

Avila Beach Community Services District Force Main Realignment, Gravity Main Replacement and WWTP Redundancy Project Initial Study and Mitigated Negative Declaration



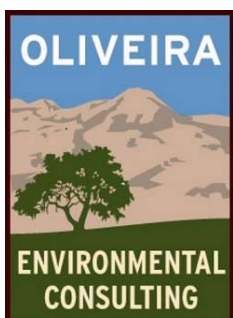
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October 2020



Avila Beach Community Services District

Force Main Realignment, Gravity Main Replacement and WWTP Redundancy Project

Initial Study and Mitigated Negative Declaration



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Attachments:

- Attachment A: Project Figures (Figure 1, Site Location Map; Figure 2, Aerial Overlay Map; Figure 3, Existing Conditions Map; Figure 4, CNDDDB Plant Occurrences Map; Figure 5, Animal Occurrences Map)
- Attachment B: Project Site Photo Plate
- Attachment C: Special Status Biological Resources Summary Table
- Attachment D: Project Site Plans
- Attachment E: Geotechnical Report for the ABCSD WWTP Upgrade



AVILA BEACH COMMUNITY SERVICES DISTRICT INITIAL STUDY AND ENVIRONMENTAL CHECKLIST

Force Main Realignment, Gravity Main Replacement and WWTP Redundancy Project

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: The proposed project could have a "Potentially Significant Impact" for environmental factors checked below. The purpose of the following discussion is to provide a supplement to the project Environmental Impact Report (EIR) that provides the required impact analysis for the remaining issue areas under CEQA Appendix G.

<input type="checkbox"/> Aesthetics <input type="checkbox"/> Agriculture & Forestry Resources <input checked="" type="checkbox"/> Air Quality <input checked="" type="checkbox"/> Biological Resources <input checked="" type="checkbox"/> Cultural Resources <input type="checkbox"/> Energy <input checked="" type="checkbox"/> Geology & Soils	<input type="checkbox"/> Greenhouse Gas Emissions <input type="checkbox"/> Hazards & Hazardous Materials <input type="checkbox"/> Hydrology & Water Quality <input type="checkbox"/> Land Use & Planning <input type="checkbox"/> Mineral Resources <input checked="" type="checkbox"/> Noise <input type="checkbox"/> Population & Housing	<input type="checkbox"/> Public Services <input type="checkbox"/> Recreation <input type="checkbox"/> Transportation <input checked="" type="checkbox"/> Tribal Cultural Resources <input type="checkbox"/> Utilities & Service Systems <input type="checkbox"/> Wildfire <input checked="" type="checkbox"/> Mandatory Findings of Significance
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DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation, the Avila Beach Community Services District finds that:

- The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- The proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- The proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- Although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Jeff Oliveira, Principal Environmental Planner 8/19/2020
 Prepared by (Print) Signature Date

Brad Hagemann, ABCSD General Manager 9/28/2020
 Lead Agency Rep. (Print) Signature Date

Project Environmental Analysis: The Avila Beach Community Services District (ABCSD) environmental review process incorporates all of the requirements for completing the Initial Study as required by the California Environmental Quality Act (CEQA) and the CEQA Guidelines. The Initial Study includes on-site inspection of the project site and surroundings and a detailed review of the information in the file for the project. In addition, available background information is reviewed for each project. Relevant information regarding soil types and characteristics, geologic information, significant vegetation and/or wildlife resources, water availability, wastewater disposal services, existing land uses and surrounding land use categories and other information relevant to the environmental review process are evaluated for each project. The ABCSD uses the Initial Study checklist to summarize the results of the research accomplished during the project environmental review.

Persons, agencies or organizations interested in obtaining more information regarding the environmental review process for a project should contact the Avila Beach Community Services District at 100 San Luis Street, Avila Beach, CA 93424 (805-595-2664).

1. PROJECT DESCRIPTION: The proposed project consists of two primary community infrastructure improvements. This includes the realignment of a portion of the ABCSD force main, replacement of a section of gravity main and proposed improvements at the community wastewater treatment plant. Based on the project site plans and details from the project files the proposed Avila Beach Community Services District (ABCSD) Force Main Realignment, Gravity Main Replacement and Wastewater Treatment Plant (WWTP) Redundancy Project includes the following details:

Force Main Realignment and Gravity Main Replacement Project

The proposed project consists of water line realignment at two primary locations in the Community of Avila Beach. Phase 1, consisting of the re-routing of an approximately 600-foot segment of the 4-inch sanitary sewer force main, is a linear site beginning at the north side of Avila Beach Drive approximately 100-feet south of the existing WWTP and extending south past Beach Colony Lane and turning southwest through the Port San Luis Parking lot, terminating at First Street. Phase 2 would consist of the replacement of an approximately 125-foot gravity sewer pipeline segment located at the Avila Beach Drive/Beach Colony Lane/San Miguel Street intersection, extending across Avila Beach Drive to the existing WWTP.

