a term within the federal Endangered Species Act designed to guide actions by federal agencies (as opposed to state, local, or other agency actions) and defined as "an area occupied by a species listed as threatened or endangered within which are found physical or geographical features essential to the conservation of the species, or an area not currently occupied by the species which is itself essential to the conservation of the species."

Section 404 Clean Water Act Regulations – The Clean Water Act provides wetland regulation at the federal level and is administered by the USACE. The purpose of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of all waters of the U.S. Permitting is required for filling waters of the U.S. (including wetlands). Permits may be issued on an individual basis, or may be covered under approved nationwide permits.

Migratory Bird Treaty Act – All migratory bird species that are native to the U.S. or its territories are protected under the federal Migratory Bird Treaty Act, as amended under the Migratory Bird Treaty Reform Act of 2004. The Migratory Bird Treaty Act is generally protective of migratory birds.

4.2 State Regulations

California Environmental Quality Act (CEQA) – CEQA requires that biological resources be considered when assessing the environmental impacts that are the result of proposed actions. The lead agencies determine the scope of what is considered an impact and what constitutes an "adverse effect" on a biological resource.

California Fish and Game Code – The California Fish and Game Code (FGC) regulates the taking or possession of birds, mammals, fish, amphibians, and reptiles, as well as natural resources such as wetlands and waters of the state. It includes the California Endangered Species Act, Lake and Streambed Alteration Program, California Native Plant Protection Act, Natural Community Conservation Planning Act, and California Oak Woodland Conservation Act.

Section 86 of the FGC regulates "take" of fish and wildlife. "Take" is defined "take" as to "hunt, pursue, catch, capture, or kill, or to attempt to hunt, pursue, catch, capture, or kill.

The California Endangered Species Act (CESA), similar to the federal Endangered Species Act, contains a process for listing of species and regulating potential impacts to listed species. State threatened and endangered species include both plants and wildlife, but do not include invertebrates. The designation "rare species" applies only to California native plants. State threatened and endangered plant species are regulated largely under the Native Plant Preservation Act in conjunction with the California Endangered Species Act. State threatened and endangered animal species are legally protected against "take." The CESA authorizes CDFW to enter into a memorandum of agreement for take of listed species to issue an incidental take permit for a state-listed threatened and endangered species only if specific criteria are met. Section 2080 of the CESA prohibits the take of species listed as threatened or endangered pursuant to the Act. Section 2081 allows CDFW to authorize take prohibited under Section 2080 provided that: 1) the taking is incidental to an otherwise lawful activity; 2) the taking will be minimized and fully mitigated; 3) the applicant ensures adequate funding for minimization and mitigation; and 4) the authorization will not jeopardize the continued existence of the listed species.

Section 3503 of the FGC states that it is "unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto," and "unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird" unless authorized.

Section 1602 of the FGC requires any person, state, or local governmental agency to provide advance written notification to CDFW prior to initiating any activity that would substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. The state definition of "lakes, rivers, and streams" includes all rivers or streams that flow at least periodically or permanently through a well-defined bed or channel with banks that support fish or other aquatic life, and watercourses with surface or subsurface flows that support or have supported riparian vegetation.

Section 1900-1913 of the FGC contains the regulations of the Native Plant Protection Act of 1977. The intent of this act is to help conserve and protect rare and endangered plants in the state.

Section 2800 of the FGC establishes the Natural Community Conservation Planning (NCCP) Act of 1991. The NCCP Act is designed to conserve natural communities at the ecosystem scale while accommodating compatible land use. CDFW is the primary state agency that implements the NCCP. The NCCP plan provides for the comprehensive management and conservation of multiple wildlife species. It identifies and provides for regional protection of natural wildlife diversity while allowing for compatible and appropriate development and growth.

Regional Water Quality Control Board – The RWQCB not only regulates impacts to water quality in federal waters of the U.S. under Section 401 of the Clean Water Act, but they also regulate any isolated waters that are impacted under the state Porter Cologne Act utilizing a

Waste Discharge Requirement. Discharge of fill material into waters of the State not subject to the jurisdiction of the USACE pursuant to Section 401 of the Clean Water Act may require authorization pursuant to the Porter Cologne Act through application for waste discharge requirements or through waiver of waste discharge requirements.

California Coastal Act – The California Coastal Act of 1976 established the Coastal Zone and appointed the California Coastal Commission to provide long-term protection of California's coastal resources. In partnership with coastal cities and counties, the Coastal Commission plans and regulates the use of land and water in the coastal zone. Development within the Coastal Zone typically requires a Coastal Development Permit from either the Coastal Commission or the local agency overseeing a Local Coastal Program.

4.3 Local Regulations

City of Morro Bay Local Coastal Plan – The City of Morro Bay established a Local Coastal Plan (LCP) to guide development in the coastal zone. The LCP conforms with California Coastal Act goals and policies, while reflecting the unique characteristics of the local Morro Bay coastal community. The Morro Bay LCP governs decisions which determine the conservation and use of coastal resources. The LCP designates local Environmentally Sensitive Habitat Areas (ESHA) as defined by the California Coastal Act. It specifies ESHA policies that are meant to avoid and minimize disturbances to ESHAs defined in the LCP.

Estero Area Plan – The Estero Area Plan was developed with input primarily from the community of Cayucos and is a part of the Land Use Element and Local Coastal Plan of the San Luis Obispo County General Plan. It is meant to guide development and protect resources within the plan area. The plan identifies Sensitive Resource Areas (SRA), which are also designated as Environmentally Sensitive Habitat Areas.

5.0 Constraints Analysis

Construction of the project at the Proposed or Alternative Project Study Areas could affect common and special status species, nesting birds, and a variety of habitats. Disturbance would occur primarily in agricultural land and ruderal vegetation, but a small area of willow riparian would be impacted at the Alternative Project Study Area.

5.1 Potential Habitat Impacts

At the Proposed Project Study Area, only agricultural land and ruderal vegetation would be permanently impacted. At the Alternative Project Study Area, agricultural land and riparian habitat would be permanently impacted. See Table 7 for acreages of temporary and permanent impacts. See Figures 8 and 9 for mapped impacts within the Proposed Project and Alternative Project Study Areas.

TABLE 7. POTENTIAL HABITAT IMPACTS. Approximate areas of impact in acres are provided for temporarily disturbed area and permanently removed areas at the Proposed Project Study Area at Toro Creek, the Alternative Project Study Area at Willow Creek, and the conveyance pipeline infrastructure.

Habitat Type	Proposed Project Study Area	Alternative Project Study Area	
	Permanent Impact (Acres)	Temporary Impact (Acres)	Permanent Impact (Acres)
Agriculture	7.40	0.94	6.23
Ruderal vegetation	0.57	-	-
Willow riparian	0.0	0.0	0.04
Total	7.97	0.94	6.27

5.1.1 Agriculture

At the Proposed Project Study Area, approximately 7.4 acres of agricultural land would be permanently impacted. At the Alternative Project Study Area, approximately 6.23 acres would be permanently impacted and an additional 0.94 acres would be temporarily impacted. Agricultural land in the Study Areas is poor quality habitat to most plants and wildlife, however some organisms may utilize it. It may provide foraging opportunities for songbirds, small mammals and raptors including special status birds such as Cooper's hawk. However, regular tilling of the agricultural land in the Study Areas makes it an inconsistent resource for flora and fauna. Agriculture is not a sensitive habitat type and does not require mitigation.

5.1.2 California annual grassland

There will be no areas of annual grassland impacted. In the Proposed Project Study Area, there is a small area of transitional grassland habitat at the southern end of the field on the east side of Toro Creek Road which is more dominated by native species. This area provides potential habitat for special status plant species. This small transitional area would not be impacted by the project.

5.1.3 Developed

Road bridges over Toro Creek, Willow Creek, Old Creek, and Alva Paul Creek may provide roosting habitat for bats, including pallid bats, or habitat for nesting birds. This is not a sensitive habitat type and does not require mitigation, but a survey for roosting bats and nesting birds is recommended before construction begins at road bridges (refer to Sections 6.3 and 6.4).

5.1.4 Eucalyptus

Eucalyptus forest may be temporarily impacted at the Proposed Project Study Area when the conveyance pipeline is constructed across Toro Creek at the Toro Creek Road bridge. Impacts that may occur would be to eucalyptus canopy only, if trimming is required. No trees would be removed. The trees provide habitat and potential habitat for a variety of common and sensitive

bird species including raptors. The eucalyptus trees are also a known winter aggregation location for monarch butterflies. Eucalyptus forest is not a sensitive habitat and does not require mitigation, but a survey for nesting birds is recommended prior to any tree trimming (refer to Sections 6.2 and 6.3). Monarch aggregations have been observed in the eucalyptus trees on the south side of Toro Creek Road, approximately 80 to 100 feet from the road. Surveys for monarch butterflies are recommended prior to tree trimming to avoid impacts to clustering monarchs (refer to Section 6.3).

5.1.5 Ruderal vegetation

In the Proposed Project Study Area, approximately 0.57 acres of ruderal vegetation may be permanently impacted. The ruderal habitat is highly disturbed and dominated by non-native species, but may provide foraging habitat for songbirds and small mammals. This is not a sensitive habitat type and does not require mitigation. Pre-construction surveys for nesting birds are recommended if the vegetation is tall enough or dense enough to provide nesting habitat (see Sections 6.2 and 6.3).

5.1.6 Willow riparian

At the Proposed Project Study Area where conveyance structures will be installed adjacent to the Toro Creek Road bridge, there may be minimal trimming of riparian canopy to allow access for construction equipment. These vegetation trimming impacts would not be significant. Further impacts to riparian habitat due to construction related activities will be avoided by implementing construction setbacks and other Best Management Practices (BMPs) (see Section 6.2).

At the Alternative Project Study Area, approximately 0.04 acres of riparian habitat may be permanently impacted where the access road bridge is installed across Willow Creek from Montecito Road. Non-significant impacts to riparian canopy may occur where landscape screening would be installed along the west edge of the WRRF footprint and solar arrays.

5.2 Potential Impacts to Environmentally Sensitive Areas

5.2.1 Impacts to Potential Wetlands and Jurisdictional Waters

There will be no impacts to wetlands, as there are no wetlands located within either Study Area. At the Proposed Project Study Area, impacts to jurisdictional waters may occur due to sedimentation caused by earthmoving, or spills during construction or operation of the WRRF or conveyance infrastructure. Mitigation measures are recommended to avoid significant impacts to jurisdictional waters (see Section 6.2).

At the Alternative Project Study Area, there may be impacts to Willow Creek and the unnamed drainage to the west. The WRRF footprint is less than 100 feet from Willow Creek and the unnamed drainage. The construction laydown area is less than 100 feet from Willow Creek. Impacts to water quality may occur from sedimentation due to ground disturbance activities, or spills from refueling or maintaining equipment.

5.2.2 Impacts to Riparian Habitat

Minimal canopy trimming of riparian habitat along Toro Creek Road at the Proposed Project Study Area would constitute a non-significant impact. There may be impacts to riparian habitat within the Alternative Project Study Area. See Section 5.1 for further discussion. Mitigation measures are recommended to avoid significant impacts to riparian habitat (see Section 6.2).

5.2.3 Impacts to Critical Habitat

Critical habitat for California red-legged frog, tidewater goby, and steelhead is found in and around the Proposed Project Study Area. Sedimentation due to earthmoving, or spills during construction or operation of the WRRF or conveyance infrastructure may impact creeks and upland areas designated as critical habitat. Mitigation measures are recommended to avoid significant impacts to critical habitat (see Section 6.2).

5.2.4 Impacts to Sensitive Communities

There are no CNDDB designated sensitive communities found within the Proposed Project site. There will be no significant impacts to sensitive communities.

5.3 Potential Impacts to Nesting Birds

Vegetation removal and construction activities associated with the proposed Project could result in adverse impacts to nesting birds if conducted during nesting season (March 15 through August 15). Take of nesting birds is prohibited by federal and state code. The potential for vegetation removal to adversely affect nesting birds can be reduced (see Sections 6.3 and 6.4).

5.4 Potential Impacts to Special Status Species

5.4.1 Special Status Plants

Habitat and soil types are suitable for six special status plant species within the Proposed Project Study Area. Appropriately timed floristic surveys were conducted to determine if any of these species occur in either Study Area. One special status plant species was observed in the Proposed Project Study Area, club-haired mariposa lily. One individual of this plant was growing at the southern end of the Study Area, outside the limits of grading. No other special status plant species were observed in either Study Area nor along the conveyance pipeline route, including Obispo Indian paintbrush, which historically occurred on the east side of SR 1 north of the intersection with Toro Creek Road. See Section 6.4.

5.4.2 Special Status Birds

Several special status bird species were observed foraging in the Proposed and Alternative Project Study Areas, including Cooper's hawk, lark sparrow, loggerhead shrike, and Nuttall's woodpecker. Foraging habitat exists within the Study Areas for several other special status bird species including tricolored blackbird, white-tailed kite, purple martin, and yellow warbler. There is potential nesting habitat for special status species in riparian and grassland areas adjacent to the Study Areas. Preconstruction surveys are recommended prior to activities that

affect trees, shrubs, and grassland areas during the nesting season, March 1 to August 31 (refer to Sections 6.3 and 6.4).

5.4.3 Special Status Reptiles and Amphibians

Potential habitat occurs in or immediately adjacent to the Proposed and Alternative Project Study Areas for five special status reptiles and amphibians: western pond turtle, foothill yellow-legged frog, California red-legged frog, coast range newt, and two-striped garter snake. The majority of the Proposed and Alternative Study Areas occur in designated critical habitat for California red-legged frog. Toro Creek at the Proposed Project Study Area is a perennially flowing creek, and all five special status species could potentially occur there. Willow Creek flows seasonally, and is less likely to provide habitat for special status species. Construction equipment and vehicle traffic, sedimentation due to earthmoving, or spills during construction or operation of the WRRF may impact special status reptiles and amphibians. Recommendations are provided to avoid or minimize impacts to these special status species (Section 6.4).

5.4.4 Special Status Fish

Two federally listed fish species may occur within the vicinity of the Proposed and Alternative Project Study Areas: tidewater goby and steelhead. Both species have been observed in Toro Creek, and gobies have been observed in Willow Creek. Steelhead fry were observed in Toro Creek during an October 2015 site visit to the Proposed Project Study Area. Steelhead and tidewater goby habitat may be affected by sedimentation due to earthmoving, or spills during construction or operation of the WRRF. Impacts to special status fish may be mitigated (refer to Section 6.4).

5.4.5 Bats

Pallid bat is a special status bat species that may occur along the conveyance pipeline route under road bridges across Toro Creek, Old Creek, Willow Creek, or Alva Paul Creek. Maternal bat colonies are protected by the California Department of Fish and Wildlife but are not expected to occur in the Proposed or Alternative Project Study Areas or along the conveyance pipeline route. Preconstruction surveys are recommended prior to activities that affect bridges in order to avoid impacts to pallid bats (Section 6.4).

5.4.6 Monarch Butterflies

There is a monarch butterfly overwintering site in a grove of eucalyptus along Toro Creek Road, adjacent to the bridge over Toro Creek, south of the Proposed Project Study Area. Monarch butterflies have been observed clustering in eucalyptus trees located in the grove approximately 80 to 100 feet south of Toro Creek Road. In November 2016, 110 monarchs were observed at the roost trees, while 1700 monarchs were observed in 2015, 0 were documented in 2014, and 3200 were documented in 2013. Butterflies are likely to be present at the site, in varying numbers, from year to year. If eucalyptus branches are trimmed for pipeline construction along Toro Creek Road, monarch butterfly aggregations may be impacted. Winter surveys for monarch butterflies are recommended (refer to Section 6.4).

6.0 Recommendations and Mitigations

Riparian habitat and special status species are present in the Proposed and Alternative Project Study Areas. This section provides mitigation recommendations appropriate to potential project impacts identified in Section 5.0. Where potentially adverse impacts to biological resources could occur during construction of the Project or due to the presence of the Project, these biological resource (BR) mitigation measures are designed to reduce the adverse effect to less than significant.

6.1 Habitats

6.1.1 California annual grassland

The portion of transitional annual grassland dominated by native species located at the southern end of the Proposed Project Study Area is potential habitat for sensitive plant species, but is outside the grading limits and will not be impacted by the project (see Section 6.4). The areas of grassland impacted by the proposed project are dominated by non-native annual grasses. This is not a sensitive habitat type and does not require mitigation.

6.1.2 Eucalyptus

Loss of eucalyptus habitat usually does not require mitigation except where it affects special status species or important wildlife populations. Nesting birds and monarch butterflies may utilize eucalyptus trees located along Toro Creek road south of the proposed Project Study Area. Impacts to these species from tree trimming can be avoided (refer to Sections 6.2 and 6.3).

6.1.3 Willow riparian

Approximately 0.04 acres of willow riparian habitat may be impacted within the Alternative Project Study Area where the access road is proposed over Willow Creek. These impacts would require mitigation. Non-significant impacts may occur to riparian canopy where conveyance pipeline is installed adjacent to the Toro Creek Road bridge over Toro Creek and in the Alternative Project Study Area where landscape screening would be installed along the west edge of the WRRF footprint and solar arrays. These impacts are less than significant and do not need to be mitigated. Nesting birds may be utilizing the riparian habitat, but impacts can be avoided (refer to Section 6.3 and 6.4). In the Proposed Project Study Area, impacts to riparian habitat will be avoided by implementing construction setbacks and BMPs (see Section 6.2).

6.2 Environmentally Sensitive Habitat Areas

The Proposed Project site contains riparian habitat, jurisdictional waters in the form of a natural drainage modified into an agricultural ditch, and critical habitat for tidewater goby, steelhead, and California red-legged frog in and surrounding the creeks within the Proposed Project Study Area. These areas are considered ESHAs. Potential impacts to the agricultural ditch and Toro Creek, Old Creek, Willow Creek, or Alva Paul Creek could occur during construction and implementation of the Project. Ground-disturbing construction activities, vegetation removal, and grading could result in substantial amounts of sediment washing into creeks, or changes in

stormwater runoff quality or volume. Spills that occur during construction or during operation of the Project could result in pollutants washing into creeks.

BR-1. Appropriate best management practices (BMPs) shall be utilized within the Study Area to prevent excess sediment from entering Toro Creek or Willow Creek. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared and implemented by qualified practitioners. Long-term measures identified in the SWPPP will include revegetation, basins, bioswales and infiltration areas, as applicable. A spill containment basin will capture, slow, and percolate increased post-construction stormwater runoff on the site. The basin will also function as a stormwater treatment facility to remove sediments and other deleterious materials from the stormwater before it flows into a creek.

BR-2. Check valves will be present on all influent and treated water pipelines near creeks to reduce the risk of spill into the creek in the event of a pipeline break.

BR-3. During construction of the Water Resource Recovery Facility in the Proposed Project Study Area there will be a 300 ft setback from the top of bank of Toro Creek. This will minimize impacts due to sedimentation.

BR-4. During construction of the conveyance pipelines across all creeks, no ground disturbing activities will take place within the riparian corridor or within the top of bank channel.

BR-5. The edge of riparian vegetation will be shown on construction plans and boundaries of the work area will be shown on construction plans. Limits of grading will be clearly delineated in the field prior to initiation of construction activities.

BR-6. All hazardous materials required to operate and maintain equipment will be properly used in accordance with manufacturer's specifications.

BR-7. The contractor will follow an approved spill prevention plan, including procedures to ensure that all equipment is properly maintained and free of leaks and all necessary repairs incorporate proper spill containment.

BR-8. Hazardous materials will be properly stored and managed in secured areas located outside riparian corridors.

BR-9. Mobile equipment will be staged, repaired, and maintained 300 ft from top of bank of Toro Creek, or on existing paved road surfaces. Fueling of equipment will be conducted in pre-designated areas at least 300 ft from the top of bank drainages, or on existing paved road surfaces. Spill containment materials will be placed around the equipment before refueling. Standing equipment will be outfitted with drip pans and hydrocarbon absorbent pads.

BR-10. Avoid ground disturbing activities during the wet season of the year.

6.3 Nesting Birds

Migratory non-game native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918 (50 C.F.R. Section 10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take (as defined therein) of all native birds and their active nests, including raptors and other migratory non-game birds (as listed under the Federal MBTA).

BR-11. Within one week of ground disturbance or vegetation removal activities, if work occurs between March 1 and August 31, nesting bird surveys shall be conducted. If surveys do not locate nesting birds, construction activities may be conducted. If nesting birds are located, no construction activities shall occur within 100 feet of nests until chicks are fledged. If nesting birds are located, no construction activities shall occur within 100 feet of nests (or other setback distance determined by a qualified ornithologist) until chicks are fledged. Construction activities shall observe a 300-foot buffer for active raptor nests.

6.4 Special Status Species

6.4.1 Special Status Plants

BR-12. Potential habitat for special status plants occurs in a small patch of annual grassland at the southern end of the Proposed Project Study Area. This habitat is outside the limits of grading. Limits of grading will be clearly delineated in the field prior to initiation of construction activities to avoid impacting this area.

6.4.2 Special Status Birds

In order to reduce the potential for disturbance of special status birds that may be present during nesting season, the applicant shall implement BR-12 one week prior to ground disturbance or vegetation removal activities (refer to Section 6.3). If nests of sensitive birds are identified in the work area, the following additional mitigation measures shall be implemented:

BR-13. Occupied nests of special status bird species shall be mapped using GPS or survey equipment. Work shall not be allowed within a 100 foot buffer (or other setback distance determined by a qualified ornithologist) while the nest is in use. Construction activities shall observe a 300-foot buffer for active raptor nests.

BR-14. Occupied nests of special status bird species that are within 100 feet of project work areas shall be monitored at least every two weeks through the nesting season to document nest success and check for project compliance with buffer zones. Once nests are deemed inactive and/or chicks have fledged and are no longer dependent on the nest, work may commence in these areas.

6.4.3 Pallid bat

Roosting pallid bats may be present under road bridges along the conveyance pipeline route.

BR-15. Prior to installation of conveyance structures adjacent to road bridges over Toro Creek, Willow Creek, Old Creek, or Alva Paul Creek, a qualified biologist shall conduct a survey of the bridge to determine if roosting bats are present. If possible, the survey shall be conducted during the non-breeding season (November through March). If a colony of bats is found roosting in any structure, further surveys shall be conducted sufficient to determine the species present and the type of roost (day, night, maternity, etc.) If the bats are not part of an active maternity colony, passive exclusion measures may be implemented with approval from CDFW. November is the best time of the year

to exclude bats from a roost because it is after the breeding season and before winter hibernation (not all species hibernate).

6.4.4 Monarch butterflies

Monarch butterflies overwinter in eucalyptus trees adjacent to Toro Creek Road in the Toro Creek drainage.

BR-16. To avoid impacts to overwintering monarchs, tree trimming/removal and construction activities that affect eucalyptus trees near or within the overwintering grove shall not be conducted during the overwintering season from October 1 through March 31. If construction activities must be conducted during this period, overwintering monarch surveys shall take place within one week of habitat disturbance. If surveys do not locate clustering monarchs, construction activities may be conducted. If clustering monarchs are located, no construction activities shall occur within 100 feet of the edge of the overwintering grove.

6.4.5 Special Status Fish

The federally listed endangered tidewater goby and the federally listed threated steelhead may occur in Toro Creek adjacent to and downstream from the Proposed Project Study Area. Tidewater goby have been documented in lower Willow Creek downstream of the Alternative Project Study Area. Steelhead fry were observed in Toro Creek during October 2015. Impacts to special status fish species may be avoided by implementing BR-1 through BR-10 listed above.

6.4.6 California red-legged frog

Potential habitat for California red-legged frogs is present in the Proposed and Alternative Study Areas although this species was not observed during site surveys. The Study Areas lie within designated critical habitat for this species. In addition to implementing BR-1 through BR-10 above, we offer the following measures to protect California red-legged frogs.

BR-17. Qualified biologists will brief all project personnel prior to participating in construction activities. At a minimum, the briefing will include a description of the project components and techniques, a description of the listed species occurring in the project area, and the general and specific measures and restrictions to protect the species during implementation of the project.

BR-18. Pre-construction surveys for CRLF will be conducted prior to ground disturbance.

BR-19. Prior to start of construction activities, install exclusionary silt fencing to adequately exclude CRLF from the Project area during active construction. Exclusion fences will be checked daily by a biological monitor. The biological monitor(s) shall be qualified to move any CRLF to the nearest suitable habitat away from the Project area as needed.

BR-20. USFWS-approved biological monitor(s) shall document compliance with all best practices and environmental compliance items for the Project. Prior to the start of construction activities in the riparian zone each day, monitor(s) will survey the work areas for CRLF, look under parked vehicles and heavy equipment frequently (especially every morning before work starts). The biological monitor(s) shall be qualified to move

wildlife, including CRLF, from the Project areas to the nearest suitable habitat outside of the Project area as needed.

6.4.7 Other Special Status Reptiles and Amphibians

Potentially suitable habitat is present in Toro Creek adjacent to the Proposed Project Study Area for four other sensitive reptile and amphibian species: western pond turtle, foothill yellow-legged frog, coast range newt, and two-striped garter snake. In addition to implementing BR-1 through BR-10 above, we offer the following measures to protect sensitive reptile and amphibian species.

BR-21. A pre-construction survey would be conducted within 48 hours prior to starting work in or within 50 feet of habitats likely to support sensitive reptiles and amphibians such as seasonal drainages and riparian. The survey would be conducted by a qualified biologist approved to relocate sensitive species should they occur. If sensitive reptile or amphibian species are located during the pre-construction survey, a biologist would monitor ground-breaking work conducted within 50 feet of habitat.

BR-22. Qualified biologists will brief all project personnel prior to participating in construction activities. At a minimum, the briefing will include a description of the project components and techniques, a description of the listed species occurring in the project area, and the general and specific measures and restrictions to protect the species during implementation of the project.

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Exhibit A - Figures

- Figure 1. USGS Topographic Map
- Figure 2. Aerial Photograph
- Figure 3. USDA Soils Map
- Figure 4. Proposed Project Study Area Habitat Map
- Figure 5. Alternative Project Study Area Habitat Map
- Figure 6. Plants - CNDDB & USFWS Critical Habitat Map
- Figure 7. Animals - CNDDB & USFWS Critical Habitat Map
- Figure 8. Proposed Project Study Area Impact Map
- Figure 9. Alternative Project Study Area Impact Map

Figure 1. USGS Topographic Map

0 2,500 5,000 10,000 Feet

Study Area ★ Project Location

Cayucos Sanitary District

Map Updated: December 09, 2016, 02:37 PM

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Figure 2. Aerial

Cayucos Sanitary District

2014 San Luis Obispo County
NAIP Aerial Photography
Map Updated: December 09, 2016, 01:28 PM

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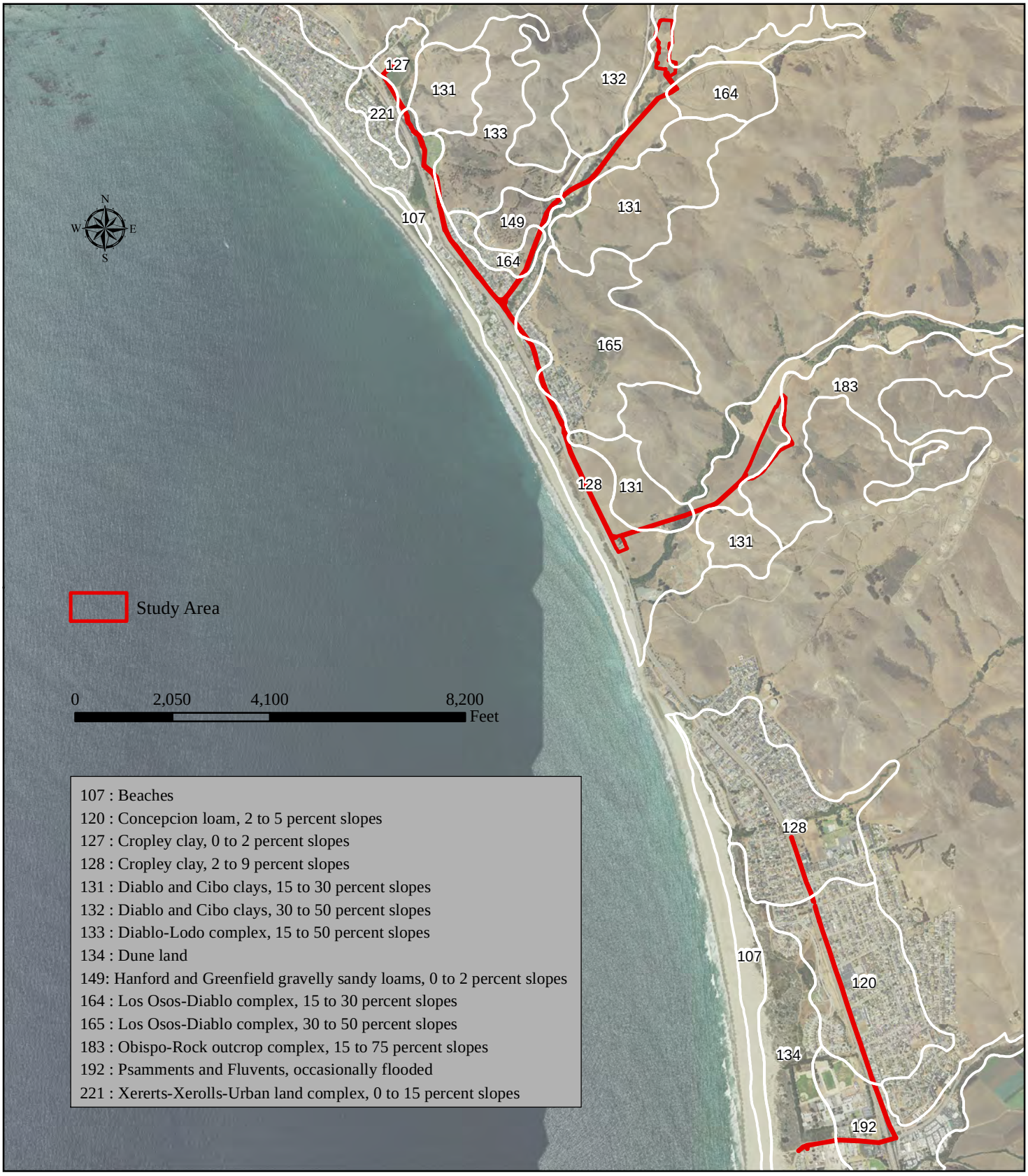
Figure 3. USDA Soils Map



Cayucos Sanitary District

2014 San Luis Obispo County
NAIP Aerial Photography
Map Updated: December 09, 2016, 02:36 PM

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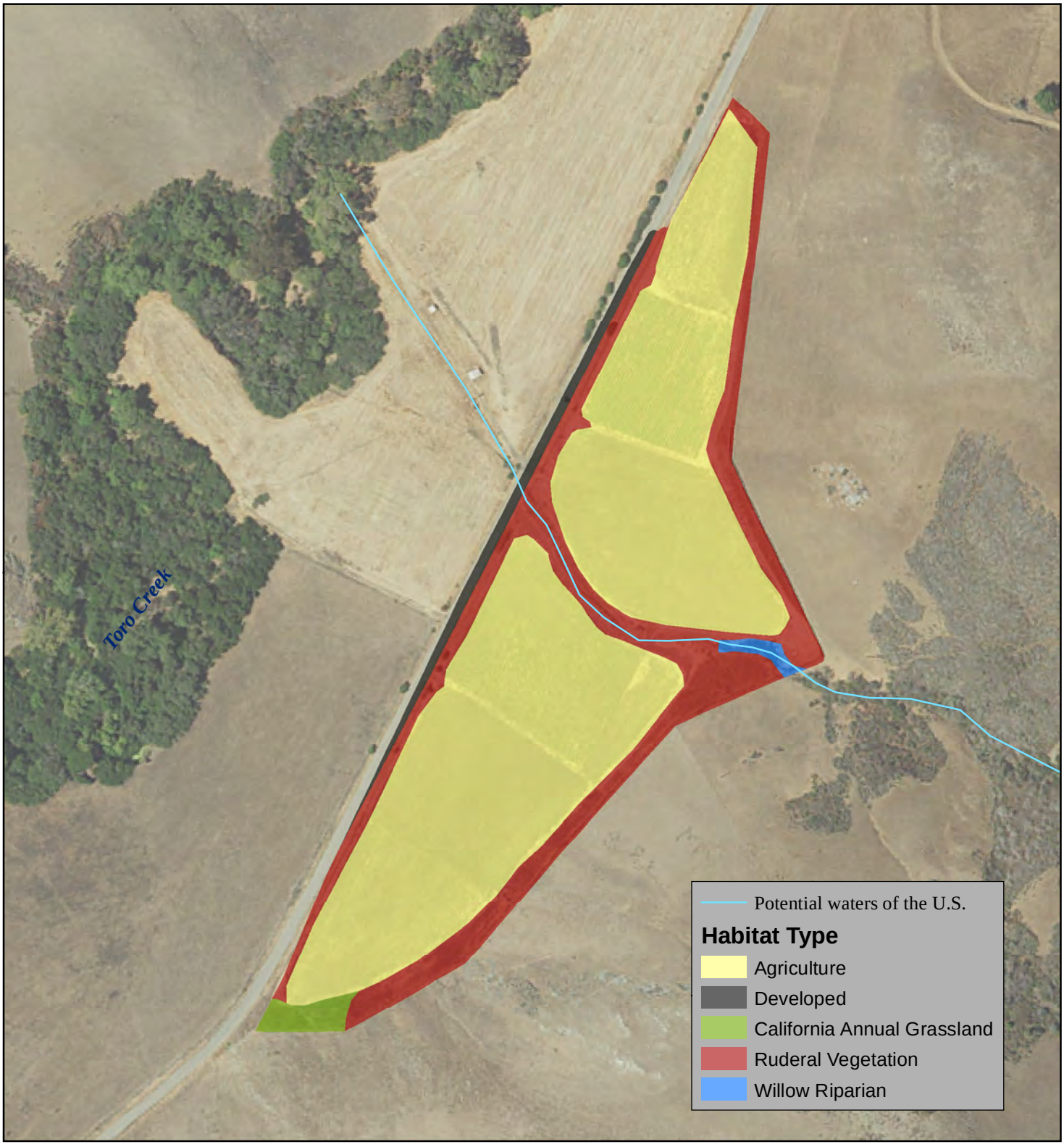
Figure 4. Proposed Project Study Area Habitat Map



Cayucos Sanitary District

2014 San Luis Obispo County
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Map Updated: December 15, 2016, 10:19 AM

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Figure 5. Alternative Project Study Area Habitat Map

0 100 200 300 400 500 1,000 Feet

N W E S

Cayucos Sanitary District

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Map Updated: December 15, 2016, 10:21 AM

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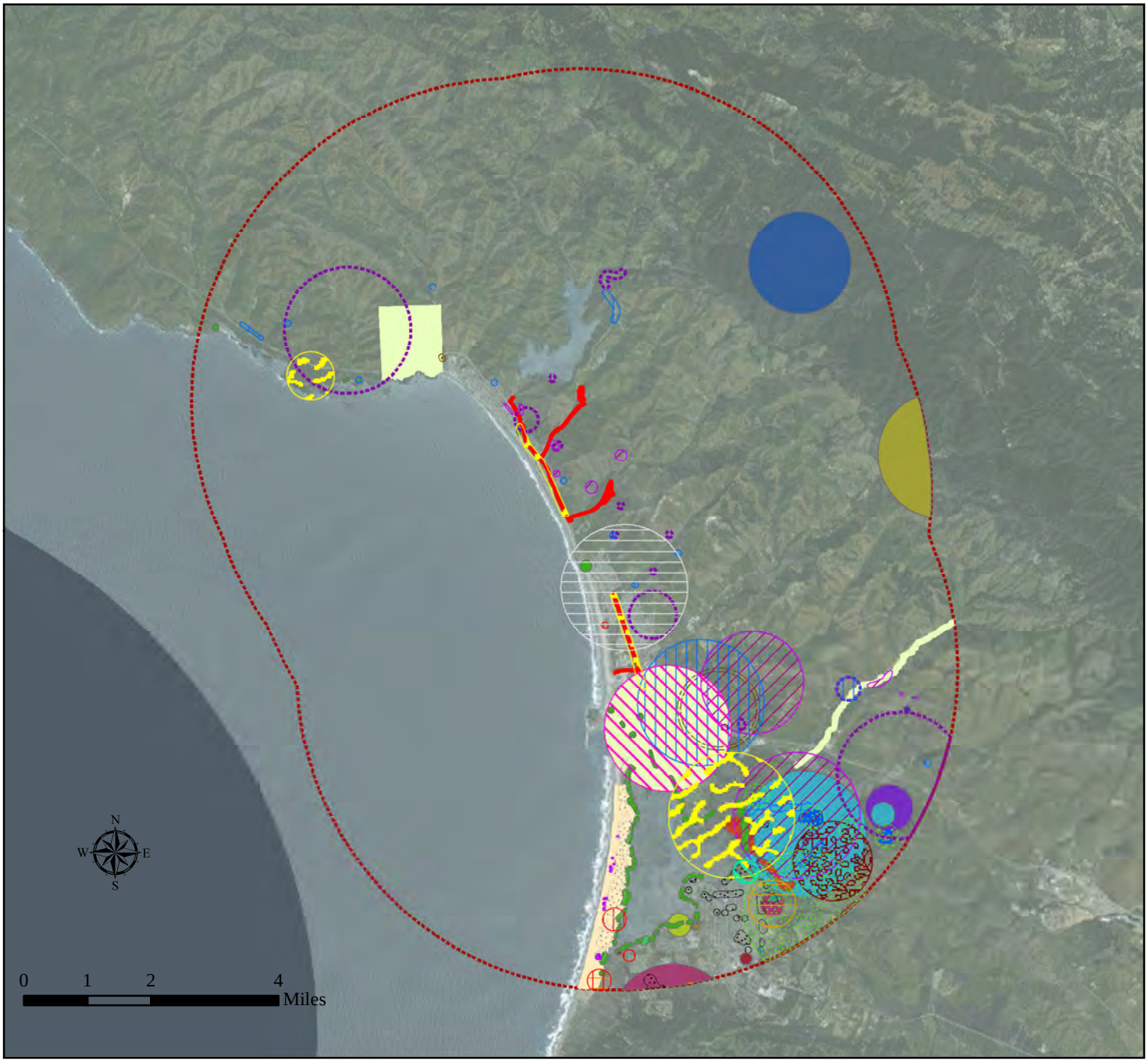
Figure 6. Plants - CNDDB & FWS Critical Habitat Map



- 5 mile Buffer
- Study Area

CNDDB

- Arroyo de la Cruz manzanita
- Beach spectaclepod
- Betty's dudleya
- Blochman's dudleya
- Blochman's leafy daisy
- California seablite
- Cambria morning-glory
- Central Dune Scrub
- Central Maritime Chaparral
- Coast woolly-heads
- Coastal Brackish Marsh
- Coastal goosefoot
- Coulter's goldfields
- Dacite manzanita
- Eastwood's larkspur
- Jones' layia
- Marsh sandwort
- Miles' milk-vetch
- Morro manzanita
- Mouse-gray dudleya
- Oso manzanita
- Pecho manzanita
- Popcorn lichen
- Salt marsh bird's-beak
- San Benito fritillary
- San Joaquin spearscale
- San Luis Obispo fountain thistle
- San Luis Obispo owl's-clover
- Southern curly-leaved monardella
- Splitting yarn lichen
- Twisted horsehair lichen
- Umbrella larkspur

Cayucos Sanitary District

Service Layer Credits: Copyright: © 2013 National Geographic Society
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Map Updated: December 09, 2016, 11:08 AM

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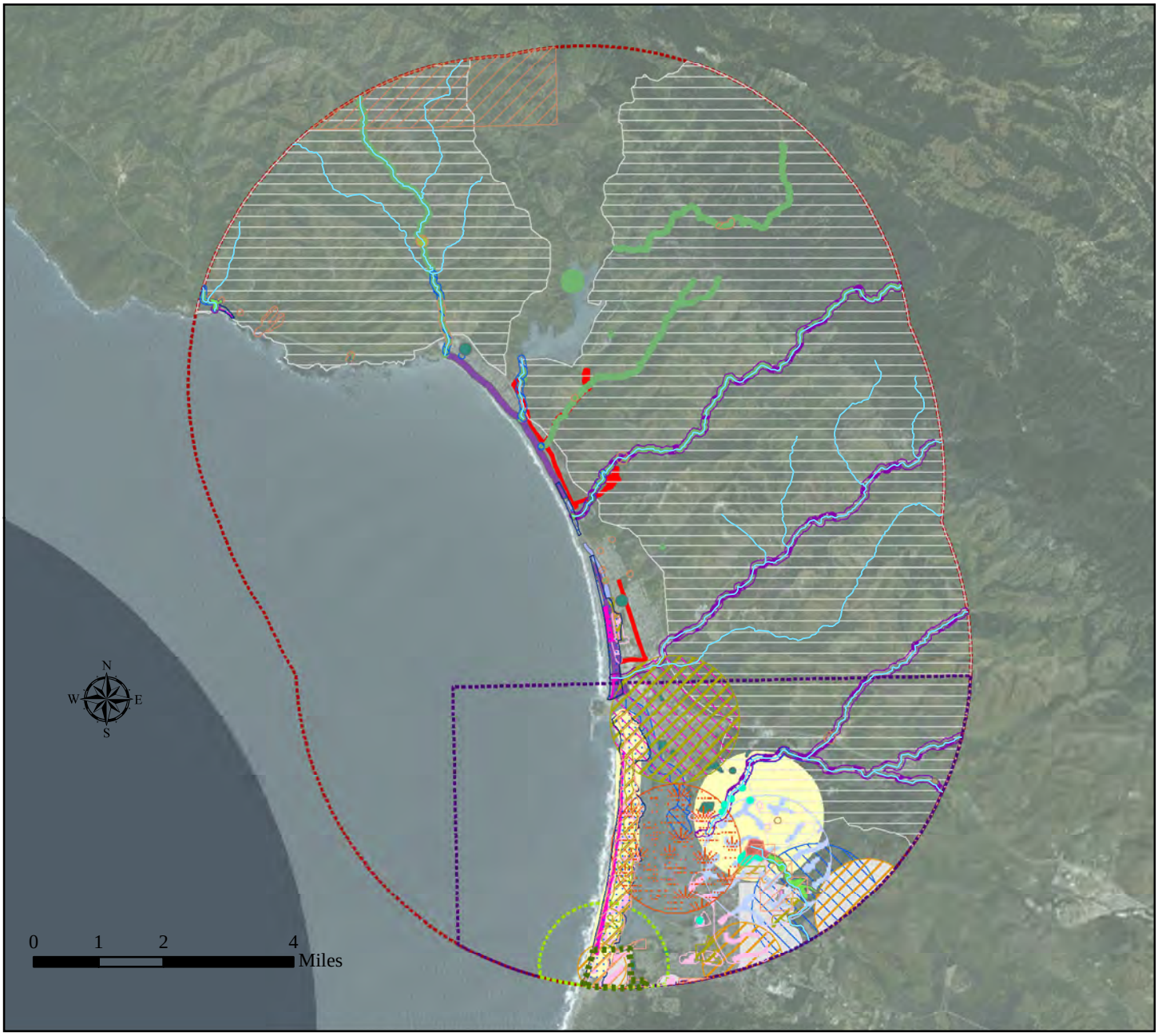
Figure 7. Animals - CNDDB & FWS Critical Habitat Map



- 5 mile Buffer
- Study Area

FWS Critical Habitat

- Steelhead
- Morro Bay kangaroo rat
- Morro shoulderband (Banded dune) snail
- Tidewater goby
- Western snowy plover
- California red-legged frog

CNDDB Animals

- California black rail
- California clapper rail
- California red-legged frog
- Cooper's hawk
- Morro Bay blue butterfly
- Morro Bay kangaroo rat
- Morro shoulderband (banded dune) snail
- Townsend's big-eared bat
- big free-tailed bat
- black legless lizard
- coast horned lizard
- globose dune beetle
- California brackishwater snail
- monarch - California overwintering population
- pallid bat
- sandy beach tiger beetle
- silvery legless lizard
- steelhead - south-central California coast DPS
- steelhead - southern California DPS
- tidewater goby
- western pond turtle
- western snowy plover
- obscure bumble bee

Cayucos Sanitary District

Service Layer Credits: Copyright: © 2013 National Geographic Society
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Map Updated: December 09, 2016, 11:11 AM

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Figure 8. Proposed Project Study Area Impact Map

0 100 200 300 400 500 1,000 Feet

N W E S

Cayucos Sanitary District

2014 San Luis Obispo County
NAIP Aerial Photography
Map Updated: December 15, 2016, 10:22 AM

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Figure 9. Alternative Project Study Area Impact Map

Cayucos Sanitary District

2014 San Luis Obispo County
NAIP Aerial Photography
Map Updated: December 15, 2016, 10:23 AM

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Exhibit B – Photographs

Photo 1. Wildlfowers in grassland at Proposed Project Study Area, Toro Creek, April 15, 2016.

Photo 2. Agricultural farmland and riparian habitat at Proposed Project Study Area, Toro Creek, facing northwest, April 15, 2016.

Photo 3. Willows at Proposed Project Study Area, Toro Creek, facing northwest, April 15, 2016.

Photo 4. Water flow in riparian habitat at Proposed Project Study Area, Toro Creek, facing north (upstream), April 15, 2016.

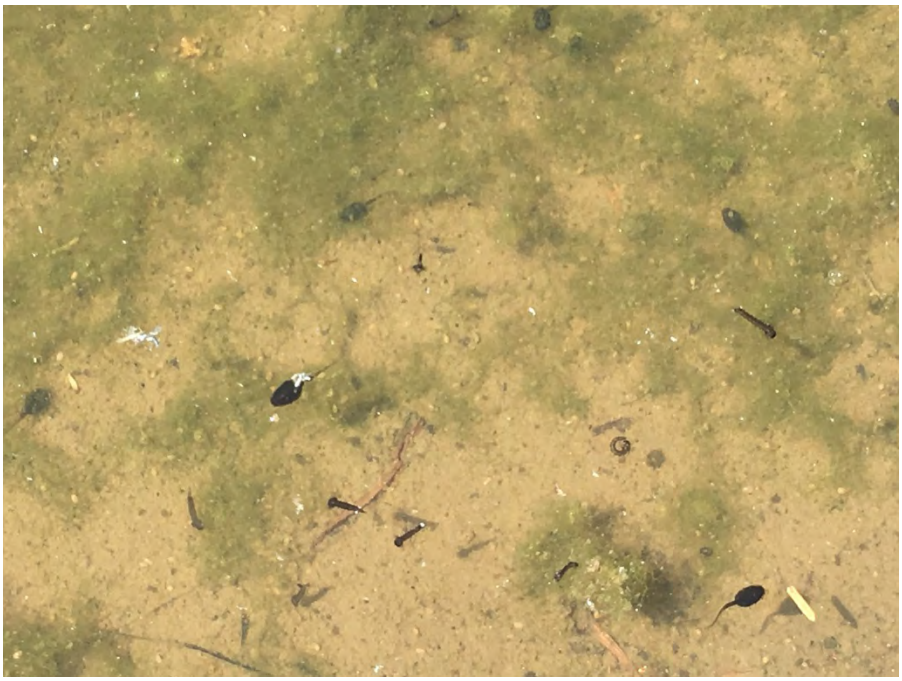

Photo 5. Tadpole in Proposed Project Study Area, Toro Creek, April 15, 2016.