Phase 1 of the proposed Force Main Realignment and Gravity Main Replacement Project consists of the re-routing of the Sanitary Sewer Force Main from the existing lift station located at First Street, through the Avila Beach Public Parking Lot and continuing to a newly constructed manhole on Avila Beach Drive via a water and sewer easement at the existing Beach Colony Lane residential development. Phase 2 of the project will include replacement of a 125-foot section of gravity main at San Miguel Street and continuing to the existing WWTP across the intersection on the north side of Avila Beach Drive. Please refer to the attached Figure 2, Aerial Overlay Map, for a depiction of the proposed pipeline alignments and the attached Site Plans for a detailed schematic of the proposed pipeline construction.

The proposed pipeline realignment project would consist of jack and bore (tunneling) construction technology in order to limit the total amount of earth disturbance required. Phase 1 would include an approximately 8-foot by 8-foot square access pit (64 square feet), with a total depth of 8 feet. The Phase 1 receiver pit would be an approximately 4-foot by 4-foot square (16 square feet), with a maximum depth of 8 feet.

The proposed Phase 2 gravity main replacement would include an approximately 8-foot by 8-foot square access pit (64 square feet), with a depth of 14-feet depending on final design. The Phase 2 receiver pit would be an approximately 4-foot by 4-foot square (16 square feet) with a depth maximum depth of 14 feet.

The total volume of excavation proposed for Phase 1 of the proposed pipeline realignment would be a maximum of 640 cubic yards. Phase 2 would result in a maximum excavation of 1,120 cubic yards. Total proposed excavation would be a maximum of 1,760 cubic yards.

Wastewater Treatment Plant Redundancy Project

According to the ABCSD, the existing WWTP is anticipated to receive higher peak flows than designed for in the near future and is currently receiving higher loadings (wastewater strength) than originally designed for, due to reduced water usage from water conservation efforts resulting in an increase in the concentration of wastewater pollutants. As such, the proposed project includes improvements at the influent lift station and added wastewater treatment capacity to allow for operational flexibility and adequate process redundancy to ensure continued treatment. The full project would be located entirely within the existing footprint of the community WWTP. The proposed project includes the following elements:

Influent Lift Station Improvements:

- Increase the size of the two existing submersible pumps from 5 horsepower (hp) to 7.5 hp;
- Replace existing variable frequency drives to accommodate the new influent pumps;
- Replace coated ductile iron piping and valves, as needed;
- Recoat the influent wet well, as needed; and
- Install new electrical panels, wiring, and instrumentation, as needed to accommodate new pumps.

Install Side Stream Organic Loading Redundancy Treatment System:

- Install a packaged Membrane Bioreactor (MBR) treatment plant;
- Associated system piping, electrical, and controls integration; and
- Associated site-work including possible retaining wall and concrete slab.

The recommended improvements will provide process redundancy to accommodate existing and community build-out demand. The lift station improvements will provide the capacity needed to handle peak hour flows under current and community build-out demand. The side-stream MBR treatment system will allow for operational flexibility and will produce a higher quality treated effluent.

All improvements will occur within the existing WWTP site and no additional land or easements are anticipated to be required. Excavation requirements will be minimal, and will be limited to trenches located in existing disturbed areas for the installation of the 4- to 10-inch diameter pipelines. The sidestream package MBR treatment plant will be installed within a portion of the footprint of an existing drying bed. Imported fill will be used to bring the elevation up to at least match the elevation of the existing WWTP unit processes.

Installation of the proposed MBR unit and construction of the retaining wall would result in a total of 1,100 cubic yards of cut/fill and a total area of disturbance of approximately 5,000 square feet.

The proposed lift station improvements would result in a total of 260 cubic yards of cut/fill, and a total area of disturbance of approximately 5,100 square feet.