Photo 6. Water flow at Proposed Project Study Area, facing south (downstream), Toro Creek, October 9, 2015.

Photo 7. Heavily grazed agricultural land at Proposed Project Study Area, Toro Creek, facing north east, October 9, 2015.

Photo 8. Plowed agricultural farmland at Proposed Project Study Area, Toro Creek, facing south west, April 15, 2016.

Photo 9. Agricultural farmland at Alternative Project Study Area, Willow Creek, April 15, 2016.

Photo 10. Riparian habitat at Alternative Study Area, Willow Creek. April 15, 2016.

Appendix A – Other Sensitive Species Reported from the Region

TABLE A-1. OTHER SPECIAL STATUS PLANTS. Ninety-five special status plants reported from the region are listed. These species have no potential to occur within the Proposed Project Study Area at Toro Creek or Alternative Project Study Area at Willow Creek.

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
1.	**Red Sand-verbena** *Abronia maritima*	None/None 4.2	February - October	Coastal dunes; <100m sCCo, Sco, ChI; Baja CA	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
2.	**Douglas' Fiddleneck** *Amsinckia douglasiana*	None/None 4.2	March – June	Unstable shaly sedimentary slopes; (100) 150–1600 m. SCoR, w WTR	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
3.	**Arroyo De La Cruz Manzanita** *Arctostaphylos cruzensis*	None/None 1B.2	December - March	Sandy bluffs; <150 m. c CCo (s Monterey, nw SLO Counties)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
4.	**Santa Lucia Manzanita** *Arctostaphylos luciana*	None/None 1B.2	February - March	Shale outcrops, slopes, chaparral, 500-700 m. Cuesta Pass, SLO County.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
5.	**Morro Manzanita** *Arctostaphylos morroensis*	FT/None 1B.1	December - March	Sand dunes; <200 m. s CCo (Morro Bay, SLO County)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
6.	**Bishop Manzanita** *Arctostaphylos obispoensis*	None/None 4.3	February - March	Rocky, gen serpentine soils, chaparral, open close-cone forest near coast; 60-950 m; SCoRO	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
7.	**Oso Manzanita** *Arctostaphylos osoensis*	None/None 1B.2	February - March	Chaparral, woodland; 300-500 m. s CCo (w Los Osos Valley, SLO County)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
8.	**Pecho Manzanita** *Arctostaphylos pechoensis*	None/None 1B.2	November - March	Shale outcrops, chaparral, coniferous forest; <850 m. s CCo (Pecho Hills, SLO)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
9.	**Santa Margarita Manzanita** *Arctostaphylos pilosula*	None/None 1B.2	December - March	Shale outcrops, slopes, chaparral; 300-1100 m. s SCoRO Endemic to SLO County	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
10.	**Dacite Manzanita** *Arctostaphylos tomentosa ssp. daciticola*	None/None 1B.1	March	Chaparral; <300 m. s CCo (w Los Osos Valley, SLO County)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
11.	**Marsh Sandwort** *Arenaria paludicola*	FE/CE 1B.1	May - August	Boggy meadows, marshes; <300 m. s CCo (Nipomo Mesa, SLO County, Santa Ana River, SCo)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
12.	**Carlotta Hall's Lace Fern** *Aspidotis carlotta-halliae*	None/None 4.2	N/A	Generally serpentine slopes, crevices, outcrops	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
13.	**Salinas Milk-vetch** *Astragalus macrodon*	None/None 4.3	April - July	Eroded pale shales or sandstone, or serpentine alluvium; 300-950 m. SCoR	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
14.	**Ocean Bluff Milk-vetch** *Astragalus nuttallii* var. *nuttallii*	None/None 4.2	January - November	Rocks, coastal bluff scrub, coastal dunes; 3-120 m.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
15.	**Coastal Marsh Milk-vetch** *Astragalus pycnostachyus* var. *pycnostachyus*	None/None 1B.2	June-September	Coastal marshes, seeps, adjacent sand; <150 m. NCo, n CCo.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
16.	**San Simeon Baccharis** *Baccharis plummerae* ssp. *glabrata*	None/None 1B.2	June	Shrubby slopes; <100 m. c CCo (nw SLO County)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
17.	**False Gray Horsehair Lichen** *Bryoria pseudocapillaris*	None/None 3.2	none	Usually on conifers. Found on coastal dunes and North Coast coniferous forest. NCo, CCo	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
18.	**Twisted Horsehair Lichen** *Bryoria spiralifera*	None/None 1B.1	none	Usually on conifers. North Coast coniferous forest. Nco, Cco	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
19.	**Arroyo De La Cruz Mariposa Lily** *Calochortus clavatus* var. *recurvifolius*	None/None 1B.2	May - July	Rocky slopes in coastal bluff scrub, maritime chaparral, coastal prairie, and lower montane coniferous forest; 10-120 m. SLO County	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
20.	**San Luis Mariposa Lily** *Calochortus obispoensis*	None/None 1B.2	May - July	Chaparral, coastal scrub, valley and foothill grassland, often on serpentine but also sandstone; 100-500 m. SCoRO Endemic to SLO County	No. Study Area outside known range and elevation for species.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
21.	**Dwarf Calycadenia** *Calycadenia villosa*	None/None 1B.1	May - October	Dry, rocky hills, ridges, in chaparral, woodland, meadows and seeps; <1100 m. c&s SCoRO	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
22.	**Hardham's Evening-primrose** *Camissoniopsis hardhamiae*	None/None 1B.2	April - May	Decomposed carbonate soils, in chaparral, cismontane woodland. Monterey, SLO Counties	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
23.	**San Luis Obispo Sedge** *Carex obispoensis*	None/None 1B.2	April - June	Serpentine springs, stream sides; <600 m. Endemic to SLO County	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
24.	**Lemmon's Jewelflower** *Caulanthus lemmonii*	None/None 1B.2	March – May	Dry, exposed slopes, grassland, chaparral, scrub; 80-1100 m. sw SnJv, se SnFrb, e SCoRO, SCoRI	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
25.	**Lompoc Ceanothus** *Ceanothus cuneatus* var. *fascicularis*	None/None 4.2	February - April	Chaparral on coastal sandy mesas; <400 m. s Cco	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
26.	**Monterey Ceanothus** *Ceanothus rigidus*	None/None 4.2	February - June	Sandy soils, closed-cone coniferous forest, chaparral, coastal scrub; <550 m.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
27.	**Congdon's Tarplant** *Centromadia parryi* ssp. *congdonii*	None/None 1B.1	May - November	Mesic grassland, open ground; <100 m. CW	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
28.	**Island Mountain-mahogany** *Cercocarpus betuloides* var. *blancheae*	None/None 4.3	March - April	Chaparral; <600 m.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
29.	**Coastal Goosefoot** *Chenopodium littoreum*	None/None 1B.2	June – October	Generally sandy soils, dunes; <40m. s CCo	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
30.	**Dwarf Soaproot** *Chlorogalum pomeridianum* var. *minus*	None/None 1B.2	May - August	Serpentine outcrops in chaparral; gen <750 m. NCoRI, SnFrB, SCoRO	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
31.	**Salt Marsh Bird's-beak** *Chloropyron maritimum* ssp. *maritimum*	FE/CE 1B.2	May - October	Coastal salt marshes;<10 m. SCo, n Baja CA	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
32.	**Brewer's Spineflower** *Chorizanthe breweri*	None/None 1B.3	May - August	Chaparral, foothill woodland on serpentine; <800 m. Endemic to SLO County	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
33.	**Douglas' Spineflower** *Chorizanthe douglasii*	None/None 4.3	April - July	Foothill woodland, pine forest, chaparral, sandy or gravelly soils; 200-1600 m. e SCoRO, SCoRI	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
34.	**Peninsular Spineflower** *Chorizanthe leptotheca*	None/None 4.2	May - August	Alluvial fan, granitic soils, sand or gravel; chaparral, coast scrub, lower montane coniferous forest; 300-1900 m. e PR	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
35.	**Palmer's Spineflower** *Chorizanthe palmeri*	None/None 4.2	May – August	Serpentine; 60-700m. SCoRO (w Monterey, w San Luis Obispo cos.)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
36.	**Straight-awned Spineflower** *Chorizanthe rectispina*	None/None 1B.3	May - July	Chaparral, dry woodland in sandy soil; 200-600 m. SCoRO	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
37.	**Potbellied Spineflower** *Chorizanthe ventricosa*	None/None 4.3	May - Sept	Serpentine; 500-1000 m. SCoRI	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
38.	**San Luis Obispo Fountain Thistle** *Cirsium fontinale var. obispoense*	FE/CE 1B.2	February - July	Serpentine seeps and streams; <300 m. Endemic to SLO County	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
39.	**Compact Cobwebby Thistle** *Cirsium occidentale var. compactum*	None/None 1B.2	April - June	Coastal bluffs, on dune sand or clay; 5-155 m. CCo	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
40.	**Cuesta Ridge Thistle** *Cirsium occidentale var. lucianum*	None/None 1B.2	April – July	Chaparral, woodland or forest openings, often on serpentine; 500-750m. s SCoRO (s Santa Lucia Range, San Luis Obispo, CA)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
41.	**Surf Thistle** *Cirsium rhothophilum*	None/CT 1B.2	April - June	Dunes, bluffs; <20 m. s CCo (s SLO, n SB Counties)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
42.	**La Graciosa Thistle** *Cirsium scariosum var. loncholepis*	FE/CT 1B.1	April – September	Marshes, dune wetlands; <50m. s CCo (sw San Luis Obispo, nw Santa Barbara counties)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
43.	**Popcorn Lichen** *Cladonia firma*	None/None 2B.1	n/a	Reported in maritime chaparral and dune scrub typically in stabilized dunes, grows on soil and detritus.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
44.	**Monkey-flower Savory** *Clinopodium mimuloides*	None/None 4.2	June – October	Moist places, streambanks, chaparral, woodland; 400-1800 m. CCo, SCoRO, WTR, SnGb	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
45.	**Paniculate Tarplant** *Deinandra paniculata*	None/None 4.2	May - November	Vernally mesic or sandy soils in coastal scrub and grassland habitats; <1320 m.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
46.	**Eastwood's Larkspur** *Delphinium parryi* ssp. *eastwoodiae*	None/None 1B.2	March – May	Coastal chaparral, grassland, on serpentine; 100-500m sCCo, SCoRO (San Luis Obispo County)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
47.	**Umbrella Larkspur** *Delphinium umbraculorum*	None/None 1B.3	April - June	Moist oak forest; 400-1600 m. SCoRO, WTR.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
48.	**Beach Spectaclepod** *Dithyrea maritima*	None/CT 1B.1	March - May	Sea shores, sandy soils on dunes near the shore; <50 m s CCo, SCo, Baja CA.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
49.	**Betty's Dudleya** *Dudleya abramsii* ssp. *bettinae*	None/None 1B.2	May - July	Rocky outcrops in serpentine grassland; <50-180 m. Endemic to SLO County	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
50.	**Mouse-gray Dudleya** *Dudleya abramsii* ssp. *Murina*	None/None 1B.3	May – June	Serpentine outcrops; 120-300 m. Endemic to SLO County	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
51.	**Blochman's Dudleya** *Dudleya blochmaniae* ssp. *blochmaniae*	None/None 1B.1	April - June	Open, rocky slopes, often serpentine or clay soils; <450 m. s CCo, SCo	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
52.	**Yellow-flowered Eriastrum** *Eriastrum luteum*	None/None 1B.2	May – June	Bare sandy decomposed granite slopes in cismontane woodland, chaparral, forest; 360-1000 m. SCoR, Monterey, SLO Counties	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
53.	**Blochman's Leafy Daisy** *Erigeron blochmaniae*	None/None 1B.2	July - August	Sand dunes and hills; <30 m. s CCo	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
54.	**Indian Knob Mountainbalm** *Eriodictyon altissimum*	FE/CE 1B.1	March - June	Sandstone ridges, chaparral; 250± m. Endemic to SLO County	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
55.	**Hoover's Button-celery** *Eryngium aristulatum* var. *hooveri*	None/None 1B.1	July	Vernal pools, lagunas; 0-1000 m. s SnFrB, SCoR	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
56.	**Suffrutescent Wallflower** *Erysimum suffrutescens*	None/None 4.2	January - July	Coastal dunes and bluffs; 0-150 m. CCo, SCo	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
57.	**San Joaquin Spearscale** *Extriplex joaquinana*	None/None 1B.2	April - September	Alkaline soils; < 350(840) m. NCoRI, SnJV, CCo, SnFrB, SCoRI	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
58.	**Stinkbells** *Fritillaria agrestis*	None/None 4.2	March – June	Clay (gen serpentine) banks, depressions; <500 m. NCoRO , SNF, GV, CW	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
59.	**Ojai Fritillary** *Fritillaria ojaiensis*	None/None 1B.2	March - May	Rocky slopes, river basins; 300-500 m. SCoRO, WTR	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
60.	**San Benito Fritillary** *Fritillaria viridea*	None/None 1B.2	March - May	Serpentine slopes; 200-1500 m. SCoR (San Benito, SLO Counties)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
61.	**Cone Peak Bedstraw** *Galium californicum* ssp. *luciense*	None/None List 1B.3	March - September	In forest duff or gravelly talus of pine and oak forest, in partial shade; 875-1525 m. Monterey, SLO Counties.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
62.	**Hardham's Bedstraw** *Galium hardhamiae*	None/None 1B.3	April - October	Serpentine soil with Sargent Cypress; 400-950 m. SCoRO	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
63.	**San Francisco Gumplant** *Grindelia hirsutula* var. *maritima*	None/None 3.2	August - September	Sandy or serpentine slopes, sea bluffs; <400 m. n CCo	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
64.	**Mesa Horkelia** *Horkelia cuneata* var. *puberula*	None/None 1B.1	February - September	Dry, sandy coastal chaparral; gen 70-700 m. SCoRO, SCo.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
65.	**Kellogg's Horkelia** *Horkelia cuneata* var. *sericea*	None/None 1B.1	April - September	Old dunes, coastal sand hills; <200 m. CCo	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
66.	**Santa Lucia Horkelia** *Horkelia yadonii*	None/None 4.2	June – September	Sandy meadow edges, seasonal streambeds in chaparral or foothill-pine woodland; 350-1900m. SCoRO	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
67.	**Santa Lucia Dwarf Rush** *Juncus luciensis*	None/None 1B.2	April – July	Vernal pools, ephemeral drainages, wet meadow habitats, and streams; 300-1900 m. CaRH, n SNH, SCoRO, TR, PR, MP.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
68.	**Perennial Goldfields** *Lasthenia californica* ssp. *macrantha*	None/None List 1B.2	May-Aug	Grassland, dunes along immediate coast; <500 m. NCo, CCo.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
69.	**Coulter's Goldfields** *Lasthenia glabrata* ssp. *coulteri*	None/None 1B.1	February - June	Saline places, vernal pools; <1000 m. s SCoRO, SCo, n ChI, PR, w DMoj	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
70.	**Jones' Layia** *Layia jonesii*	None/None 1B.2	March - May	Open serpentine or clay slopes; <400 m. Endemic to SLO County	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
71.	**Small-leaved Lomatium** *Lomatium parvifolium*	None/None 4.2	February – May	Pine woodland, serpentine outcrops; 70-150 m. CCo, SCoR	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.			No Effect
72.	**Jones' Bush-mallow** *Malacothamnus jonesii*	None/None 4.3	May - July	Open chaparral in foothill woodland; 250-830 m. SCoRO (Monterey, SLO Counties).	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
73.	**Carmel Valley Bush-mallow** *Malacothamnus palmeri* var. *involucratus*	None/None 1B.2	May - October	Chaparral, cismontane woodland, coastal scrub; 30-1100 m. s CCo, SCoRO	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
74.	**Santa Lucia Bush-mallow** *Malacothamnus palmeri* var. *palmeri*	None/None 1B.2	May - July	Chaparral, cismontane woodland, coastal scrub; 30-1100 m. s CCo, SCoRO	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
75.	**Oregon Meconella** *Meconella oregana*	None/None 1B.1	Mar-May	Sandy bluffs, meadows, streambanks; <1000 m. SnFrB, S OR, WA.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
76.	**Palmer's Monardella** *Monardella palmeri*	None/None 1B.2	June - August	Serpentine soils in chaparral, forest; 200-800 m. SCoRO	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
77.	**Southern Curly-leaved Monardella** *Monardella sinuata* ssp. *sinuata*	None/None 1B.2	April - September	Sandy soils, coastal strand, dune and sagebrush scrub, coastal chaparral and woodland; <300 m. Cco, SCoRO, extirpated Sco.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
78.	**San Luis Obispo Monardella** *Monardella undulata* ssp. *undulata*	None/None 1B.2	April - September	Stabilized dunes, coastal scrub, stabilized sandy soils; <200 m. CCo.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
79.	**Woodland Woollythreads** *Monolopia gracilens*	None/None 1B.2	March – July	Chaparral, serpentine grassland, cismontane woodland, sandy to rocky soils; SnFrB, SCoR	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
80.	**Shining Navarretia** *Navarretia nigelliformis* ssp. *radians*	None/None 1B.2	May - July	Vernal pools, clay depressions, dry grasslands; 150-1000 m. SCoR	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
81.	**Coast Woolly-heads** *Nemacaulis denudata* var. *denudata*	None/None 1B.2	April-September	Coastal dunes; 0-100 m.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
82.	**Monterey Pine** *Pinus radiata*	None/None 1B.1	N/A	Closed-cone-pine forest, oak woodland;<1200 m. CCo	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
83.	**Narrow-petaled Rein Orchid** *Piperia leptopetala*	None/None 4.3	May – July	Generally dry sites, scrub, woodland; <2200m. KR, NCoR, CaR, SN, SnFrB, SCoR, TR, PR; to WA	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
84.	**Hooked Popcornflower** *Plagiobothrys uncinatus*	None/None 1B.2	April - May	Canyon sides, chaparral; on sandstone 300-600 m. n SCoR (Gabilan Range, Santa Lucia Mountains)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
85.	**Diablo Canyon Blue Grass** *Poa diaboli*	None/None 1B.2	March - April	Coastal scrub, chaparral, cismontane woodland in shale. San Luis Range	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
86.	**Hoffmann's Sanicle** *Sanicula hoffmannii*	None/None 4.3	March – May	Shrubby coastal hills, pine woodland; <500m. CCo, SCo, n ChI	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
87.	**Adobe Sanicle** *Sanicula maritima*	None/CR 1B.1	February - May	Coastal, grassy, open wet meadows, ravines; ±150 m. CCo (SLO County)	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
88.	**Chaparral Ragwort** *Senecio aphanactis*	None/None 2B.2	January - April	Drying alkaline flats, chaparral, cismontane woodland, coastal scrub; <400 m. CW, SCo, ChI	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
89.	**San Gabriel Ragwort** *Senecio astephanus*	None/None 4.3	January - April	Drying alkaline flats, chaparral, cismontane woodland, coastal scrub; <400 m. CW, SCo, ChI	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
90.	**Cuesta Pass Checkerbloom** *Sidalcea hickmanii* ssp. *anomala*	None/CR 1B.2	May - June	Closed-cone-conifer forest, gen serpentine; 600-800 m. Endemic to SLO County	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
91.	**Most Beautiful Jewelflower** *Streptanthus albidus* ssp. *peramoenus*	None/None 1B.2	April - June	Open, grassy or ±barren slopes, often serpentine; ±150-800 m. c SCoRO	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
92.	**California Seablite** *Suaeda californica*	FE/None 1B.1	July - October	Margins of coastal salt marshes; <5 m. CCo	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CRPR	Blooming Period	Habitat Preference	Potential Habitat at Proposed Site?	Potential Habitat at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
93.	**Splitting Yarn Lichen** *Sulcaria isidiifera*	None/None 1B.1	n/a	Chaparral, cismontane woodland, on branches of oaks, chamise, Ceanothus; 20-30 m. Los Osos, SLO County.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
94.	**Saline Clover** *Trifolium hydrophilum*	None/None 1B.2	April – June	Salt marshes, open areas in alkaline soils; <300m. ScV, nw SnJV, CW	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
95.	**Cook's Triteleia** *Triteleia ixioides* ssp. *cookii*	None/None 1B.3	May - June	Streamsides, ravines on serpentine near cypresses; <500 m. SCoRO	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

California Geographic Subregion Abbreviations:

CCo: Central Coast
SCo: South Coast
SCoR: South Coast Ranges
SCoRO: Outer South Coast Ranges
SCoRI: Inner South Coast Ranges
SnFrB: San Francisco Bay
TR: Transverse Ranges
WTR: Western Transverse Ranges
SnJV: San Joaquin Valley
ScV: Sacramento Valley
SLO: San Luis Obispo
SN: Sierra Nevada
SnJt: San Jacinto Mtns
SnBr: San Bernardino
Teh: Tehachapi Mtn Area
CW: Central West
SW: South West
DMoj: Mojave Desert
PR: Peninsular Range

State/Rank Abbreviations:

FE: Federally Endangered
FT: Federally Threatened
PE: Proposed Federally Endangered
PT: Proposed Federally Threatened
CE: California Endangered
CR: California Rare
CT: California Threatened
Cand. CE: Candidate for California Endangered
Cand. CT: Candidate for California Threatened

California Rare Plant Ranks:

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 common elsewhere
CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
CRPR 3: Plants about which more information is needed-A review list
CRPR 4: Plants of limited distribution - a watch list

CRPR Threat Ranks:

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

TABLE A-2. OTHER SPECIAL STATUS ANIMALS. Twenty-four special status animals reported from the region are listed. These species have no potential to occur within the Proposed or Alternative Project Study Areas.

	Common and Scientific Names	Fed/State Status CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential To Occur at Proposed Site?	Potential to Occur at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
1.	**Grasshopper Sparrow** *Ammodramus savannarum*	None/None SSC (Nesting)	March 15 through August 15	Nests in grassland habitats on mountain slopes, foothills, and valleys. May nest colonially.	No. Appropriate Habitat not present in Study Area.	No. Appropriate Habitat not present in Study Area.	No	No	No Effect
2.	**Black Legless Lizard** *Anniella pulchra nigra*	None/None SSC	May - September	Inhabits sandy soil/dune areas with bush lupine and mock heather, from Morro Bay to Monterey Bay.	No. Appropriate soils are not present in the Study Area.	No. Appropriate soils are not present in the Study Area.	No	No	No Effect
3.	**Silvery Legless Lizard** *Anniella pulchra pulchra*	None/None SSC	May - September	Sandy or loose loamy soils under coastal scrub or oak trees. Soil moisture essential.	No. Appropriate soils are not present in the Study Area.	No. Appropriate soils are not present in the Study Area.	No	No	No Effect
4.	**Golden Eagle** *Aquila chrysaetos*	None/None FP	March 15 - August 15	Nests in large, prominent trees in valley and foothill woodland. Requires adjacent food source.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
5.	**Burrowing Owl** *Athene cunicularia*	None/None SSC	March 15 - August 15	Burrows in squirrel holes in open habitats with low vegetation.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area	No	No	No Effect

	Common and Scientific Names	Fed/State Status CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential To Occur at Proposed Site?	Potential to Occur at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
6.	**Vernal Pool Fairy Shrimp** *Branchinecta lynchi*	FT/None Special Animal	Rainy Season	Clear water sandstone depression pools, grassed swale, earth slump, or basalt flow depression pools.	No. Appropriate vernal pool habitat is not present in the Study Area.	No. Appropriate vernal pool habitat is not present in the Study Area.	No	No	No Effect
7.	**Western Snowy Plover** *Charadrius alexandrinus nivosus*	FT/None SSC	March 15 - August 15	Sandy beaches, salt pond levees, & shorelines of large alkali lakes. Needs friable soils for nesting.	No. Appropriate sandy beach habitat is not present in the Study Area.	No. Appropriate sandy beach habitat is not present in the Study Area.	No	No	No Effect
8.	**Northern Harrier** *Circus cyaneus*	None/none G5/S3 SSC (Nesting)	March 15 through August 15	Nests on ground in shrubby areas, usually near water. Forages in open areas.	No. Appropriate nesting habitat not present in the Study Area.	No. Appropriate nesting habitat not present in the Study Area.	No	No	No Effect
9.	**Townsend's Big-eared Bat** *Corynorhinus townsendii*	None/Cand. CT SSC	Spring - Summer	Caves, buildings, and mine tunnels. Cave like attics as day roosts. On coast roosts are normally within 100 m. of creeks.	No. Appropriate deep roosting habitat is not present in the Study Area.	No. Appropriate deep roosting habitat is not present in the Study Area.	No	No	No Effect
10.	**Morro Bay Kangaroo Rat** *Dipodomys heermanni morroensis*	FE/CE FP	n/a	Coastal sage scrub on the south side of Morro Bay. Needs sandy soil, but nor active dunes, prefers early seral stages.	No. Study Area is outside of the species' known range.	No. Study Area is outside of the species' known range.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential To Occur at Proposed Site?	Potential to Occur at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
11.	**Western Mastiff Bat** *Eumops perotis californicus*	None/None SSC	Spring-Fall	Roosts in crevices in cliff faces, high buildings, trees, and tunnels. Inhabits many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
12.	**Morro Shoulderband (=banded Dune) Snail** *Helminthoglypta walkeriana*	FE/None	n/a	Restricted to the coastal strand and sage scrub habitats in the immediate vicinity of Morro Bay.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
13.	**California Black Rail** *Laterallus jamaicensis coturniculus*	None/CT FP	March 15 - August 15	Occurs in tidal salt marsh heavily grown to pickleweed, also in freshwater and brackish marshes near the coast.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
14.	**Fringed Myotis** *Myotis thysanodes*	None/None Special Animal	Spring - Summer	Variety of habitats, uses caves, mines, buildings, or crevices for maternity colonies and roosts.	No. Deep roosting habitat not present around Study Area.	No. Deep roosting habitat not present around Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential To Occur at Proposed Site?	Potential to Occur at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
15.	**Yuma Myotis** *Myotis yumanensis*	None/None Special Animal	Spring - Summer	Caves, mines, buildings, tree cavities, rock crevices, or under bridges. Feeds near open water.	No. Deep roosting habitat not present around Study Area.	No. Deep roosting habitat not present around Study Area.	No	No	No Effect
16.	**San Diego Desert Woodrat** *Neotoma lepida intermedia*	None/None SSC	n/a	Moderate to dense canopies preferred. Abundant in rocky areas, outcrops. Ranges from San Diego to SLO Counties.	No. Study Area is outside of the species range.	No. Study Area is outside of the species range.	No	No	No Effect
17.	**Big Free-tailed Bat** *Nyctinomops macrotis*	None/None SSC	Spring - Summer	Low lying arid areas in Southern California with rock outcrops or cliffs.	No. Appropriate rocky habitat is not present in the Study Area.	No. Appropriate rocky habitat is not present in the Study Area.	No	No	No Effect
18.	**Coast Horned Lizard** *Phrynosoma blainvillii*	None/None SSC	May - September	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes.	No. Appropriate sandy habitat is not present in the Study Area.	No. Appropriate sandy habitat is not present in the Study Area.	No	No	No Effect
19.	**California Clapper Rail** *Rallus longirostris obsoletus*	FE/CE FP	March 15 - August 15	Saltwater & brackish marshes traversed by tidal sloughs.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect

	Common and Scientific Names	Fed/State Status CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential To Occur at Proposed Site?	Potential to Occur at Alternative Site?	Detected at Proposed Site?	Detected at Alternative Site?	Effect of Proposed Activity
20.	**Western Spadefoot** *Spea hammondii*	None/None SSC	January – August	Vernal pools in grassland and woodland habitats	No. Appropriate vernal pool habitat is not present in the Study Area.	No. Appropriate vernal pool habitat is not present in the Study Area.	No	No	No Effect
21.	**American Badger** *Taxidea taxus*	None/None SSC	February – May	Needs friable soils in open ground with abundant food source such as California ground squirrels.	No. Appropriate habitat is not present in the Study Area.	No. Appropriate habitat is not present in the Study Area.	No	No	No Effect
22.	**Two-striped Garter Snake** *Thamnophis hammondii*	None/None SSC	Spring	Coastal California from Salinas to Baja, sea level to 7000', aquatic, in or near permanent water, streams with rocky beds and riparian growth	Yes. Appropriate riparian habitat is present adjacent to the Proposed Project.	Yes. Appropriate riparian habitat is present adjacent to the Alternative Project.	No	No	No Effect
23.	**Least Bell's Vireo** *Vireo bellii pusillus*	FE/CE	March 15 - August 15	Riparian habitat, near water or dry streambed, <2000 ft. Nests in willows, mesquite, Baccharis.	No. Appropriate riparian habitat is not present in Study Area. Study Area is outside the current range of this species.	No. Appropriate riparian habitat is not present in Study Area. Study Area is outside the current range of this species.	No	No	No Effect
24.	**San Joaquin Kit Fox** *Vulpes macrotis mutica*	FE/CT	December – July	Annual grasslands or grassy open stages with scattered shrubby vegetation. Needs loose textured sandy soil and prey base.	No. The Study Area is outside the known range of this species.	No. The Study Area is outside the known range of this species.	No	No	No Effect

Appendix B – Botanical and Wildlife Inventory

Botanical Survey Results

Botanical surveys in 2016 identified 102 species, subspecies, and varieties of vascular plant taxa within the Proposed and Alternative Project Study Areas. (Table B-1). These consist of 40 native species and 62 introduced species. One special status plant, club-haired mariposa lily, was identified at the Proposed Project Study Area.

TABLE B-1. VASCULAR PLANT LIST. The 102 species of vascular plants identified within the Proposed and Alternative Project Study Areas, consist of 40 native species and 62 introduced species. The vascular plant list is separated into general life form categories, within which the taxa are listed alphabetically by family and scientific name.

Scientific Name	Special Status	Origin	Common Name	Proposed Project	Alternative Project
Ferns					
Equisetum sp.	None	Native	Horsetail	X	
Trees					
Eucalyptus globulus	None	Introduced	Blue-gum	X	
Myoporum laetum	None	Introduced	Myoporum	X	
Platanus racemosa	None	Native	Western sycamore	X	
Populus fremontii	None	Native	Fremont cottonwood	X	X
Quercus agrifolia	None	Native	Coast live oak	X	
Salix lasiolepis	None	Native	Arroyo willow	X	X
Shrubs					
Baccharis pilularis	None	Native	Coyote brush	X	X
Frangula Californica	None	Native	Coffeeberry	X	X
Ricinus communis	None	Introduced	Castor bean	X	
Rubus ursinus	None	Native	California blackberry	X	X
Sambucus nigra ssp. *caerulea*	None	Native	Blue elderberry	X	X
Toxicodendron diversilobum	None	Native	Poison oak	X	X
Forbs					
Achillea millefolium	None	Native	Yarrow	X	
Asclepias fascicularis	None	Native	Narrow leaf milkweed	X	
Anagallis arvensis	None	Introduced	Scarlet pimpernel	X	X
Artemisia douglasiana	None	Native	Mugwort	X	X
Atriplex rosea	None	Introduced	Tumbling saltweed	X	
Baccharis glutinosa	None	Native	Salt marsh baccharis		X
Brassica rapa	None	Introduced	Field mustard		X
Calochortus clavatus ssp. clavatus	CRPR 4.3	Native	Club-haired mariposa	X	
Calystegia macrostegia	None	Native	Island false bindweed		X

Scientific Name	Special Status	Origin	Common Name	Proposed Project	Alternative Project
Calystegia macrostegia ssp. *cyclostegia*	None	Native	Morning glory	X	
Carduus pycnocephalus	None	Introduced	Italian thistle	X	X
Centaurea melitensis	None	Introduced	Tocolote		X
Chenopodium album	None	Introduced	Lamb's-quarters	X	X
Chlorogalum pomeridianum var. *pomeridianum*	None	Native	Amole lily	X	
Cirsium vulgare	None	Introduced	Bull thistle	X	X
Claytonia perfoliata	None	Native	Miner's lettuce	X	
Clematis sp.	None	Native	Virgin's bower	X	X
Conium maculatum	None	Introduced	Poison hemlock	X	X
Convolvulus arvensis	None	Introduced	Bindweed		X
Delairea odorata	None	Introduced	German ivy	X	X
Erodium cicutarium	None	Introduced	Redstem filaree	X	X
Erodium moschatum	None	Introduced	Filaree		X
Eschscholzia californica	None	Native	California poppy	X	X
Euphorbia peplus	None	Introduced	Petty spurge	X	X
Foeniculum vulgare	None	Introduced	Fennel	X	X
Galium sp.	None	Native	Bedstraw	X	
Galium aparine	None	Native	Goose grass	X	
Geranium dissectum	None	Introduced	Geranium	X	X
Hedypnois cretica	None	Introduced	Crete weed	X	X
Helminthotheca echioides	None	Introduced	Bristly ox-tongue	X	X
Hirschfeldia incana	None	Introduced	Mustard		X
Hypochaeris glabra	None	Introduced	Smooth cat's ear		X
Kickxia elatine	None	Introduced	Fluellin	X	X
Lactuca serriola	None	Introduced	Prickly lettuce	X	
Lamium amplexicaule	None	Introduced	Henbit	X	
Layia platyglossa	None	Native	Tidy tips	X	
Lepidium latifolium	None	Introduced	Broad-leaved peppergrass		X
Lomatium sp.	None	Native	Biscuit root	X	
Lotus corniculatus	None	Introduced	Birdfoot trefoil	X	
Lupinus succulentus	None	Native	Arroyo lupine	X	
Malva parviflora	None	Introduced	Cheeseweed	X	X
Marah fabaceus	None	Native	California man-root	X	
Matricaria discoidea	None	Introduced	Pineapple weed	X	X

Scientific Name	Special Status	Origin	Common Name	Proposed Project	Alternative Project
Medicago polymorpha	None	Introduced	California burclover	X	X
Melilotus sp.	None	Introduced	Sweet clover	X	
Melilotus indicus	None	Introduced	Annual sweetclover	X	X
Nasturtium officinale	None	Native	Common watercress	X	
Oxalis pes-caprae	None	Introduced	Bermuda buttercup	X	X
Plantago lanceolata	None	Introduced	English plantain	X	X
Platystemon californicus	None	Native	Cream cups	X	
Polygonum aviculare	None	Introduced	Common knotweed	X	
Pterostegia drymarioides	None	Native	Pterostegia	X	
Ranunculus californicus	None	Native	California buttercup	X	
Raphanus raphanistrum	None	Introduced	Jointed charlock	X	X
Rumex crispus	None	Introduced	Curly dock	X	X
Scrophularia californica	None	Native	California figwort	X	X
Senecio vulgaris	None	Introduced	Common groundsel		X
Silene gallica	None	Introduced	Catchfly	X	
Silybum marianum	None	Introduced	Milk thistle	X	X
Sisyrinchium bellum	None	Native	Blue-eyed grass	X	X
Solanum americanum	None	Native	Common nightshade	X	X
Solanum xanti	None	Native	Purple nightshade	X	
Sonchus oleraceus	None	Introduced	Common sowthistle		X
Sonchus sp.	None	Introduced	Sow thistle	X	X
Stellaria media	None	Introduced	Chickweed	X	
Torilis arvensis	None	Introduced	Hedge parsley	X	
Trifolium hirtum	None	Introduced	Rose clover	X	X
Tropaeolum majus	None	Introduced	Nasturtium		X
Urtica dioica ssp. *holosericea*	None	Native	Stinging nettle	X	
Urtica urens	None	Introduced	Dwarf nettle	X	
Veronica anagallis-aquatica	None	Native	Water speedwell	X	
Vicia faba	None	Introduced	Fava bean		X
Viola pedunculata	None	Native	Johnny jump-up	X	
Xanthium spinosum	None	Native	Spiny cocklebur	X	
Grasses					
Avena fatua	None	Introduced	Wild oat	X	X
Avena sativa	None	Introduced	Cultivated oat		X
Bromus diandrus	None	Introduced	Ripgut brome	X	

Scientific Name	Special Status	Origin	Common Name	Proposed Project	Alternative Project
Bromus hordeaceus	None	Introduced	Soft chess brome	X	X
Bromus madritensis ssp. *rubens*	None	Introduced	Red top brome	X	
Digitaria sanguinalis	None	Introduced	Crab grass		X
Festuca perennis	None	Introduced	Italian ryegrass	X	X
Hordeum murinum	None	Introduced	Foxtail barley	X	X
Hordeum vulgare	None	Introduced	Barley	X	
Lamarckia aurea	None	Introduced	Goldentop grass	X	
Phalaris aquatica	None	Introduced	Bulbous canarygrass	X	X
Phalaris brachystachys	None	Introduced	Short spike canarygrass	X	X
Phalaris sp.	None	Introduced	Canarygrass	X	
Physalis philadelphica	None	Introduced	Mexican groundcherry		X
Poa secunda	None	Native	One-sided bluegrass	X	
			Total	86	59

Wildlife Survey Results

At least 118 animal species are listed that could potentially occur at the Proposed and Alternative Project Study Areas. These include at least 7 fish, 9 amphibians, 11 reptiles, 67 birds, and 24 mammals. Small mammal trapping studies were beyond the scope of this report, although several species are likely to occur. We provide this list as a guide to the wildlife both observed and potentially present, at least seasonally, within the Proposed and Alternative Project Study Areas. Other species could occur as transients, particularly avian fauna. A total of 26 species were observed in the Proposed Project Study Area and 22 species were observed in the Alternate Project Study Area.

TABLE B-2. WILDLIFE LIST. At least 118 animal species have the potential to occur within the Proposed Project Study Area at Toro Creek and the Alternative Project Study Area at Willow Creek. The Special Status column indicates listing status of the organism under the Federal Endangered Species Act, the California Endangered Species Act, or by CDFW. Species observed in the Proposed or Alternative Project Study Areas during our surveys are denoted by "Proposed" or "Alternative" in the fourth column.

Common Name	Scientific Name	Special Status	Found On-site?	Habitat Preference
Fish – 7 species				
Sacramento Sucker	*Catostomus occidentalis*	None		Rivers, creeks, ponds
Prickly Sculpin	*Cottus asper*	None		Rivers, streams, creeks
Tidewater Goby	*Eucyclogobius newberryi*	FE[1]		Coastal lagoons and streams
Mosquito Fish	*Gambusia affinis*	None		Rivers, creeks, lakes, ponds
Three-spine Stickleback	*Gasterosteus aculeatus*	None		Rivers, creeks, lakes, ponds
California Roach	*Hesperoleucus symmetricus*	None		Rivers, creeks, lakes, ponds
Steelhead - South/Central ESU	*Oncorhynchus mykiss*	FT[2]	Proposed	Coastal streams with an ocean connection
Amphibians – 9 species				
Arboreal Salamander	*Aneides lugubris*	None		Oak savanna
California (Western) Toad	*Anaxyrus [=Bufo] boreas halophilus*	None	Proposed	Grassland, woodland
Black-bellied Slender Salamander	*Batrachoseps nigriventris*	None		Moist habitats
Monterey Ensatina	*Ensatina eschscholzii eschscholzii*	None		Riparian, oak woodlands, grasslands
Foothill Yellow-legged Frog	*Rana boylii*	SSC[3]		Shallow streams and riffles
Bullfrog	*Rana catesbeiana*	None		Perennial streams, ponds
California Red-legged Frog	*Rana draytonii*	FT		Streams, creeks, and ponds

[1] FE = Federally Endangered

[2] FT = Federally Threatened

[3] SSC = California Species of Special Concern

Common Name	Scientific Name	Special Status	Found On-site?	Habitat Preference
Sierran Treefrog [=Pacific Chorus Frog]	*Pseudacris sierra* [formerly *P. regilla*]	None		Many habitats near water
Coast Range Newt	*Taricha torosa torosa*	SSC		Coastal drainages and adjacent upland habitat.
Reptiles – 11 Species				
Western Yellow-bellied Racer	*Coluber constrictor mormon*	None		Grasslands, open areas
Northern Pacific Rattlesnake	*Crotalus oreganus oreganus*	None		Dry, rocky habitats
Monterey Ringneck Snake	*Diadophis punctatus vandenburgii*	None		Woodlands, grasslands, chaparral
California Alligator Lizard	*Elgaria multicarinata multicarinata*	None		Open grassland, woodland, chaparral
Western Pond Turtle	*Emys [=Actinemys] marmorata*	SSC		Lakes, ponds, streams
California Kingsnake	*Lampropeltis getula californiae*	None		Woodland, grassland, streams
Pacific Gopher Snake	*Pituophis catenifer catenifer*	None		Woodland, grassland, rural
Skilton's [=Western] Skink	*Plestiodon [=Eumeces] skiltonianus skiltonianus*	None		Woodland, grassland, chaparral, inland and coastal
Coast Range [=Western] Fence Lizard	*Sceloporus occidentalis bocourtii*	None	Alternative	Wide range; variety of habitats
Coast Garter Snake	*Thamnophis elegans terrestris*	None		Many habitats near water
Two-striped Garter Snake	*Thamnophis hammondii*	SSC		Rocky streams, ponds, wetlands.
Birds – 73 Species				
Acorn Woodpecker	*Melanerpes formicivorus*	None		Oak woodland
American Crow	*Corvus brachyrhynchos*	None	Proposed Alternative	Many habitats, esp. urban
American Goldfinch	*Carduelis tristis*	None		Weedy fields, woodlands
American Robin	*Turdus migratorius*	None		Streamsides, woodlands
Anna's Hummingbird	*Calypte anna*	None	Proposed Alternative	Many habitats
Band-tailed Pigeon	*Patagionenas fasciata*	None	Proposed	Woodlands, urban trees
Barn Owl	*Tyto alba*	None		Agricultural, woodlands
Barn Swallow	*Hirundo rustica*	None		Riparian, grasslands, lakes
Belted kingfisher	*Cerle alcyon*	None		Riparian, lakes and streams
Bewick's Wren	*Thryomanes bewickii*	None		Riparian woodland, scrub
Black Phoebe	*Sayornis nigricans*	None	Proposed Alternative	Near water
Black-headed Grosbeak	*Pheucticus melanocephalus*	None		Woodlands
Blue-gray gnatcatcher	*Polioptila caerulea*	None		Chaparral

Common Name	Scientific Name	Special Status	Found On-site?	Habitat Preference
Brewer's Blackbird	*Euphagus cyanocephalus*	None	Proposed Alternative	Open habitats
Bullock's Oriole	*Icterus bullockii*	None		Oak, riparian woodlands
Bushtit	*Psaltriparus minimus*	None		Woodlands, chaparral
California Quail	*Callipepla californica*	None		Shrubby habitats
California Thrasher	*Toxostoma redivivum*	None		Chaparral, coastal scrub
California Towhee	*Melozone crissalis*	None	Proposed	Brushy habitats
Cassin's Kingbird	*Tyrannus vociferans*	None	Proposed	Open and semi-open areas
Chestnut-backed Chickadee	*Poecile rufescens*	None		Mixed woods
Cliff Swallow	*Petrochelidon pyrrhonota*	None	Alternative	Open areas; nests on cliffs and structures
Cooper's Hawk	*Accipiter cooperii*	SA (Nesting)	Alternative	Oak, riparian woodland
Dark-eyed Junco	*Junco hyemalis*	None		Oak woodland
Downy Woodpecker	*Picoides pubescens*	None		Oak, riparian woodlands
Eurasian Collared Dove	*Streptopelia decaocto*	None	Proposed Alternative	Urban areas
European Starling	*Sturnus vulgaris*	None	Proposed Alternative	Agricultural, livestock areas
Great Horned Owl	*Bubo virginianus*	None		Woodland, grassland
Hairy Woodpecker	*Picoides villosus*	None		Oak, riparian woodlands
Hermit Thrush	*Catharus guttatus*	None		Woodland and brush
House Finch	*Carpodacus mexicanus*	None	Proposed Alternative	Riparian, grasslands, chaparral, and woodlands
House Sparrow	*Passer domesticus*	None		Urban
Hutton's Vireo	*Vireo huttonii*	None		Oak, riparian woodlands
Lark Sparrow	*Chondestes grammacus*	SA (Nesting)	Proposed	Woodland edges
Lesser Goldfinch	*Carduelis psaltria*	None		Riparian, oak woodlands
Loggerhead Shrike	*Lanius ludovicianus*	SSC	Alternative	Open areas, shrubland
Mourning Dove	*Zenaida macroura*	None	Proposed Alternative	Open and semi-open habitats
Northern Flicker	*Colaptes auratus*	None		Woodlands
Northern Mockingbird	*Mimus polyglottos*	None		Riparian, chaparral and woodlands. Also urban
Nuttall's Woodpecker	*Picoides nuttallii*	SA (Nesting)	Proposed Alternative	Oak, riparian woodlands
Orange-crowned Warbler	*Vermivora celata*	None		Oak, riparian woodlands
Pacific-slope Flycatcher	*Empidonax difficilis*	None	Proposed	Riparian, oak woodlands
Purple Martin	*Progne subis*	SSC		Sycamore trees
Red-shouldered Hawk	*Buteo lineatus*	None		Oak, riparian woodlands

Common Name	Scientific Name	Special Status	Found On-site?	Habitat Preference
Red-tailed Hawk	*Buteo jamaicensis*	None	Proposed Alternative	Open, semi-open country
Red-winged Blackbird	*Agelaius phoeniceus*	None	Alternative	Aquatic habitats
Rock Pigeon	*Columba livia*	None	Proposed	Urban areas
Rock Wren	*Salpinctes obsoletus*	None	Proposed	Grasslands with rock outcrops
Ruby-crowned Kinglet	*Regulus calendula*	None		Oak, riparian woodlands
Say's Phoebe	*Sayornis saya*	None	Proposed Alternative	Open grasslands
Song Sparrow	*Melospiza melodia*	None		Oak, riparian woodland
Spotted Towhee	*Pipilo maculatus*	None		Dense brushy areas
Swainson's Thrush	*Catharus ustulatus*	None		Mixed woodlands
Townsend's Warbler	*Setophaga townsendii*	None		Riparian, oak woodlands
Tree Swallow	*Tachycineta bicolor*	None	Proposed Alternative	Oak, riparian woodlands, open areas near water
Tricolored Blackbird	*Agelaius tricolor*	SSC		Open water & protected nesting substrate
Turkey Vulture	*Cathartes aura*	None	Proposed Alternative	Open country
Violet-green Swallow	*Tachycineta thalassina*	None		Oak, riparian woodlands, open areas near water
Warbling Vireo	*Vireo gilvus*	None		Oak, riparian woodlands
Western Bluebird	*Sialia mexicana*	None	Proposed Alternative	Woodland near open areas
Western Scrub-Jay	*Aphelocoma californica*	None	Proposed Alternative	Oak, riparian woodlands
Western Screech Owl	*Otus kennicottii*	None		Oak woodland
Western Wood Pewee	*Contopus sordidulus*	None		Riparian woodlands
White-crowned Sparrow	*Zonotrichia leucophrys*	None	Proposed	Oak, riparian woodlands
White-tailed Kite	*Elanus leucurus*	FP		Open areas
Wilson's Warbler	*Wilsonia pusilla*	None		Oak, riparian woodlands
Wrentit	*Chamaea fasciata*	None		Riparian, chaparral
Yellow Warbler	*Setophaga petechia*	SSC		Riparian woodlands
Yellow-rumped Warbler	*Setophaga coronata*	None		Woodlands, brush, open country
Mammals – 18 Species				
Black-tailed Jackrabbit	*Lepus californicus*	None		Grasslands
Brush Rabbit	*Sylvilagus bachmani*	None		Brushy habitats
California Ground Squirrel	*Spermophilus beecheyi*	None	Alternative	Grasslands
California Mouse	*Peromyscus californicus*	None		Oak woodland, chaparral
California Myotis	*Myotis californicus*	None		Tunnels, hollow trees, buildings, bridges.