Please refer to the 2010 ABCSD Sewer System Management Plan for additional details regarding the community sewer system operations, performance standards, overflow response plan, system evaluation and proposed program modifications. The Sewer System Management Plan can be found at: www.avilabeachcsd.org/files/1ff81067a/2014-04-24+ABCSD+Final+SSMP+RPT-Rev+3.pdf

Please refer to the attached project Site Plans for a detailed schematic of the Force Main Realignment and WWTP Redundancy Project, including detailed depictions of the pipeline corridor and installation of the proposed MBR unit at the WWTP facility. Please refer to the attached Figure 1, Site Location Map and Figure 2, Aerial Overview Map, for a detailed depiction of the proposed project location and improvements.

2. BACKGROUND: As discussed in the Avila Community Plan Background Report (County of San Luis Obispo, 2018) The ABCSD supplies its customers with domestic water service, wastewater service and fire protection, among other services. The water supply for the Avila Beach CSD is contracted through CSA 12, and consists of both Lopez Reservoir (68 AFY) and State Water (100 AFY) allocations for a total supply of 168 AFY. Water quality for both Lopez Lake and State Water treated sources meets both primary and secondary standards for drinking water, though regular monitoring of the treatment process is necessary to make appropriate adjustments to account for seasonal changes in the quality of Lopez Lake water.

As discussed in the 2010 Sewer System Management Plan, the ABCSD's sewage collection system currently serves the town of Avila Beach and conveys its raw wastewater to the District's WWTP. The WWTP serves the town of Avila Beach and the Port San Luis Harbor District. The District's treated municipal wastewater is discharged to the Pacific Ocean through a 2,240 foot outfall. The outfall is terminated in the San Luis Bay at in approximately 29 feet of water, 540 feet beyond the Avila Pier. The District's WWTP is designed for an average dry weather maximum monthly flow of 0.2 million gallons per day (MGD).

3. PROJECT LOCATION: The proposed force and gravity main realignment would take place at two primary locations in the Community of Avila Beach. Phase I, consisting of the re-routing of an approximately 575-foot segment of the Sanitary Sewer Force Main, is a linear site beginning at the north side of Avila Beach Drive approximately 100-feet south of the existing WWTP and extending south past Beach Colony Lane and turning southwest through the Port San Luis Parking lot,

terminating at the First Street lift station. Phase 2 would consist of the replacement of approximately 125-foot gravity sewer pipeline located at the Avila Beach Drive/Beach Colony Lane/San Miguel Street intersection, extending across Avila Beach Drive to the existing WWTP.

The proposed WWTP redundancy project consists on the installation of a new membrane bioreactor (MBR) package plant and associated infrastructure improvements located within the existing community WWTP footprint. The WWTP is located on the north side of Avila Beach Drive, at the Avila Beach Drive and San Miguel Street intersection in the community of Avila Beach.

Please refer to the attached Figure 1, Site Location Map, for a depiction of the proposed project location.

4. EXISTING SETTING: The proposed pipeline realignment (Phase 1) would be accessed from Avila Beach Drive and extend south beneath Beach Colony Drive and the existing Public Parking Lot, terminating at the First Street lift station. Phase 2 of the pipeline realignment would be located completely within and beneath the Avila Beach Drive/San Miguel Street intersection. The project alignment is considered to be an urban setting, primarily paved and avoids any undisturbed area.

The proposed WWTP redundancy improvements would be located entirely within the footprint of the existing community WWTP site, consisting of previously disturbed fill material and void of vegetation.

The site is bounded to the north by the Avila Beach Resort, the Bob Jones Trail and San Luis Obispo Creek to the north and northwest, and by Avila Beach Drive and the developed community of Avila Beach to the south and east.

5. ENVIRONMENTAL ANALYSIS: During the Initial Study process, several issues were identified as having potentially significant environmental effects (see following Initial Study). Impacts identified as "Impact can & will be mitigated" are considered to be significant but mitigable impacts. Those potentially significant items associated with the proposed uses can be minimized to less than significant levels. Please refer to the Initial Study Checklist and environmental impact analysis below.

INITIAL STUDY CHECKLIST

I. AESTHETICS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Except as provided in Public Resources Code Section 21099, would the project:</i>				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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Except as provided in Public Resources Code Section 21099, would the project:

- | | | | | |
|---|--------------------------|--------------------------|-------------------------------------|--------------------------|
| c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Setting. The Community of Avila Beach is situated at the base of the Irish Hills of the southern Coastal Range region of California. The Irish Hills provide a backdrop for the beach community of Avila Beach as well as panoramic views of San Luis Obispo Bay, Port San Luis, and the Pacific Ocean. The community occupies approximately 2,220 acres situated on a coastal terrace which averages in elevation of about 100 feet and includes nearly vertical sea cliffs and narrow beaches. The project area is characterized by a variety of scenic features and includes well-known landmarks such as Avila Beach, the Avila Beach Pier, Port San Luis, the Harford Pier, and the Port San Luis Lighthouse.