Common Name	Scientific Name	Special Status	Found On-site?	Habitat Preference
Coyote	*Canis latrans*	None		Open woodlands, brushy areas, wide ranging.
Deer Mouse	*Peromyscus maniculatus*	None		All dry land habitats
Desert Woodrat	*Neotoma lepida*	None		Rocky areas, coastal
Dusky-footed Woodrat	*Neotoma fuscipes*	None	Alternative	Oak woodland, riparian, dense vegetation
Heermann's Kangaroo Rat	*Dipodomys heermanni*	None		Dry grasslands with few shrubs
Hoary Bat	*Lasiurus cinereus*	None		Variety of habitats, roosts in foliage
Long-tailed Weasel	*Mustela frenata*	None		Grasslands
Mule Deer	*Odocoileus hemionus*	None	Proposed	Many habitats
Pallid Bat	*Antrozous pallidus*	SSC		Riparian, woodland, urban
Raccoon	*Procyon lotor*	None		Streams, lakes, rock cliffs, dens in trees
Striped Skunk	*Mephitis mephitis*	None		Mixed woods, brush, semi-open country
Virginia Opossum	*Didelphis virginiana*	None		Woodlands, streams
Western Harvest Mouse	*Reithrodontomys megalotis*	None		Grassland, dense vegetation near water

ARCHAEOLOGICAL INVESTIGATION OF TWO LOCATIONS AND ATTENDANT PIPELINES FOR THE PROPOSED WASTEWATER TREATMENT FACILITY, CAYUCOS COMMUNITY SERVICES DISTRICT, CAYUCOS, SAN LUIS OBISPO COUNTY, CALIFORNIA

Submitted to:

David Foote
Firma Consultants, Inc.
187 Tank Farm Road, Suite 230
San Luis Obispo, California 93401

Prepared by:

Nancy Farrell
and
Esther Kenner, M.A., RPA
Cultural Resource Management Services
829 Paso Robles Street
Paso Robles, California 93446

December, 2016

USGS 7.5' Quadrangle, Cayucos, CA
USGS 7.5' Quadrangle, Morro Bay North, CA

CRMS
CULTURAL RESOURCE MANAGEMENT SERVICES

CRMS Project No.: 50-897

Pursuant to State law, the contents of the Archaeological investigations are confidential. Contact the CSD for additional information.

INTERIM REPORT:
SUMMARY OF PHASE 2 TESTING AT CA-SLO-879/H

CAYUCOS SUSTAINABLE WATER PROJECT

Prepared by Applied EarthWorks, Inc.
Revised January 30, 2017

The Cayucos Community Service District (CSD) is planning to develop a new water treatment plant on a 5-acre parcel on Toro Creek Road approximately 0.75 mile northeast of State Route 1 (SR 1). CSD will install pipelines along Toro Creek Road to connect the new plant with an existing pumping station at SR 1. Other project elements include abutments on either side of Toro Creek to facilitate pipeline spans across the creek. The proposed pipelines along Toro Creek Road cross through CA-SLO-879/H, a large and complex archaeological site containing both prehistoric and historic components. The site is a significant historical resource that was previously judged eligible for inclusion in the California Register of Historical Resources (CRHR).

In support of the CSD Sustainable Water Project (Project), Applied EarthWorks, Inc., (Æ), conducted Phase 2 archaeological testing to document cultural deposits along Toro Creek Road and to collect data to assess potential Project effects on those deposits. The treatment plant site itself is not located inside the currently defined boundary of CA-SLO-879/H, and surface inspection of the parcel found no evidence of cultural materials; however, the location and topography indicate that this parcel has a high sensitivity for buried archaeological deposits. Therefore, buried site testing was conducted at the plant site to determine whether buried cultural deposits are present. The archaeological fieldwork was completed between August 15 and September 6, 2016.

Pursuant to State law, the contents of the Archaeological investigations are confidential. Contact the CSD for additional information.

Cayucos Sustainable Water Project - Proposed Project

San Luis Obispo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	23.09	1000sqft	4.55	23,095.00	6
Other Asphalt Surfaces	5.07	Acre	5.07	220,849.20	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.2	**Precipitation Freq (Days)**	44
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Cayucos Sustainable Water Project - Proposed Project - San Luis Obispo County, Annual

Project Characteristics - Operation planned in 2018.

Land Use - WRRF = 23,095 sf structures, 5.07 acres paving, 2.4 acres solar array
Pipeline route to occupy 1.62 acres.
WRRF would have up to 6 employees.

Construction Phase - Project construction phases and dates used.

Off-road Equipment -

Off-road Equipment - Bore/Drill Rig added for pipeline installation for 5 days.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Default equipment used except Bore/Drill Rigs added.

Trips and VMT - Site preparation includes two haul trips per day at 10 cy/trip.
Four vendor trips per day for construction and paving.

Grading - Vehicle speed assumed to be 15 mph on unpaved areas.

Architectural Coating -

Road Dust - San Luis Obispo region values used.

Area Coating -

Energy Use - Energy use associated with electrical demand of all engines (1,365,600 kWh/yr) added.

Water And Wastewater - Potable water and wastewater treatment handled by the proposed project.

Solid Waste - Solid waste generation includes disposal of all biosolids generated from the facility, and solid waste from the new buildings.

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation - Proposed mitigation includes watering 3x per day, and maintaining speeds at 15 mph at construction site.
Tier 3 diesel particulate filters applied to excavators, graders, dozers, & tractors/loaders/backhoes.

Energy Mitigation -

Water Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

Off-road Equipment -

Cayucos Sustainable Water Project - Proposed Project - San Luis Obispo County, Annual

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstructionPhase	PhaseStartDate	3/8/2018	7/27/2017
tblEnergyUse	NT24E	3.70	62.83
tblGrading	MaterialExported	0.00	17,857.00
tblGrading	MaterialExported	0.00	78.00
tblGrading	MaterialImported	0.00	17,857.00
tblGrading	MeanVehicleSpeed	7.10	15.00
tblGrading	MeanVehicleSpeed	7.10	15.00
tblLandUse	BuildingSpaceSquareFeet	23,090.00	23,095.00
tblLandUse	LandUseSquareFeet	23,090.00	23,095.00
tblLandUse	LotAcreage	0.53	4.55
tblLandUse	Population	0.00	6.00
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	CARB_PM_VMT	True	False
tblRoadDust	MaterialMoistureContent	0.5	0.1
tblRoadDust	MaterialSiltContent	4.3	9.3
tblRoadDust	MeanVehicleSpeed	40	32.4
tblSequestration	NumberOfNewTrees	0.00	70.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	100.00
tblSolidWaste	SolidWasteGenerationRate	28.63	816.68

tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	1.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	850.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	20.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	20.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripNumber	8.00	20.00
tblTripsAndVMT	HaulingTripNumber	2,232.00	0.00
tblTripsAndVMT	VendorTripNumber	40.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00

tblWater	IndoorWaterUseRate	5,339,562.50	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.2956	2.4604	1.7610	2.9300e-003	0.3291	0.1483	0.4774	0.1530	0.1384	0.2914	0.0000	265.1366	265.1366	0.0561	0.0000	266.5390
2018	0.6829	2.7983	2.5213	4.3400e-003	0.1109	0.1695	0.2804	0.0296	0.1592	0.1888	0.0000	387.4903	387.4903	0.0732	0.0000	389.3192
Maximum	**0.6829**	**2.7983**	**2.5213**	**4.3400e-003**	**0.3291**	**0.1695**	**0.4774**	**0.1530**	**0.1592**	**0.2914**	**0.0000**	**387.4903**	**387.4903**	**0.0732**	**0.0000**	**389.3192**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.2956	2.4604	1.7610	2.9300e-003	0.1657	0.1483	0.3140	0.0696	0.1384	0.2080	0.0000	265.1364	265.1364	0.0561	0.0000	266.5388
2018	0.6829	2.7983	2.5213	4.3400e-003	0.1109	0.1695	0.2804	0.0296	0.1592	0.1888	0.0000	387.4899	387.4899	0.0732	0.0000	389.3189
Maximum	**0.6829**	**2.7983**	**2.5213**	**4.3400e-003**	**0.1657**	**0.1695**	**0.3140**	**0.0696**	**0.1592**	**0.2080**	**0.0000**	**387.4899**	**387.4899**	**0.0732**	**0.0000**	**389.3189**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**37.14**	**0.00**	**21.56**	**45.66**	**0.00**	**17.36**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2017	8-31-2017	1.3706	1.3706
2	9-1-2017	11-30-2017	1.0427	1.0427
3	12-1-2017	2-28-2018	0.9515	0.9515
4	3-1-2018	5-31-2018	0.9257	0.9257
5	6-1-2018	8-31-2018	0.9241	0.9241
6	9-1-2018	9-30-2018	0.3013	0.3013
		Highest	1.3706	1.3706

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1359	0.0000	4.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.2000e-004	9.2000e-004	0.0000	0.0000	9.9000e-004
Energy	3.3000e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003	0.0000	486.4764	486.4764	0.0212	4.8400e-003	488.4486
Mobile	0.0703	0.3573	0.9864	2.4300e-003	0.2019	3.8700e-003	0.2058	0.0541	3.6600e-003	0.0578	0.0000	221.9717	221.9717	9.9900e-003	0.0000	222.2215
Stationary	0.0140	0.0625	0.0357	7.0000e-005		2.0600e-003	2.0600e-003		2.0600e-003	2.0600e-003	0.0000	6.4812	6.4812	9.1000e-004	0.0000	6.5039
Waste						0.0000	0.0000		0.0000	0.0000	105.9966	0.0000	105.9966	31.5362	0.0000	894.4009
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.2235**	**0.4497**	**1.0477**	**2.6800e-003**	**0.2019**	**8.2100e-003**	**0.2101**	**0.0541**	**8.0000e-003**	**0.0621**	**105.9966**	**714.9302**	**820.9268**	**31.5682**	**4.8400e-003**	**1,611.5759**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1359	0.0000	4.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.2000e-004	9.2000e-004	0.0000	0.0000	9.9000e-004
Energy	3.3000e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003	0.0000	484.3740	484.3740	0.0211	4.8200e-003	486.3380
Mobile	0.0703	0.3573	0.9864	2.4300e-003	0.2019	3.8700e-003	0.2058	0.0541	3.6600e-003	0.0578	0.0000	221.9717	221.9717	9.9900e-003	0.0000	222.2215
Stationary	0.0140	0.0625	0.0357	7.0000e-005		2.0600e-003	2.0600e-003		2.0600e-003	2.0600e-003	0.0000	6.4812	6.4812	9.1000e-004	0.0000	6.5039
Waste						0.0000	0.0000		0.0000	0.0000	105.9966	0.0000	105.9966	31.5362	0.0000	894.4009
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.2235**	**0.4497**	**1.0477**	**2.6800e-003**	**0.2019**	**8.2100e-003**	**0.2101**	**0.0541**	**8.0000e-003**	**0.0621**	**105.9966**	**712.8278**	**818.8244**	**31.5681**	**4.8200e-003**	**1,609.4653**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.29**	**0.26**	**0.00**	**0.41**	**0.13**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	49.5600
Vegetation Land Change	-59.6440
Total	**-10.0840**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/1/2017	6/28/2017	5	10	
2	Grading	Grading	6/29/2017	7/26/2017	5	20	
3	Building Construction	Building Construction	7/27/2017	10/17/2018	5	230	
4	Paving	Paving	10/18/2018	11/14/2018	5	20	
5	Architectural Coating	Architectural Coating	11/15/2018	12/12/2018	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 5.07

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 34,643; Non-Residential Outdoor: 11,548; Striped Parking Area: 13,251 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Bore/Drill Rigs	1	0.30	221	0.50
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	20.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	102.00	4.00	0.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	4.00	0.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	20.00	0.00	0.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use DPF for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0496	0.5228	0.2346	3.8000e-004		0.0288	0.0288		0.0265	0.0265	0.0000	35.3344	35.3344	0.0108	0.0000	35.6051
Total	**0.0496**	**0.5228**	**0.2346**	**3.8000e-004**	**0.1807**	**0.0288**	**0.2095**	**0.0993**	**0.0265**	**0.1258**	**0.0000**	**35.3344**	**35.3344**	**0.0108**	**0.0000**	**35.6051**

3.2 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.9000e-004	0.0137	3.1400e-003	3.0000e-005	4.0000e-004	1.4000e-004	5.5000e-004	1.2000e-004	1.4000e-004	2.5000e-004	0.0000	2.8534	2.8534	1.4000e-004	0.0000	2.8570
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	1.0700e-003	9.3300e-003	2.0000e-005	1.7300e-003	1.0000e-005	1.7500e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.5843	1.5843	7.0000e-005	0.0000	1.5861
Total	**1.5900e-003**	**0.0148**	**0.0125**	**5.0000e-005**	**2.1300e-003**	**1.5000e-004**	**2.3000e-003**	**5.8000e-004**	**1.5000e-004**	**7.2000e-004**	**0.0000**	**4.4377**	**4.4377**	**2.1000e-004**	**0.0000**	**4.4431**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0705	0.0000	0.0705	0.0387	0.0000	0.0387	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0496	0.5228	0.2346	3.8000e-004		0.0288	0.0288		0.0265	0.0265	0.0000	35.3344	35.3344	0.0108	0.0000	35.6050
Total	**0.0496**	**0.5228**	**0.2346**	**3.8000e-004**	**0.0705**	**0.0288**	**0.0993**	**0.0387**	**0.0265**	**0.0652**	**0.0000**	**35.3344**	**35.3344**	**0.0108**	**0.0000**	**35.6050**

3.2 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.9000e-004	0.0137	3.1400e-003	3.0000e-005	4.0000e-004	1.4000e-004	5.5000e-004	1.2000e-004	1.4000e-004	2.5000e-004	0.0000	2.8534	2.8534	1.4000e-004	0.0000	2.8570
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	1.0700e-003	9.3300e-003	2.0000e-005	1.7300e-003	1.0000e-005	1.7500e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.5843	1.5843	7.0000e-005	0.0000	1.5861
Total	**1.5900e-003**	**0.0148**	**0.0125**	**5.0000e-005**	**2.1300e-003**	**1.5000e-004**	**2.3000e-003**	**5.8000e-004**	**1.5000e-004**	**7.2000e-004**	**0.0000**	**4.4377**	**4.4377**	**2.1000e-004**	**0.0000**	**4.4431**

3.3 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0872	0.0000	0.0872	0.0373	0.0000	0.0373	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0307	0.3389	0.1710	3.0000e-004		0.0178	0.0178		0.0164	0.0164	0.0000	27.5595	27.5595	8.4400e-003	0.0000	27.7706
Total	**0.0307**	**0.3389**	**0.1710**	**3.0000e-004**	**0.0872**	**0.0178**	**0.1049**	**0.0373**	**0.0164**	**0.0537**	**0.0000**	**27.5595**	**27.5595**	**8.4400e-003**	**0.0000**	**27.7706**

3.3 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	8.9000e-004	7.7700e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3202	1.3202	6.0000e-005	0.0000	1.3217
Total	**9.2000e-004**	**8.9000e-004**	**7.7700e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.3202**	**1.3202**	**6.0000e-005**	**0.0000**	**1.3217**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0340	0.0000	0.0340	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0307	0.3389	0.1710	3.0000e-004		0.0178	0.0178		0.0164	0.0164	0.0000	27.5594	27.5594	8.4400e-003	0.0000	27.7705
Total	**0.0307**	**0.3389**	**0.1710**	**3.0000e-004**	**0.0340**	**0.0178**	**0.0518**	**0.0146**	**0.0164**	**0.0309**	**0.0000**	**27.5594**	**27.5594**	**8.4400e-003**	**0.0000**	**27.7705**

3.3 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	8.9000e-004	7.7700e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3202	1.3202	6.0000e-005	0.0000	1.3217
Total	**9.2000e-004**	**8.9000e-004**	**7.7700e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.3202**	**1.3202**	**6.0000e-005**	**0.0000**	**1.3217**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1751	1.4974	1.0227	1.5300e-003		0.1004	0.1004		0.0943	0.0943	0.0000	136.5106	136.5106	0.0337	0.0000	137.3542
Total	**0.1751**	**1.4974**	**1.0227**	**1.5300e-003**		**0.1004**	**0.1004**		**0.0943**	**0.0943**	**0.0000**	**136.5106**	**136.5106**	**0.0337**	**0.0000**	**137.3542**

3.4 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6700e-003	0.0517	0.0164	1.0000e-004	2.6300e-003	7.5000e-004	3.3900e-003	7.6000e-004	7.2000e-004	1.4800e-003	0.0000	9.7006	9.7006	4.9000e-004	0.0000	9.7127
Worker	0.0349	0.0340	0.2960	5.6000e-004	0.0550	4.1000e-004	0.0554	0.0146	3.8000e-004	0.0150	0.0000	50.2737	50.2737	2.3200e-003	0.0000	50.3317
Total	**0.0376**	**0.0857**	**0.3124**	**6.6000e-004**	**0.0576**	**1.1600e-003**	**0.0588**	**0.0154**	**1.1000e-003**	**0.0165**	**0.0000**	**59.9743**	**59.9743**	**2.8100e-003**	**0.0000**	**60.0444**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1751	1.4974	1.0227	1.5300e-003		0.1004	0.1004		0.0943	0.0943	0.0000	136.5105	136.5105	0.0337	0.0000	137.3540
Total	**0.1751**	**1.4974**	**1.0227**	**1.5300e-003**		**0.1004**	**0.1004**		**0.0943**	**0.0943**	**0.0000**	**136.5105**	**136.5105**	**0.0337**	**0.0000**	**137.3540**

3.4 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6700e-003	0.0517	0.0164	1.0000e-004	2.6300e-003	7.5000e-004	3.3900e-003	7.6000e-004	7.2000e-004	1.4800e-003	0.0000	9.7006	9.7006	4.9000e-004	0.0000	9.7127
Worker	0.0349	0.0340	0.2960	5.6000e-004	0.0550	4.1000e-004	0.0554	0.0146	3.8000e-004	0.0150	0.0000	50.2737	50.2737	2.3200e-003	0.0000	50.3317
Total	**0.0376**	**0.0857**	**0.3124**	**6.6000e-004**	**0.0576**	**1.1600e-003**	**0.0588**	**0.0154**	**1.1000e-003**	**0.0165**	**0.0000**	**59.9743**	**59.9743**	**2.8100e-003**	**0.0000**	**60.0444**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2798	2.4489	1.8365	2.8400e-003		0.1565	0.1565		0.1471	0.1471	0.0000	250.6191	250.6191	0.0616	0.0000	252.1596
Total	**0.2798**	**2.4489**	**1.8365**	**2.8400e-003**		**0.1565**	**0.1565**		**0.1471**	**0.1471**	**0.0000**	**250.6191**	**250.6191**	**0.0616**	**0.0000**	**252.1596**

3.4 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.2800e-003	0.0891	0.0270	1.9000e-004	4.8900e-003	1.1300e-003	6.0200e-003	1.4100e-003	1.0800e-003	2.4900e-003	0.0000	17.9475	17.9475	8.7000e-004	0.0000	17.9691
Worker	0.0568	0.0547	0.4731	1.0100e-003	0.1021	7.2000e-004	0.1028	0.0271	6.6000e-004	0.0278	0.0000	90.8361	90.8361	3.7400e-003	0.0000	90.9296
Total	**0.0611**	**0.1438**	**0.5001**	**1.2000e-003**	**0.1070**	**1.8500e-003**	**0.1089**	**0.0286**	**1.7400e-003**	**0.0303**	**0.0000**	**108.7836**	**108.7836**	**4.6100e-003**	**0.0000**	**108.8987**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2798	2.4489	1.8365	2.8400e-003		0.1565	0.1565		0.1471	0.1471	0.0000	250.6188	250.6188	0.0616	0.0000	252.1593
Total	**0.2798**	**2.4489**	**1.8365**	**2.8400e-003**		**0.1565**	**0.1565**		**0.1471**	**0.1471**	**0.0000**	**250.6188**	**250.6188**	**0.0616**	**0.0000**	**252.1593**

3.4 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.2800e-003	0.0891	0.0270	1.9000e-004	4.8900e-003	1.1300e-003	6.0200e-003	1.4100e-003	1.0800e-003	2.4900e-003	0.0000	17.9475	17.9475	8.7000e-004	0.0000	17.9691
Worker	0.0568	0.0547	0.4731	1.0100e-003	0.1021	7.2000e-004	0.1028	0.0271	6.6000e-004	0.0278	0.0000	90.8361	90.8361	3.7400e-003	0.0000	90.9296
Total	**0.0611**	**0.1438**	**0.5001**	**1.2000e-003**	**0.1070**	**1.8500e-003**	**0.1089**	**0.0286**	**1.7400e-003**	**0.0303**	**0.0000**	**108.7836**	**108.7836**	**4.6100e-003**	**0.0000**	**108.8987**

3.5 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0164	0.1752	0.1480	2.3000e-004		9.5600e-003	9.5600e-003		8.8000e-003	8.8000e-003	0.0000	20.8116	20.8116	6.4800e-003	0.0000	20.9736
Paving	6.6400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0231**	**0.1752**	**0.1480**	**2.3000e-004**		**9.5600e-003**	**9.5600e-003**		**8.8000e-003**	**8.8000e-003**	**0.0000**	**20.8116**	**20.8116**	**6.4800e-003**	**0.0000**	**20.9736**

3.5 Paving - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1000e-004	8.5700e-003	2.6000e-003	2.0000e-005	4.7000e-004	1.1000e-004	5.8000e-004	1.4000e-004	1.0000e-004	2.4000e-004	0.0000	1.7257	1.7257	8.0000e-005	0.0000	1.7278
Worker	8.0000e-004	7.7000e-004	6.6900e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2845	1.2845	5.0000e-005	0.0000	1.2858
Total	**1.2100e-003**	**9.3400e-003**	**9.2900e-003**	**3.0000e-005**	**1.9100e-003**	**1.2000e-004**	**2.0300e-003**	**5.2000e-004**	**1.1000e-004**	**6.3000e-004**	**0.0000**	**3.0102**	**3.0102**	**1.3000e-004**	**0.0000**	**3.0136**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0164	0.1752	0.1480	2.3000e-004		9.5600e-003	9.5600e-003		8.8000e-003	8.8000e-003	0.0000	20.8116	20.8116	6.4800e-003	0.0000	20.9736
Paving	6.6400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0231**	**0.1752**	**0.1480**	**2.3000e-004**		**9.5600e-003**	**9.5600e-003**		**8.8000e-003**	**8.8000e-003**	**0.0000**	**20.8116**	**20.8116**	**6.4800e-003**	**0.0000**	**20.9736**

3.5 Paving - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1000e-004	8.5700e-003	2.6000e-003	2.0000e-005	4.7000e-004	1.1000e-004	5.8000e-004	1.4000e-004	1.0000e-004	2.4000e-004	0.0000	1.7257	1.7257	8.0000e-005	0.0000	1.7278
Worker	8.0000e-004	7.7000e-004	6.6900e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2845	1.2845	5.0000e-005	0.0000	1.2858
Total	**1.2100e-003**	**9.3400e-003**	**9.2900e-003**	**3.0000e-005**	**1.9100e-003**	**1.2000e-004**	**2.0300e-003**	**5.2000e-004**	**1.1000e-004**	**6.3000e-004**	**0.0000**	**3.0102**	**3.0102**	**1.3000e-004**	**0.0000**	**3.0136**

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9900e-003	0.0201	0.0185	3.0000e-005		1.5100e-003	1.5100e-003		1.5100e-003	1.5100e-003	0.0000	2.5533	2.5533	2.4000e-004	0.0000	2.5593
Total	**0.3167**	**0.0201**	**0.0185**	**3.0000e-005**		**1.5100e-003**	**1.5100e-003**		**1.5100e-003**	**1.5100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.4000e-004**	**0.0000**	**2.5593**

3.6 Architectural Coating - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0700e-003	1.0300e-003	8.9200e-003	2.0000e-005	1.9300e-003	1.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.7126	1.7126	7.0000e-005	0.0000	1.7144
Total	**1.0700e-003**	**1.0300e-003**	**8.9200e-003**	**2.0000e-005**	**1.9300e-003**	**1.0000e-005**	**1.9400e-003**	**5.1000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.7126**	**1.7126**	**7.0000e-005**	**0.0000**	**1.7144**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9900e-003	0.0201	0.0185	3.0000e-005		1.5100e-003	1.5100e-003		1.5100e-003	1.5100e-003	0.0000	2.5533	2.5533	2.4000e-004	0.0000	2.5593
Total	**0.3167**	**0.0201**	**0.0185**	**3.0000e-005**		**1.5100e-003**	**1.5100e-003**		**1.5100e-003**	**1.5100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.4000e-004**	**0.0000**	**2.5593**

3.6 Architectural Coating - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0700e-003	1.0300e-003	8.9200e-003	2.0000e-005	1.9300e-003	1.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.7126	1.7126	7.0000e-005	0.0000	1.7144
Total	**1.0700e-003**	**1.0300e-003**	**8.9200e-003**	**2.0000e-005**	**1.9300e-003**	**1.0000e-005**	**1.9400e-003**	**5.1000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.7126**	**1.7126**	**7.0000e-005**	**0.0000**	**1.7144**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0703	0.3573	0.9864	2.4300e-003	0.2019	3.8700e-003	0.2058	0.0541	3.6600e-003	0.0578	0.0000	221.9717	221.9717	9.9900e-003	0.0000	222.2215
Unmitigated	0.0703	0.3573	0.9864	2.4300e-003	0.2019	3.8700e-003	0.2058	0.0541	3.6600e-003	0.0578	0.0000	221.9717	221.9717	9.9900e-003	0.0000	222.2215

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	160.94	30.48	15.70	536,493	536,493
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	160.94	30.48	15.70	536,493	536,493

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	13.00	13.00	13.00	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	13.00	13.00	13.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.538734	0.036174	0.198999	0.136972	0.036255	0.008427	0.013246	0.018689	0.002427	0.001358	0.005860	0.000839	0.002018
Other Asphalt Surfaces	0.538734	0.036174	0.198999	0.136972	0.036255	0.008427	0.013246	0.018689	0.002427	0.001358	0.005860	0.000839	0.002018

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	451.7390	451.7390	0.0204	4.2300e-003	453.5091
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	453.8415	453.8415	0.0205	4.2500e-003	455.6197
NaturalGas Mitigated	3.3000e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003	0.0000	32.6349	32.6349	6.3000e-004	6.0000e-004	32.8289
NaturalGas Unmitigated	3.3000e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003	0.0000	32.6349	32.6349	6.3000e-004	6.0000e-004	32.8289

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	611556	3.3000e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003	0.0000	32.6349	32.6349	6.3000e-004	6.0000e-004	32.8289
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**3.3000e-003**	**0.0300**	**0.0252**	**1.8000e-004**		**2.2800e-003**	**2.2800e-003**		**2.2800e-003**	**2.2800e-003**	**0.0000**	**32.6349**	**32.6349**	**6.3000e-004**	**6.0000e-004**	**32.8289**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	611556	3.3000e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003	0.0000	32.6349	32.6349	6.3000e-004	6.0000e-004	32.8289
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**3.3000e-003**	**0.0300**	**0.0252**	**1.8000e-004**		**2.2800e-003**	**2.2800e-003**		**2.2800e-003**	**2.2800e-003**	**0.0000**	**32.6349**	**32.6349**	**6.3000e-004**	**6.0000e-004**	**32.8289**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	1.56007e+006	453.8415	0.0205	4.2500e-003	455.6197
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**453.8415**	**0.0205**	**4.2500e-003**	**455.6197**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	1.55645e+006	452.7902	0.0205	4.2400e-003	454.5644
Other Asphalt Surfaces	-3613.5	-1.0512	-0.0001	0.0000	-1.0553
Total		**451.7390**	**0.0204**	**4.2300e-003**	**453.5091**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1359	0.0000	4.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.2000e-004	9.2000e-004	0.0000	0.0000	9.9000e-004
Unmitigated	0.1359	0.0000	4.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.2000e-004	9.2000e-004	0.0000	0.0000	9.9000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0314					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1045					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	4.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.2000e-004	9.2000e-004	0.0000	0.0000	9.9000e-004
Total	**0.1359**	**0.0000**	**4.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.2000e-004**	**9.2000e-004**	**0.0000**	**0.0000**	**9.9000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0314					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1045					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	4.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.2000e-004	9.2000e-004	0.0000	0.0000	9.9000e-004
Total	**0.1359**	**0.0000**	**4.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.2000e-004**	**9.2000e-004**	**0.0000**	**0.0000**	**9.9000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

Use Reclaimed Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Use Water Efficient Irrigation System

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

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	105.9966	31.5362	0.0000	894.4009
Unmitigated	105.9966	31.5362	0.0000	894.4009

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	816.68	105.9966	31.5362	0.0000	894.4009
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**105.9966**	**31.5362**	**0.0000**	**894.4009**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	816.68	105.9966	31.5362	0.0000	894.4009
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**105.9966**	**31.5362**	**0.0000**	**894.4009**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	20	1	0.73	Diesel
Emergency Generator	1	0	20	850	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (0 - 11 HP)	2.0000e-005	9.0000e-005	1.0000e-004	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.6200e-003	7.6200e-003	0.0000	0.0000	7.6400e-003
Emergency Generator - Diesel (750 - 9999 HP)	0.0140	0.0624	0.0356	7.0000e-005		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	6.4736	6.4736	9.1000e-004	0.0000	6.4962
Total	**0.0140**	**0.0625**	**0.0357**	**7.0000e-005**		**2.0600e-003**	**2.0600e-003**		**2.0600e-003**	**2.0600e-003**	**0.0000**	**6.4812**	**6.4812**	**9.1000e-004**	**0.0000**	**6.5039**

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-10.0840	0.0000	0.0000	-10.0840

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	9.62 / 0	-59.6440	0.0000	0.0000	-59.6440
Total		**-59.6440**	**0.0000**	**0.0000**	**-59.6440**

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	70	49.5600	0.0000	0.0000	49.5600
Total		**49.5600**	**0.0000**	**0.0000**	**49.5600**

Cayucos Sustainable Water Project - Proposed Project

San Luis Obispo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	23.09	1000sqft	4.55	23,095.00	6
Other Asphalt Surfaces	5.07	Acre	5.07	220,849.20	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.2	**Precipitation Freq (Days)**	44
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Cayucos Sustainable Water Project - Proposed Project - San Luis Obispo County, Summer

Project Characteristics - Operation planned in 2018.

Land Use - WRRF = 23,095 sf structures, 5.07 acres paving, 2.4 acres solar array
Pipeline route to occupy 1.62 acres.
WRRF would have up to 6 employees.

Construction Phase - Project construction phases and dates used.

Off-road Equipment -

Off-road Equipment - Bore/Drill Rig added for pipeline installation for 5 days.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Default equipment used except Bore/Drill Rigs added.

Trips and VMT - Site preparation includes two haul trips per day at 10 cy/trip.
Four vendor trips per day for construction and paving.

Grading - Vehicle speed assumed to be 15 mph on unpaved areas.

Architectural Coating -

Road Dust - San Luis Obispo region values used.

Area Coating -

Energy Use - Energy use associated with electrical demand of all engines (1,365,600 kWh/yr) added.

Water And Wastewater - Potable water and wastewater treatment handled by the proposed project.

Solid Waste - Solid waste generation includes disposal of all biosolids generated from the facility, and solid waste from the new buildings.

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation - Proposed mitigation includes watering 3x per day, and maintaining speeds at 15 mph at construction site.
Tier 3 diesel particulate filters applied to excavators, graders, dozers, & tractors/loaders/backhoes.

Energy Mitigation -

Water Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

Off-road Equipment -

Cayucos Sustainable Water Project - Proposed Project - San Luis Obispo County, Summer

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstructionPhase	PhaseStartDate	3/8/2018	7/27/2017
tblEnergyUse	NT24E	3.70	62.83
tblGrading	MaterialExported	0.00	17,857.00
tblGrading	MaterialExported	0.00	78.00
tblGrading	MaterialImported	0.00	17,857.00
tblGrading	MeanVehicleSpeed	7.10	15.00
tblGrading	MeanVehicleSpeed	7.10	15.00
tblLandUse	BuildingSpaceSquareFeet	23,090.00	23,095.00
tblLandUse	LandUseSquareFeet	23,090.00	23,095.00
tblLandUse	LotAcreage	0.53	4.55
tblLandUse	Population	0.00	6.00
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	CARB_PM_VMT	True	False
tblRoadDust	MaterialMoistureContent	0.5	0.1
tblRoadDust	MaterialSiltContent	4.3	9.3
tblRoadDust	MeanVehicleSpeed	40	32.4
tblSequestration	NumberOfNewTrees	0.00	70.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	100.00
tblSolidWaste	SolidWasteGenerationRate	28.63	816.68

Cayucos Sustainable Water Project - Proposed Project - San Luis Obispo County, Summer

tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	1.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	850.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	20.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	20.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripNumber	8.00	20.00
tblTripsAndVMT	HaulingTripNumber	2,232.00	0.00
tblTripsAndVMT	VendorTripNumber	40.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00

tblWater	IndoorWaterUseRate	5,339,562.50	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	5.1168	53.7087	24.7153	0.0428	18.2864	2.8941	21.1805	9.9900	2.6631	12.6531	0.0000	4,392.1219	4,392.1219	1.2173	0.0000	4,422.5548
2018	31.7716	24.8583	22.5673	0.0392	1.0565	1.5220	2.5785	0.2813	1.4307	1.7120	0.0000	3,849.4043	3,849.4043	0.7291	0.0000	3,866.9721
Maximum	**31.7716**	**53.7087**	**24.7153**	**0.0428**	**18.2864**	**2.8941**	**21.1805**	**9.9900**	**2.6631**	**12.6531**	**0.0000**	**4,392.1219**	**4,392.1219**	**1.2173**	**0.0000**	**4,422.5548**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	5.1168	53.7087	24.7153	0.0428	7.2653	2.8941	10.1594	3.9322	2.6631	6.5953	0.0000	4,392.1219	4,392.1219	1.2173	0.0000	4,422.5548
2018	31.7716	24.8583	22.5673	0.0392	1.0565	1.5220	2.5785	0.2813	1.4307	1.7120	0.0000	3,849.4043	3,849.4043	0.7291	0.0000	3,866.9721
Maximum	**31.7716**	**53.7087**	**24.7153**	**0.0428**	**7.2653**	**2.8941**	**10.1594**	**3.9322**	**2.6631**	**6.5953**	**0.0000**	**4,392.1219**	**4,392.1219**	**1.2173**	**0.0000**	**4,422.5548**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**56.98**	**0.00**	**46.39**	**58.98**	**0.00**	**42.17**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.7446	3.0000e-005	2.9100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.1600e-003	6.1600e-003	2.0000e-005		6.5900e-003
Energy	0.0181	0.1643	0.1380	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.1170	197.1170	3.7800e-003	3.6100e-003	198.2884
Mobile	0.5290	2.4785	7.2672	0.0183	1.5076	0.0281	1.5358	0.4032	0.0266	0.4299		1,838.8861	1,838.8861	0.0810		1,840.9109
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.2917**	**2.6428**	**7.4081**	**0.0193**	**1.5076**	**0.0406**	**1.5483**	**0.4032**	**0.0391**	**0.4424**		**2,036.0093**	**2,036.0093**	**0.0848**	**3.6100e-003**	**2,039.2059**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.7446	3.0000e-005	2.9100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.1600e-003	6.1600e-003	2.0000e-005		6.5900e-003
Energy	0.0181	0.1643	0.1380	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.1170	197.1170	3.7800e-003	3.6100e-003	198.2884
Mobile	0.5290	2.4785	7.2672	0.0183	1.5076	0.0281	1.5358	0.4032	0.0266	0.4299		1,838.8861	1,838.8861	0.0810		1,840.9109
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.2917**	**2.6428**	**7.4081**	**0.0193**	**1.5076**	**0.0406**	**1.5483**	**0.4032**	**0.0391**	**0.4424**		**2,036.0093**	**2,036.0093**	**0.0848**	**3.6100e-003**	**2,039.2059**

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

3.0 Construction Detail

Construction Phase

Cayucos Sustainable Water Project - Proposed Project - San Luis Obispo County, Summer

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/1/2017	6/28/2017	5	10	
2	Grading	Grading	6/29/2017	7/26/2017	5	20	
3	Building Construction	Building Construction	7/27/2017	10/17/2018	5	230	
4	Paving	Paving	10/18/2018	11/14/2018	5	20	
5	Architectural Coating	Architectural Coating	11/15/2018	12/12/2018	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 5.07

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 34,643; Non-Residential Outdoor: 11,548; Striped Parking Area: 13,251 (Architectural Coating – sqft)

OffRoad Equipment

Cayucos Sustainable Water Project - Proposed Project - San Luis Obispo County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Bore/Drill Rigs	1	0.30	221	0.50
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	20.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	102.00	4.00	0.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	4.00	0.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	20.00	0.00	0.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use DPF for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0674	0.0000	18.0674	9.9309	0.0000	9.9309			0.0000			0.0000
Off-Road	4.9608	52.2754	23.4554	0.0380		2.8786	2.8786		2.6483	2.6483		3,894.9500	3,894.9500	1.1934		3,924.7852
Total	**4.9608**	**52.2754**	**23.4554**	**0.0380**	**18.0674**	**2.8786**	**20.9460**	**9.9309**	**2.6483**	**12.5791**		**3,894.9500**	**3,894.9500**	**1.1934**		**3,924.7852**

3.2 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0486	1.3371	0.3098	2.9400e-003	0.0411	0.0142	0.0553	0.0120	0.0136	0.0256		315.4814	315.4814	0.0157		315.8737
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1074	0.0962	0.9501	1.8300e-003	0.1780	1.2800e-003	0.1792	0.0472	1.1900e-003	0.0484		181.6904	181.6904	8.2200e-003		181.8959
Total	**0.1560**	**1.4333**	**1.2599**	**4.7700e-003**	**0.2190**	**0.0155**	**0.2345**	**0.0592**	**0.0148**	**0.0739**		**497.1718**	**497.1718**	**0.0239**		**497.7696**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0463	0.0000	7.0463	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	4.9608	52.2754	23.4554	0.0380		2.8786	2.8786		2.6483	2.6483	0.0000	3,894.9500	3,894.9500	1.1934		3,924.7852
Total	**4.9608**	**52.2754**	**23.4554**	**0.0380**	**7.0463**	**2.8786**	**9.9248**	**3.8730**	**2.6483**	**6.5213**	**0.0000**	**3,894.9500**	**3,894.9500**	**1.1934**		**3,924.7852**

3.2 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0486	1.3371	0.3098	2.9400e-003	0.0411	0.0142	0.0553	0.0120	0.0136	0.0256		315.4814	315.4814	0.0157		315.8737
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1074	0.0962	0.9501	1.8300e-003	0.1780	1.2800e-003	0.1792	0.0472	1.1900e-003	0.0484		181.6904	181.6904	8.2200e-003		181.8959
Total	**0.1560**	**1.4333**	**1.2599**	**4.7700e-003**	**0.2190**	**0.0155**	**0.2345**	**0.0592**	**0.0148**	**0.0739**		**497.1718**	**497.1718**	**0.0239**		**497.7696**

3.3 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.7175	0.0000	8.7175	3.7314	0.0000	3.7314			0.0000			0.0000
Off-Road	3.0705	33.8868	17.1042	0.0297		1.7774	1.7774		1.6352	1.6352		3,037.9107	3,037.9107	0.9308		3,061.1809
Total	**3.0705**	**33.8868**	**17.1042**	**0.0297**	**8.7175**	**1.7774**	**10.4949**	**3.7314**	**1.6352**	**5.3667**		**3,037.9107**	**3,037.9107**	**0.9308**		**3,061.1809**

3.3 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0895	0.0802	0.7917	1.5200e-003	0.1483	1.0700e-003	0.1494	0.0393	9.9000e-004	0.0403		151.4087	151.4087	6.8500e-003		151.5799
Total	**0.0895**	**0.0802**	**0.7917**	**1.5200e-003**	**0.1483**	**1.0700e-003**	**0.1494**	**0.0393**	**9.9000e-004**	**0.0403**		**151.4087**	**151.4087**	**6.8500e-003**		**151.5799**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3998	0.0000	3.3998	1.4553	0.0000	1.4553			0.0000			0.0000
Off-Road	3.0705	33.8868	17.1042	0.0297		1.7774	1.7774		1.6352	1.6352	0.0000	3,037.9107	3,037.9107	0.9308		3,061.1809
Total	**3.0705**	**33.8868**	**17.1042**	**0.0297**	**3.3998**	**1.7774**	**5.1773**	**1.4553**	**1.6352**	**3.0905**	**0.0000**	**3,037.9107**	**3,037.9107**	**0.9308**		**3,061.1809**

3.3 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0895	0.0802	0.7917	1.5200e-003	0.1483	1.0700e-003	0.1494	0.0393	9.9000e-004	0.0403		151.4087	151.4087	6.8500e-003		151.5799
Total	**0.0895**	**0.0802**	**0.7917**	**1.5200e-003**	**0.1483**	**1.0700e-003**	**0.1494**	**0.0393**	**9.9000e-004**	**0.0403**		**151.4087**	**151.4087**	**6.8500e-003**		**151.5799**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1276	26.7389	18.2630	0.0273		1.7932	1.7932		1.6840	1.6840		2,687.0929	2,687.0929	0.6642		2,703.6977
Total	**3.1276**	**26.7389**	**18.2630**	**0.0273**		**1.7932**	**1.7932**		**1.6840**	**1.6840**		**2,687.0929**	**2,687.0929**	**0.6642**		**2,703.6977**

3.4 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0470	0.9039	0.2833	1.8100e-003	0.0481	0.0134	0.0614	0.0138	0.0128	0.0266		191.9320	191.9320	9.3800e-003		192.1664
Worker	0.6085	0.5453	5.3837	0.0104	1.0084	7.2600e-003	1.0157	0.2674	6.7200e-003	0.2742		1,029.5789	1,029.5789	0.0466		1,030.7434
Total	**0.6556**	**1.4492**	**5.6670**	**0.0122**	**1.0565**	**0.0206**	**1.0771**	**0.2813**	**0.0195**	**0.3008**		**1,221.5109**	**1,221.5109**	**0.0560**		**1,222.9098**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1276	26.7389	18.2630	0.0273		1.7932	1.7932		1.6840	1.6840	0.0000	2,687.0929	2,687.0929	0.6642		2,703.6977
Total	**3.1276**	**26.7389**	**18.2630**	**0.0273**		**1.7932**	**1.7932**		**1.6840**	**1.6840**	**0.0000**	**2,687.0929**	**2,687.0929**	**0.6642**		**2,703.6977**

3.4 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0470	0.9039	0.2833	1.8100e-003	0.0481	0.0134	0.0614	0.0138	0.0128	0.0266		191.9320	191.9320	9.3800e-003		192.1664
Worker	0.6085	0.5453	5.3837	0.0104	1.0084	7.2600e-003	1.0157	0.2674	6.7200e-003	0.2742		1,029.5789	1,029.5789	0.0466		1,030.7434
Total	**0.6556**	**1.4492**	**5.6670**	**0.0122**	**1.0565**	**0.0206**	**1.0771**	**0.2813**	**0.0195**	**0.3008**		**1,221.5109**	**1,221.5109**	**0.0560**		**1,222.9098**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6908	23.5474	17.6589	0.0273		1.5043	1.5043		1.4140	1.4140		2,656.3484	2,656.3484	0.6532		2,672.6771
Total	**2.6908**	**23.5474**	**17.6589**	**0.0273**		**1.5043**	**1.5043**		**1.4140**	**1.4140**		**2,656.3484**	**2,656.3484**	**0.6532**		**2,672.6771**

3.4 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0406	0.8387	0.2509	1.8000e-003	0.0481	0.0108	0.0589	0.0138	0.0103	0.0242		191.2594	191.2594	9.0000e-003		191.4845
Worker	0.5337	0.4722	4.6575	0.0101	1.0084	6.9000e-003	1.0153	0.2674	6.3700e-003	0.2738		1,001.7965	1,001.7965	0.0406		1,002.8105
Total	**0.5743**	**1.3109**	**4.9084**	**0.0119**	**1.0565**	**0.0177**	**1.0742**	**0.2813**	**0.0167**	**0.2980**		**1,193.0559**	**1,193.0559**	**0.0496**		**1,194.2950**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6908	23.5474	17.6589	0.0273		1.5043	1.5043		1.4140	1.4140	0.0000	2,656.3484	2,656.3484	0.6532		2,672.6771
Total	**2.6908**	**23.5474**	**17.6589**	**0.0273**		**1.5043**	**1.5043**		**1.4140**	**1.4140**	**0.0000**	**2,656.3484**	**2,656.3484**	**0.6532**		**2,672.6771**

3.4 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0406	0.8387	0.2509	1.8000e-003	0.0481	0.0108	0.0589	0.0138	0.0103	0.0242		191.2594	191.2594	9.0000e-003		191.4845
Worker	0.5337	0.4722	4.6575	0.0101	1.0084	6.9000e-003	1.0153	0.2674	6.3700e-003	0.2738		1,001.7965	1,001.7965	0.0406		1,002.8105
Total	**0.5743**	**1.3109**	**4.9084**	**0.0119**	**1.0565**	**0.0177**	**1.0742**	**0.2813**	**0.0167**	**0.2980**		**1,193.0559**	**1,193.0559**	**0.0496**		**1,194.2950**

3.5 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6437	17.5209	14.7964	0.0228		0.9561	0.9561		0.8797	0.8797		2,294.0887	2,294.0887	0.7142		2,311.9432
Paving	0.6642					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.3079**	**17.5209**	**14.7964**	**0.0228**		**0.9561**	**0.9561**		**0.8797**	**0.8797**		**2,294.0887**	**2,294.0887**	**0.7142**		**2,311.9432**

3.5 Paving - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0406	0.8387	0.2509	1.8000e-003	0.0481	0.0108	0.0589	0.0138	0.0103	0.0242		191.2594	191.2594	9.0000e-003		191.4845
Worker	0.0785	0.0694	0.6849	1.4800e-003	0.1483	1.0100e-003	0.1493	0.0393	9.4000e-004	0.0403		147.3230	147.3230	5.9600e-003		147.4721
Total	**0.1191**	**0.9081**	**0.9358**	**3.2800e-003**	**0.1964**	**0.0118**	**0.2082**	**0.0532**	**0.0113**	**0.0644**		**338.5825**	**338.5825**	**0.0150**		**338.9566**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6437	17.5209	14.7964	0.0228		0.9561	0.9561		0.8797	0.8797	0.0000	2,294.0887	2,294.0887	0.7142		2,311.9432
Paving	0.6642					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.3079**	**17.5209**	**14.7964**	**0.0228**		**0.9561**	**0.9561**		**0.8797**	**0.8797**	**0.0000**	**2,294.0887**	**2,294.0887**	**0.7142**		**2,311.9432**

3.5 Paving - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0406	0.8387	0.2509	1.8000e-003	0.0481	0.0108	0.0589	0.0138	0.0103	0.0242		191.2594	191.2594	9.0000e-003		191.4845
Worker	0.0785	0.0694	0.6849	1.4800e-003	0.1483	1.0100e-003	0.1493	0.0393	9.4000e-004	0.0403		147.3230	147.3230	5.9600e-003		147.4721
Total	**0.1191**	**0.9081**	**0.9358**	**3.2800e-003**	**0.1964**	**0.0118**	**0.2082**	**0.0532**	**0.0113**	**0.0644**		**338.5825**	**338.5825**	**0.0150**		**338.9566**

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	31.3683					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.1171
Total	**31.6669**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.1171**

3.6 Architectural Coating - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1046	0.0926	0.9132	1.9800e-003	0.1977	1.3500e-003	0.1991	0.0524	1.2500e-003	0.0537		196.4307	196.4307	7.9500e-003		196.6295
Total	**0.1046**	**0.0926**	**0.9132**	**1.9800e-003**	**0.1977**	**1.3500e-003**	**0.1991**	**0.0524**	**1.2500e-003**	**0.0537**		**196.4307**	**196.4307**	**7.9500e-003**		**196.6295**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	31.3683					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.1171
Total	**31.6669**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.1171**

3.6 Architectural Coating - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1046	0.0926	0.9132	1.9800e-003	0.1977	1.3500e-003	0.1991	0.0524	1.2500e-003	0.0537		196.4307	196.4307	7.9500e-003		196.6295
Total	**0.1046**	**0.0926**	**0.9132**	**1.9800e-003**	**0.1977**	**1.3500e-003**	**0.1991**	**0.0524**	**1.2500e-003**	**0.0537**		**196.4307**	**196.4307**	**7.9500e-003**		**196.6295**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5290	2.4785	7.2672	0.0183	1.5076	0.0281	1.5358	0.4032	0.0266	0.4299		1,838.8861	1,838.8861	0.0810		1,840.9109
Unmitigated	0.5290	2.4785	7.2672	0.0183	1.5076	0.0281	1.5358	0.4032	0.0266	0.4299		1,838.8861	1,838.8861	0.0810		1,840.9109

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	160.94	30.48	15.70	536,493	536,493
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	160.94	30.48	15.70	536,493	536,493

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	13.00	13.00	13.00	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	13.00	13.00	13.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.538734	0.036174	0.198999	0.136972	0.036255	0.008427	0.013246	0.018689	0.002427	0.001358	0.005860	0.000839	0.002018
Other Asphalt Surfaces	0.538734	0.036174	0.198999	0.136972	0.036255	0.008427	0.013246	0.018689	0.002427	0.001358	0.005860	0.000839	0.002018

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0181	0.1643	0.1380	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.1170	197.1170	3.7800e-003	3.6100e-003	198.2884
NaturalGas Unmitigated	0.0181	0.1643	0.1380	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.1170	197.1170	3.7800e-003	3.6100e-003	198.2884

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	1675.49	0.0181	0.1643	0.1380	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.1170	197.1170	3.7800e-003	3.6100e-003	198.2884
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0181**	**0.1643**	**0.1380**	**9.9000e-004**		**0.0125**	**0.0125**		**0.0125**	**0.0125**		**197.1170**	**197.1170**	**3.7800e-003**	**3.6100e-003**	**198.2884**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	1.67549	0.0181	0.1643	0.1380	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.1170	197.1170	3.7800e-003	3.6100e-003	198.2884
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0181**	**0.1643**	**0.1380**	**9.9000e-004**		**0.0125**	**0.0125**		**0.0125**	**0.0125**		**197.1170**	**197.1170**	**3.7800e-003**	**3.6100e-003**	**198.2884**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.7446	3.0000e-005	2.9100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.1600e-003	6.1600e-003	2.0000e-005		6.5900e-003
Unmitigated	0.7446	3.0000e-005	2.9100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.1600e-003	6.1600e-003	2.0000e-005		6.5900e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1719					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5725					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.8000e-004	3.0000e-005	2.9100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.1600e-003	6.1600e-003	2.0000e-005		6.5900e-003
Total	**0.7446**	**3.0000e-005**	**2.9100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**6.1600e-003**	**6.1600e-003**	**2.0000e-005**		**6.5900e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1719					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5725					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.8000e-004	3.0000e-005	2.9100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.1600e-003	6.1600e-003	2.0000e-005		6.5900e-003
Total	**0.7446**	**3.0000e-005**	**2.9100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**6.1600e-003**	**6.1600e-003**	**2.0000e-005**		**6.5900e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Use Reclaimed Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	20	1	0.73	Diesel
Emergency Generator	1	0	20	850	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (0 - 11 HP)	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Emergency Generator - Diesel (750 - 9999 HP)	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

11.0 Vegetation

Cayucos Sustainable Water Project - Proposed Project

San Luis Obispo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	23.09	1000sqft	4.55	23,095.00	6
Other Asphalt Surfaces	5.07	Acre	5.07	220,849.20	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.2	**Precipitation Freq (Days)**	44
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Cayucos Sustainable Water Project - Proposed Project - San Luis Obispo County, Winter

Project Characteristics - Operation planned in 2018.

Land Use - WRRF = 23,095 sf structures, 5.07 acres paving, 2.4 acres solar array
Pipeline route to occupy 1.62 acres.
WRRF would have up to 6 employees.

Construction Phase - Project construction phases and dates used.

Off-road Equipment -

Off-road Equipment - Bore/Drill Rig added for pipeline installation for 5 days.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Default equipment used except Bore/Drill Rigs added.

Trips and VMT - Site preparation includes two haul trips per day at 10 cy/trip.
Four vendor trips per day for construction and paving.

Grading - Vehicle speed assumed to be 15 mph on unpaved areas.

Architectural Coating -

Road Dust - San Luis Obispo region values used.

Area Coating -

Energy Use - Energy use associated with electrical demand of all engines (1,365,600 kWh/yr) added.

Water And Wastewater - Potable water and wastewater treatment handled by the proposed project.

Solid Waste - Solid waste generation includes disposal of all biosolids generated from the facility, and solid waste from the new buildings.

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation - Proposed mitigation includes watering 3x per day, and maintaining speeds at 15 mph at construction site.
Tier 3 diesel particulate filters applied to excavators, graders, dozers, & tractors/loaders/backhoes.

Energy Mitigation -

Water Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

Off-road Equipment -

Cayucos Sustainable Water Project - Proposed Project - San Luis Obispo County, Winter

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstructionPhase	PhaseStartDate	3/8/2018	7/27/2017
tblEnergyUse	NT24E	3.70	62.83
tblGrading	MaterialExported	0.00	17,857.00
tblGrading	MaterialExported	0.00	78.00
tblGrading	MaterialImported	0.00	17,857.00
tblGrading	MeanVehicleSpeed	7.10	15.00
tblGrading	MeanVehicleSpeed	7.10	15.00
tblLandUse	BuildingSpaceSquareFeet	23,090.00	23,095.00
tblLandUse	LandUseSquareFeet	23,090.00	23,095.00
tblLandUse	LotAcreage	0.53	4.55
tblLandUse	Population	0.00	6.00
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	CARB_PM_VMT	True	False
tblRoadDust	MaterialMoistureContent	0.5	0.1
tblRoadDust	MaterialSiltContent	4.3	9.3
tblRoadDust	MeanVehicleSpeed	40	32.4
tblSequestration	NumberOfNewTrees	0.00	70.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	100.00
tblSolidWaste	SolidWasteGenerationRate	28.63	816.68

tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	1.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	850.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	20.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	20.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripLength	20.00	38.00
tblTripsAndVMT	HaulingTripNumber	8.00	20.00
tblTripsAndVMT	HaulingTripNumber	2,232.00	0.00
tblTripsAndVMT	VendorTripNumber	40.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00

tblWater	IndoorWaterUseRate	5,339,562.50	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	5.1321	53.7427	24.7182	0.0427	18.2864	2.8942	21.1806	9.9900	2.6632	12.6532	0.0000	4,381.4086	4,381.4086	1.2175	0.0000	4,411.8459
2018	31.7858	24.9301	22.5115	0.0387	1.0565	1.5221	2.5786	0.2813	1.4308	1.7121	0.0000	3,800.1726	3,800.1726	0.7294	0.0000	3,817.7263
Maximum	**31.7858**	**53.7427**	**24.7182**	**0.0427**	**18.2864**	**2.8942**	**21.1806**	**9.9900**	**2.6632**	**12.6532**	**0.0000**	**4,381.4086**	**4,381.4086**	**1.2175**	**0.0000**	**4,411.8459**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	5.1321	53.7427	24.7182	0.0427	7.2653	2.8942	10.1595	3.9322	2.6632	6.5954	0.0000	4,381.4086	4,381.4086	1.2175	0.0000	4,411.8459
2018	31.7858	24.9301	22.5115	0.0387	1.0565	1.5221	2.5786	0.2813	1.4308	1.7121	0.0000	3,800.1726	3,800.1726	0.7294	0.0000	3,817.7263
Maximum	**31.7858**	**53.7427**	**24.7182**	**0.0427**	**7.2653**	**2.8942**	**10.1595**	**3.9322**	**2.6632**	**6.5954**	**0.0000**	**4,381.4086**	**4,381.4086**	**1.2175**	**0.0000**	**4,411.8459**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**56.98**	**0.00**	**46.39**	**58.98**	**0.00**	**42.17**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.7446	3.0000e-005	2.9100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.1600e-003	6.1600e-003	2.0000e-005		6.5900e-003
Energy	0.0181	0.1643	0.1380	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.1170	197.1170	3.7800e-003	3.6100e-003	198.2884
Mobile	0.5224	2.5983	7.2726	0.0176	1.5076	0.0283	1.5359	0.4032	0.0268	0.4300		1,769.0024	1,769.0024	0.0806		1,771.0169
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.2851**	**2.7625**	**7.4135**	**0.0186**	**1.5076**	**0.0408**	**1.5484**	**0.4032**	**0.0393**	**0.4425**		**1,966.1256**	**1,966.1256**	**0.0844**	**3.6100e-003**	**1,969.3119**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.7446	3.0000e-005	2.9100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.1600e-003	6.1600e-003	2.0000e-005		6.5900e-003
Energy	0.0181	0.1643	0.1380	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.1170	197.1170	3.7800e-003	3.6100e-003	198.2884
Mobile	0.5224	2.5983	7.2726	0.0176	1.5076	0.0283	1.5359	0.4032	0.0268	0.4300		1,769.0024	1,769.0024	0.0806		1,771.0169
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.2851**	**2.7625**	**7.4135**	**0.0186**	**1.5076**	**0.0408**	**1.5484**	**0.4032**	**0.0393**	**0.4425**		**1,966.1256**	**1,966.1256**	**0.0844**	**3.6100e-003**	**1,969.3119**

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

3.0 Construction Detail

Construction Phase

Cayucos Sustainable Water Project - Proposed Project - San Luis Obispo County, Winter

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/1/2017	6/28/2017	5	10	
2	Grading	Grading	6/29/2017	7/26/2017	5	20	
3	Building Construction	Building Construction	7/27/2017	10/17/2018	5	230	
4	Paving	Paving	10/18/2018	11/14/2018	5	20	
5	Architectural Coating	Architectural Coating	11/15/2018	12/12/2018	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 5.07

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 34,643; Non-Residential Outdoor: 11,548; Striped Parking Area: 13,251 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Bore/Drill Rigs	1	0.30	221	0.50
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	20.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	102.00	4.00	0.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	4.00	0.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	20.00	0.00	0.00	13.00	13.00	38.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use DPF for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0674	0.0000	18.0674	9.9309	0.0000	9.9309			0.0000			0.0000
Off-Road	4.9608	52.2754	23.4554	0.0380		2.8786	2.8786		2.6483	2.6483		3,894.9500	3,894.9500	1.1934		3,924.7852
Total	**4.9608**	**52.2754**	**23.4554**	**0.0380**	**18.0674**	**2.8786**	**20.9460**	**9.9309**	**2.6483**	**12.5791**		**3,894.9500**	**3,894.9500**	**1.1934**		**3,924.7852**

3.2 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0493	1.3582	0.3203	2.9200e-003	0.0411	0.0143	0.0554	0.0120	0.0137	0.0257		313.2295	313.2295	0.0160		313.6299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1220	0.1091	0.9425	1.7400e-003	0.1780	1.2800e-003	0.1792	0.0472	1.1900e-003	0.0484		173.2291	173.2291	8.0700e-003		173.4309
Total	**0.1713**	**1.4673**	**1.2628**	**4.6600e-003**	**0.2190**	**0.0156**	**0.2346**	**0.0592**	**0.0149**	**0.0741**		**486.4585**	**486.4585**	**0.0241**		**487.0607**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0463	0.0000	7.0463	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	4.9608	52.2754	23.4554	0.0380		2.8786	2.8786		2.6483	2.6483	0.0000	3,894.9500	3,894.9500	1.1934		3,924.7852
Total	**4.9608**	**52.2754**	**23.4554**	**0.0380**	**7.0463**	**2.8786**	**9.9248**	**3.8730**	**2.6483**	**6.5213**	**0.0000**	**3,894.9500**	**3,894.9500**	**1.1934**		**3,924.7852**

3.2 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0493	1.3582	0.3203	2.9200e-003	0.0411	0.0143	0.0554	0.0120	0.0137	0.0257		313.2295	313.2295	0.0160		313.6299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1220	0.1091	0.9425	1.7400e-003	0.1780	1.2800e-003	0.1792	0.0472	1.1900e-003	0.0484		173.2291	173.2291	8.0700e-003		173.4309
Total	**0.1713**	**1.4673**	**1.2628**	**4.6600e-003**	**0.2190**	**0.0156**	**0.2346**	**0.0592**	**0.0149**	**0.0741**		**486.4585**	**486.4585**	**0.0241**		**487.0607**

3.3 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.7175	0.0000	8.7175	3.7314	0.0000	3.7314			0.0000			0.0000
Off-Road	3.0705	33.8868	17.1042	0.0297		1.7774	1.7774		1.6352	1.6352		3,037.9107	3,037.9107	0.9308		3,061.1809
Total	**3.0705**	**33.8868**	**17.1042**	**0.0297**	**8.7175**	**1.7774**	**10.4949**	**3.7314**	**1.6352**	**5.3667**		**3,037.9107**	**3,037.9107**	**0.9308**		**3,061.1809**

3.3 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1017	0.0909	0.7854	1.4500e-003	0.1483	1.0700e-003	0.1494	0.0393	9.9000e-004	0.0403		144.3576	144.3576	6.7300e-003		144.5257
Total	**0.1017**	**0.0909**	**0.7854**	**1.4500e-003**	**0.1483**	**1.0700e-003**	**0.1494**	**0.0393**	**9.9000e-004**	**0.0403**		**144.3576**	**144.3576**	**6.7300e-003**		**144.5257**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3998	0.0000	3.3998	1.4553	0.0000	1.4553			0.0000			0.0000
Off-Road	3.0705	33.8868	17.1042	0.0297		1.7774	1.7774		1.6352	1.6352	0.0000	3,037.9107	3,037.9107	0.9308		3,061.1809
Total	**3.0705**	**33.8868**	**17.1042**	**0.0297**	**3.3998**	**1.7774**	**5.1773**	**1.4553**	**1.6352**	**3.0905**	**0.0000**	**3,037.9107**	**3,037.9107**	**0.9308**		**3,061.1809**

3.3 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1017	0.0909	0.7854	1.4500e-003	0.1483	1.0700e-003	0.1494	0.0393	9.9000e-004	0.0403		144.3576	144.3576	6.7300e-003		144.5257
Total	**0.1017**	**0.0909**	**0.7854**	**1.4500e-003**	**0.1483**	**1.0700e-003**	**0.1494**	**0.0393**	**9.9000e-004**	**0.0403**		**144.3576**	**144.3576**	**6.7300e-003**		**144.5257**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1276	26.7389	18.2630	0.0273		1.7932	1.7932		1.6840	1.6840		2,687.0929	2,687.0929	0.6642		2,703.6977
Total	**3.1276**	**26.7389**	**18.2630**	**0.0273**		**1.7932**	**1.7932**		**1.6840**	**1.6840**		**2,687.0929**	**2,687.0929**	**0.6642**		**2,703.6977**

3.4 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0485	0.9137	0.3021	1.7900e-003	0.0481	0.0135	0.0616	0.0138	0.0129	0.0267		189.5927	189.5927	9.7400e-003		189.8362
Worker	0.6915	0.6184	5.3410	9.8900e-003	1.0084	7.2600e-003	1.0157	0.2674	6.7200e-003	0.2742		981.6315	981.6315	0.0457		982.7748
Total	**0.7400**	**1.5321**	**5.6431**	**0.0117**	**1.0565**	**0.0208**	**1.0772**	**0.2813**	**0.0196**	**0.3009**		**1,171.2242**	**1,171.2242**	**0.0555**		**1,172.6111**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1276	26.7389	18.2630	0.0273		1.7932	1.7932		1.6840	1.6840	0.0000	2,687.0929	2,687.0929	0.6642		2,703.6977
Total	**3.1276**	**26.7389**	**18.2630**	**0.0273**		**1.7932**	**1.7932**		**1.6840**	**1.6840**	**0.0000**	**2,687.0929**	**2,687.0929**	**0.6642**		**2,703.6977**

3.4 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0485	0.9137	0.3021	1.7900e-003	0.0481	0.0135	0.0616	0.0138	0.0129	0.0267		189.5927	189.5927	9.7400e-003		189.8362
Worker	0.6915	0.6184	5.3410	9.8900e-003	1.0084	7.2600e-003	1.0157	0.2674	6.7200e-003	0.2742		981.6315	981.6315	0.0457		982.7748
Total	**0.7400**	**1.5321**	**5.6431**	**0.0117**	**1.0565**	**0.0208**	**1.0772**	**0.2813**	**0.0196**	**0.3009**		**1,171.2242**	**1,171.2242**	**0.0555**		**1,172.6111**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6908	23.5474	17.6589	0.0273		1.5043	1.5043		1.4140	1.4140		2,656.3484	2,656.3484	0.6532		2,672.6771
Total	**2.6908**	**23.5474**	**17.6589**	**0.0273**		**1.5043**	**1.5043**		**1.4140**	**1.4140**		**2,656.3484**	**2,656.3484**	**0.6532**		**2,672.6771**

3.4 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0419	0.8469	0.2680	1.7800e-003	0.0481	0.0109	0.0590	0.0138	0.0104	0.0243		188.8070	188.8070	9.3600e-003		189.0409
Worker	0.6063	0.5358	4.5846	9.6100e-003	1.0084	6.9000e-003	1.0153	0.2674	6.3700e-003	0.2738		955.0172	955.0172	0.0396		956.0083
Total	**0.6482**	**1.3827**	**4.8526**	**0.0114**	**1.0565**	**0.0178**	**1.0743**	**0.2813**	**0.0168**	**0.2981**		**1,143.8242**	**1,143.8242**	**0.0490**		**1,145.0492**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6908	23.5474	17.6589	0.0273		1.5043	1.5043		1.4140	1.4140	0.0000	2,656.3484	2,656.3484	0.6532		2,672.6771
Total	**2.6908**	**23.5474**	**17.6589**	**0.0273**		**1.5043**	**1.5043**		**1.4140**	**1.4140**	**0.0000**	**2,656.3484**	**2,656.3484**	**0.6532**		**2,672.6771**

3.4 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0419	0.8469	0.2680	1.7800e-003	0.0481	0.0109	0.0590	0.0138	0.0104	0.0243		188.8070	188.8070	9.3600e-003		189.0409
Worker	0.6063	0.5358	4.5846	9.6100e-003	1.0084	6.9000e-003	1.0153	0.2674	6.3700e-003	0.2738		955.0172	955.0172	0.0396		956.0083
Total	**0.6482**	**1.3827**	**4.8526**	**0.0114**	**1.0565**	**0.0178**	**1.0743**	**0.2813**	**0.0168**	**0.2981**		**1,143.8242**	**1,143.8242**	**0.0490**		**1,145.0492**

3.5 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6437	17.5209	14.7964	0.0228		0.9561	0.9561		0.8797	0.8797		2,294.0887	2,294.0887	0.7142		2,311.9432
Paving	0.6642					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.3079**	**17.5209**	**14.7964**	**0.0228**		**0.9561**	**0.9561**		**0.8797**	**0.8797**		**2,294.0887**	**2,294.0887**	**0.7142**		**2,311.9432**

3.5 Paving - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0419	0.8469	0.2680	1.7800e-003	0.0481	0.0109	0.0590	0.0138	0.0104	0.0243		188.8070	188.8070	9.3600e-003		189.0409
Worker	0.0892	0.0788	0.6742	1.4100e-003	0.1483	1.0100e-003	0.1493	0.0393	9.4000e-004	0.0403		140.4437	140.4437	5.8300e-003		140.5895
Total	**0.1311**	**0.9257**	**0.9422**	**3.1900e-003**	**0.1964**	**0.0119**	**0.2083**	**0.0532**	**0.0114**	**0.0645**		**329.2507**	**329.2507**	**0.0152**		**329.6304**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6437	17.5209	14.7964	0.0228		0.9561	0.9561		0.8797	0.8797	0.0000	2,294.0887	2,294.0887	0.7142		2,311.9432
Paving	0.6642					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.3079**	**17.5209**	**14.7964**	**0.0228**		**0.9561**	**0.9561**		**0.8797**	**0.8797**	**0.0000**	**2,294.0887**	**2,294.0887**	**0.7142**		**2,311.9432**

3.5 Paving - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0419	0.8469	0.2680	1.7800e-003	0.0481	0.0109	0.0590	0.0138	0.0104	0.0243		188.8070	188.8070	9.3600e-003		189.0409
Worker	0.0892	0.0788	0.6742	1.4100e-003	0.1483	1.0100e-003	0.1493	0.0393	9.4000e-004	0.0403		140.4437	140.4437	5.8300e-003		140.5895
Total	**0.1311**	**0.9257**	**0.9422**	**3.1900e-003**	**0.1964**	**0.0119**	**0.2083**	**0.0532**	**0.0114**	**0.0645**		**329.2507**	**329.2507**	**0.0152**		**329.6304**

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	31.3683					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.1171
Total	**31.6669**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.1171**

3.6 Architectural Coating - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1189	0.1051	0.8989	1.8800e-003	0.1977	1.3500e-003	0.1991	0.0524	1.2500e-003	0.0537		187.2583	187.2583	7.7700e-003		187.4526
Total	**0.1189**	**0.1051**	**0.8989**	**1.8800e-003**	**0.1977**	**1.3500e-003**	**0.1991**	**0.0524**	**1.2500e-003**	**0.0537**		**187.2583**	**187.2583**	**7.7700e-003**		**187.4526**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	31.3683					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.1171
Total	**31.6669**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.1171**

3.6 Architectural Coating - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1189	0.1051	0.8989	1.8800e-003	0.1977	1.3500e-003	0.1991	0.0524	1.2500e-003	0.0537		187.2583	187.2583	7.7700e-003		187.4526
Total	**0.1189**	**0.1051**	**0.8989**	**1.8800e-003**	**0.1977**	**1.3500e-003**	**0.1991**	**0.0524**	**1.2500e-003**	**0.0537**		**187.2583**	**187.2583**	**7.7700e-003**		**187.4526**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5224	2.5983	7.2726	0.0176	1.5076	0.0283	1.5359	0.4032	0.0268	0.4300		1,769.0024	1,769.0024	0.0806		1,771.0169
Unmitigated	0.5224	2.5983	7.2726	0.0176	1.5076	0.0283	1.5359	0.4032	0.0268	0.4300		1,769.0024	1,769.0024	0.0806		1,771.0169

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	160.94	30.48	15.70	536,493	536,493
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	160.94	30.48	15.70	536,493	536,493

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	13.00	13.00	13.00	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	13.00	13.00	13.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.538734	0.036174	0.198999	0.136972	0.036255	0.008427	0.013246	0.018689	0.002427	0.001358	0.005860	0.000839	0.002018
Other Asphalt Surfaces	0.538734	0.036174	0.198999	0.136972	0.036255	0.008427	0.013246	0.018689	0.002427	0.001358	0.005860	0.000839	0.002018

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0181	0.1643	0.1380	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.1170	197.1170	3.7800e-003	3.6100e-003	198.2884
NaturalGas Unmitigated	0.0181	0.1643	0.1380	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.1170	197.1170	3.7800e-003	3.6100e-003	198.2884

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	1675.49	0.0181	0.1643	0.1380	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.1170	197.1170	3.7800e-003	3.6100e-003	198.2884
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0181**	**0.1643**	**0.1380**	**9.9000e-004**		**0.0125**	**0.0125**		**0.0125**	**0.0125**		**197.1170**	**197.1170**	**3.7800e-003**	**3.6100e-003**	**198.2884**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	1.67549	0.0181	0.1643	0.1380	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.1170	197.1170	3.7800e-003	3.6100e-003	198.2884
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0181**	**0.1643**	**0.1380**	**9.9000e-004**		**0.0125**	**0.0125**		**0.0125**	**0.0125**		**197.1170**	**197.1170**	**3.7800e-003**	**3.6100e-003**	**198.2884**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.7446	3.0000e-005	2.9100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.1600e-003	6.1600e-003	2.0000e-005		6.5900e-003
Unmitigated	0.7446	3.0000e-005	2.9100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.1600e-003	6.1600e-003	2.0000e-005		6.5900e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1719					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5725					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.8000e-004	3.0000e-005	2.9100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.1600e-003	6.1600e-003	2.0000e-005		6.5900e-003
Total	**0.7446**	**3.0000e-005**	**2.9100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**6.1600e-003**	**6.1600e-003**	**2.0000e-005**		**6.5900e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1719					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5725					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.8000e-004	3.0000e-005	2.9100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.1600e-003	6.1600e-003	2.0000e-005		6.5900e-003
Total	**0.7446**	**3.0000e-005**	**2.9100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**6.1600e-003**	**6.1600e-003**	**2.0000e-005**		**6.5900e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Use Reclaimed Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	20	1	0.73	Diesel
Emergency Generator	1	0	20	850	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (0 - 11 HP)	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Emergency Generator - Diesel (750 - 9999 HP)	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

11.0 Vegetation

ESTERO MARINE TERMINAL
OFFSHORE PIPELINE DESCRIPTIONS

CHEVRON ESTERO MARINE TERMNAL
SAN LUIS OBISPO COUNTY, CALIFORNIA

Project No. 1302-0394

Prepared for:

Chevron Environmental Management Company
4000 Highway One
Morro Bay, California 93442

Prepared by:

Padre Associates, Inc.
369 Pacific Street
San Luis Obispo, California 93401

OCTOBER 2016

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

INTRODUCTION

The following description of the Chevron Estero Marine Terminal offshore pipelines has been prepared by Padre Associates, Inc. to assist the Cayucos Sanitary District (CSD) as to whether the existing pipelines could be utilized as an outfall for tertiary treated water from the proposed CSD wastewater treatment facility to be constructed at the former Estero Marine Terminal (EMT) property along Toro Creek Road. The following text and graphics provides a summary of the existing pipelines and their condition. Refer to Table 1 for a summary of the Estero pipeline characteristics. Refer to Figure 1-1 for the EMT facility schematic illustration.

OUTFALL PIPELINE DESCRIPTION

The outfall pipeline was constructed in 1929 and originally served as loading line No. 1 (LL1) until it was idled in 1961. In 1980 it was converted into an ocean outfall pipeline for treated ballast water. The overall length of the outfall pipeline from onshore origination to offshore termination is approximately 3,180 feet [ft].

The outfall pipeline is comprised of 8-inch nominal pipe and 16-inch nominal pipe. The outfall originates inside the northwest corner of the EMT facility on the east side of Highway 1 as an 8-inch pipe. It exits the facility in a northwestern alignment down the south bank of Toro Creek, turns in a westerly direction near the toe of the bank and passes underneath the northbound Highway 1 bridge. From there it turns to a southwesterly alignment and passes underneath southbound Highway 1 inside of a five ft diameter reinforced concrete culvert. According to a depth of burial survey completed in March 2013, this pipeline is buried approximately three to six ft deep through the foredunes and approximately three to four ft through the beach.

The nominal 16-inch diameter portion of the outfall pipeline originates at the reinforced concrete anchor block buried in the beach where the 8-inch diameter pipeline ties into the end of the 16-inch diameter pipeline. The 16-inch diameter pipeline extends from the seaward side of the concrete anchor block in a southwesterly alignment and passes through a nominal 20-inch diameter steel pipe casing a distance of approximately 386 ft where the casing terminates underneath the shoreline. The annulus between the 16-inch diameter pipeline and the 20-inch diameter casing is filled with tar.

After exiting the casing, the 16-inch diameter pipeline continues seaward in a southwesterly alignment and passes underneath the surf zone. Just offshore of the shoreline (extreme low tide line) the pipeline is buried in excess of approximately 13 ft (to top of pipe). At the 23 ft bathymetric contour the outfall pipeline is buried approximately three to four ft to the top of the pipe. The pipeline terminates in a diffuser pipe in approximately 46 ft of water in a silt/sand seafloor. The outfall pipeline is buried three to four ft (to top of pipe) throughout the offshore segment and is externally coated with an asphaltic weight coating measuring approximately 0.75-inch thick. Due to the age of this pipeline, the poor condition of its external coating, the possibility that it was used as a sacrificial anode for 19 years (1961 to 1980), and the fact that is has been used as a wastewater discharge line for 35 years and open to the ocean, it is prudent to assume that the pipe wall is in extremely poor condition and its present wall thickness and joint conditions substantially less than its original conditions.

The diffuser termination is apparently constructed of nominal 16-inch diameter pipe (approximate) and is approximately 20 ft in length. At the outfall's offshore termination, the pipeline exits the seafloor at an angle to a height of approximately one to two ft above the seafloor and then rotates back to level to run horizontally with the seafloor underneath. The diffuser pipe is connected to the outfall pipeline with a friction-type sleeve (no attachments) and basically "hangs" on the end of the diffuser pipeline and is suspended above the seafloor (refer to Figure 1-2 Outfall Pipeline Offshore Termination Schematic).

LOADING LINE #1 DESCRIPTION

The existing nominal 18-inch diameter LL1 was installed in 1961 to replace the original nominal 16-inch diameter LL1 (now the outfall pipeline). This replacement LL1 pipeline was idled in 1999 and pigged and flushed.

LL1 is comprised of nominal 18-inch diameter steel pipe from its origination point inside the EMT facility located on the east side of Highway 1 to its termination offshore in 48 ft of water. The overall length of LL1, from onshore origination to offshore termination, is approximately 3,380 ft.

This submarine pipeline currently originates inside the EMT facility as a riser projecting vertically out of the ground near the western boundary of the facility. This pipeline is fitted with a vertical riser for above ground access. The pipeline exits the EMT facility in a westerly alignment and passes underneath Highway 1 through a 24-inch diameter steel pipe casing approximately 140 ft in length. LL1 exits the 24-inch diameter casing underneath the foredunes and continues underneath the foredunes where it makes a u-shaped expansion loop to the north and then turns to a southwesterly alignment as it exits the expansion loop. At this point, the LL1 alignment is located approximately 4.6 m (15 ft) to the south of the outfall pipeline and runs parallel with the outfall pipeline for the remainder of its length. According to a depth of burial survey completed in March 2013, this pipeline is buried approximately seven to ten ft through the foredunes and approximately five ft (to top of pipe) where it crosses underneath the beach.

Just offshore of the shoreline (extreme low tide line) the pipeline is buried in excess of approximately 13 ft (to top of pipe). At the -23 ft bathymetric contour line the pipeline is buried two to three ft (to top of pipe). The "offshore segment" of LL1 continues in a southwesterly alignment to its offshore termination in 48 ft of water, a distance of approximately 1,890 ft. The offshore segment of this pipeline is buried approximately two to three ft (to top of pipe).

A section of the beach portion of LL1 was exposed and inspected in 2013/2014 and found to be 18-inch diameter pipe with a 0.5625-inch wall and lined with a 0.500-inch thick cement liner. The pipeline is externally coated with a hand-applied cement weight coating. Offshore, the pipeline terminates in an 18-inch diameter 300# series flange and blind flange with a 6-inch diameter flushing port inserted and welded into the blind flange. The flushing port is capped with a 6-inch x 300# series flange and blind flange (refer to Figure 1-3 Loading Line #1 Offshore Termination Schematic).

LOADING LINE #2 DESCRIPTION

LL2 consists of nominal 20-inch diameter and nominal 22-inch diameter. The 20-inch diameter portion of this pipeline was constructed in 1983 and replaced the original 18-inch diameter LL2. The 22-inch diameter (onshore) portion of this pipeline was constructed in 1964. LL2 was idled in 1999 and pigged and flushed.

Like LL1, LL2 currently originates inside the EMT facility as a vertical riser projecting out of the ground near the western boundary of the facility. At its origination point, the pipeline is comprised of nominal 22-inch diameter pipe and it exits the EMT facility in a northwesterly alignment and passes underneath both lanes of Highway 1 through a 30-inch diameter by 0.250-inch wall steel pipe casing. The 22-inch diameter pipe has a wall thickness of 0.375-inches, is coated with two layers of Polyken 980 anti-corrosive wrap, and has an internal cement liner of unknown thickness. Less than approximately 50 ft west of the termination of the 30-inch diameter casing, the LL2 piping is reduced from 22-inch diameter pipe to 20-inch diameter pipe and remains 20-inch diameter pipe for the remainder of its length. According to a depth of burial survey completed in March 2013, this pipeline is buried approximately two to six ft depth through the foredunes and across the beach.

This 20-inch diameter piping represents the new LL2 submarine pipeline constructed in 1983 and was constructed using modern pipeline construction techniques, materials and quality control. The 20-inch diameter piping (beach, surf zone and offshore segments) consist of 0.500-inch wall steel pipe with a 1.500-inch external coating of Hevicote reinforced cement weight coating over a Pritec 1560 polyethylene anti-corrosive coating.

LL2 exits the 30-inch diameter casing underneath the foredunes and continues buried underneath the foredunes and across the beach where it is supported by two buried pile-based pipe supports and continues in this northwesterly alignment crossing under Toro Creek. Both supports are founded on pairs of 14-inch diameter by 0.750-inch wall steel piling capped with W14x120 wide flange beams. The pipeline rests on steel saddles attached to the top of the wide flange pile caps.

Near the shoreline, the pipeline bends approximately 22 degrees to the west and continues that westerly alignment to its termination offshore. The beach segment of LL2 is buried approximately two to seven ft (seven ft at the casing termination) where it crosses underneath the foredunes and beach. The “surf zone” segment and is buried approximately two to seven ft deep within the surf zone segment. Offshore of the surf zone, at the -24 ft bathymetric contour line, the pipeline is buried two to three ft to the top of pipe but becomes exposed on the seafloor less than 100 ft offshore of this bathymetric contour line and alternates between exposure on the seafloor and burial of no more than two ft seaward of this point.

The “offshore segment” of LL2 terminates in 51 ft of water. The overall length of LL2, from onshore origination to offshore termination is approximately 3,910 ft. The offshore termination consists of a welded steel concentric reducer that reduces the pipeline from 20-inch diameter to 16-inch diameter (refer to Figure 1-4 Loading Line #2 Offshore Termination Schematic). The pipeline end flange consists of a 16-inch diameter, 300# series flange and is currently capped with a blind flange. A 6-inch diameter flushing port has been inserted and welded into the blind flange.

Table 1 – Estero Offshore Pipeline Characteristics

Pipeline Characteristic	Outfall Line	Loading Line #1	Loading Line #2
Diameter	16-inch (8-inch onshore)	18-inch	20-22 inch
Overall Length	3180 ft	3304 ft	3952 ft
Material	Steel with flange connections	Welded steel	Welded steel
Original Wall Thickness	0.5625-in.	0.562 – 0.618 in.	0.500 in.
Installation Date	1929	1961	1983
Function	Wastewater outfall	Crude oil loading line	Crude oil loading line
Coating	Asphaltic weight coating (beach casing)	Field-applied concrete	1.5-in. Hevicot reinforced cement weight coating over Pritec 1560 polyethylene coating.
Pipe Condition	Poor	Good	Good
Contents	Sea water	Sea water	Sea water
Depth of Burial (typical)			
Beach	3-6 ft	4-13 ft	2-6 ft
Surf Zone	>13 ft	7-13 ft	4-7 ft
Offshore	3-4 ft	2-3 ft	2-3 ft, some exposures
Terminus	Exposed	Exposed	Exposed
Water Depth at Terminus	-46 ft	-48 ft	-51 ft
Pipe Terminus Configuration	20-ft long diffuser	Blind flange with flushing port	Blind flange with flushing port

REFERENCES

Chevron Environmental Management Company. 2015. Project Execution Plan, Estero Marine Terminal Decommissioning Project, June. Assistance by Padre Associates, Inc. and Longitude 123.

Longitude 123. 2014. Report on Onshore and Offshore Pipeline Location and Depth of Burial Survey, Geotechnical Investigation, and Pipeline Materials Sampling and Testing Program. Prepared for Chevron EMC. June.

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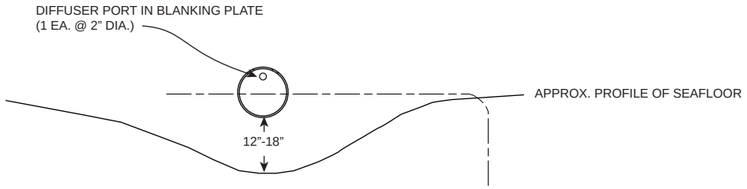
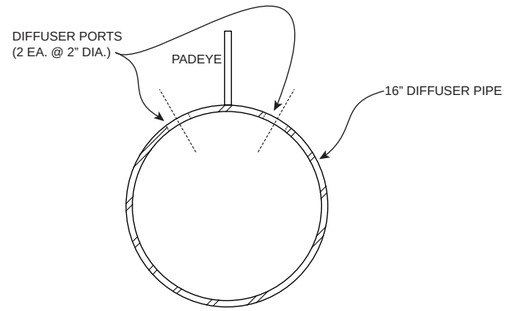
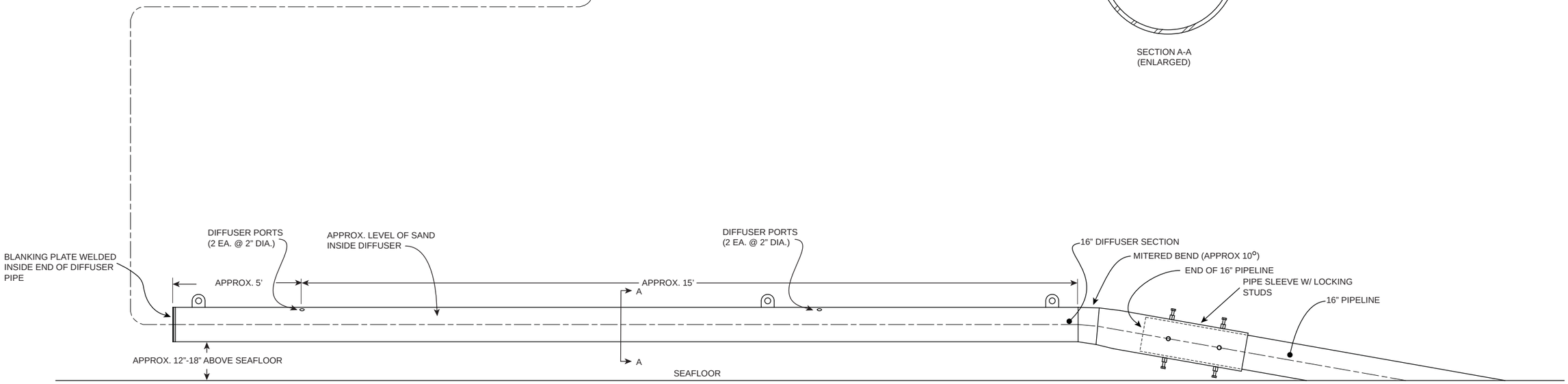
ESTERO MARINE TERMINAL DECOMMISSIONING PROJECT

FIGURE 1-1 FACILITY SCHEMATIC







OUTFALL PIPELINE DIFFUSER TERMINATION
AS-FOUND 2007

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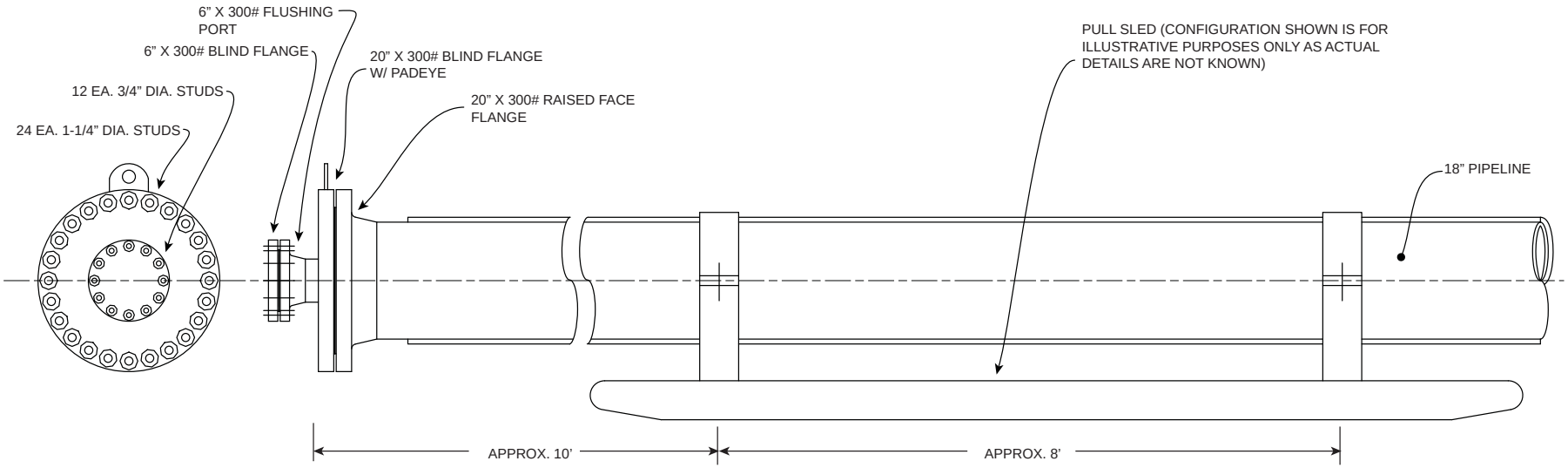
FIGURE 1-2
OUTFALL PIPELINE OFFSHORE TERMINATION SCHEMATIC



LL1 TERMINATION
AS-FOUND 2007

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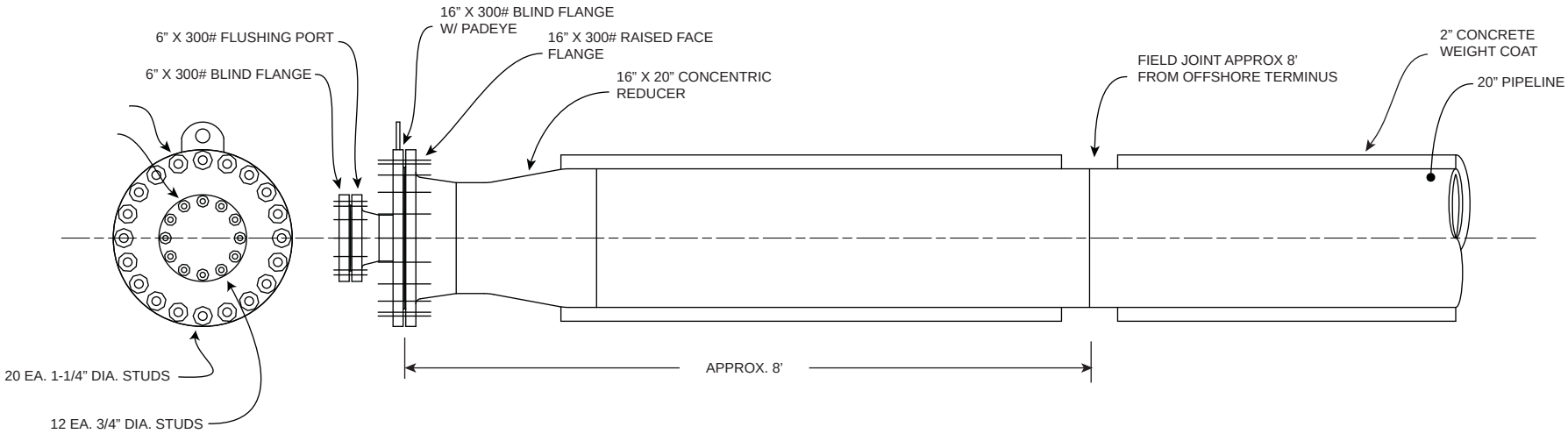
FIGURE 1-3
LOADING LINE #1 OFFSHORE TERMINATION SCHEMATIC



LL2 TERMINATION
AS-FOUND 2007

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FIGURE 1-4
LOADING LINE #2 OFFSHORE TERMINATION SCHEMATIC