The project site is characterized by the primary access road in Avila, Avila Beach Drive. Avila Beach Drive meanders along San Luis Creek providing views of steep hills covered in oak woodland, the Bob Jones bike trail, the Pacific Ocean, and the three piers. Design standards for community development are found in both the Avila Beach Specific Plan and the San Luis Bay Area Plan (Coastal). Design Standards within the community have created a more densely developed town and clustered development in San Luis Bay Estates and Avila Valley. The result has created pockets of development surrounded by open space.

Driving in from Avila Beach Drive, the Avila Beach Golf Course is to the right (north) and the town is to the left (south). In town, there are hotels, retail shops, restaurants, a park looking out to the beach, the Central Coast Aquarium, residential units, and the public parking lot. The beach is a focal point along Front Street. Front Street between San Francisco and San Miguel Streets is closed to vehicles creating a Promenade in front of the Avila pier. This is where events such as the Friday Farmer’s Market take place. Heading East on Front Street, the road increases in steepness and public access stops at San Rafael leading up to the Chevron property.

Visually significant elements in the project region include: the developed portions of the Avila Beach community; the former Unocal tank farm located above the Avila Beach community (currently owned

by Chevron); three piers which extend into San Luis Obispo Bay, and the San Luis Bay Inn. These features are set amongst a visual backdrop of sloping hillsides surrounding an open bay. Views of the bay often include commercial fishing and recreational boats moored in proximity to the coastline. Views from Port San Luis, particularly from its higher elevations, include many of these visual elements.

The Community Services District is governed by the five-member elected Avila Beach Community Services District Board of Directors. The modern development of Avila Beach occurred in 1867 as part of the subdivision of the area that had been occupied under a Spanish land grant. Development continued through time, influenced by trading and shipping from Harford Pier and oil development. However, the community has changed due to a comprehensive re-development as the result of the extensive Avila Beach Unocal Remediation Project. Due to the Unocal cleanup, most of the town has been redeveloped since the early 2000s guided by the Avila Beach Specific Plan.

Both the force main realignment, gravity main replacement and WWTP portions of the project are located on previously disturbed urban landscapes, consisting of existing roads, the community parking lot and within the existing WWTP footprint. In the case of the force main realignment and gravity main replacement, surface disturbance is limited to two access and two receiver pits discussed above under the Project Description. No native soil or undisturbed areas are proposed for excavation or tunneling. The project area of disturbance is void of trees or shrubs or native habitat. It is important to note that the proposed pipeline tunneling will cross beneath areas of residential landscaping along Avila Beach Drive, and underneath the drainage along Beach Colony Lane discussed in detail under Section IV, Biological Resources, of this Initial Study.

The site is bounded to the north and northwest by open space associated with San Luis Obispo Creek, the Bob Jones Trail, and Avila Beach Resort. The site is bound to the south and southeast by the residential and commercial development associated with the Community of Avila Beach.

Impact. As the overarching policy document guiding development for the community, the County of San Luis Obispo General Plan contains policies to ensure that development is compatible with the existing visual context. The County's Open Space and Conservation Element include policies to minimize visual impacts on surrounding natural landscapes and scenic views. In addition, the County's Zoning Code and Design Guidelines provide guidance on structural design requirements to ensure compatibility with surrounding land uses.

The project site, in its context within the coastal community of Avila Beach and in proximity to the Pacific Ocean and scenic Avila Beach Drive, is considered to be visually significant.

The proposed project site consists of the developed portions of the community, including existing roads, parking lot, and the existing WWTP. With respect to the force main realignment and gravity main replacement project, the majority of construction activity will consist of subsurface tunneling, with temporary surface disturbance limited to a maximum of two access and two receiver pits. No structural development is proposed and upon completion of the short-term construction activities, the site will be returned to its current condition. In the absence of any development associated with

this portion of the project, given the temporary nature of proposed construction and with the return of the site to its existing condition, aesthetic impacts are considered less than significant.

With respect to the proposed WWTP redundancy project, construction is limited to the addition of the MBR unit and associated infrastructure improvements. The MBR unit would occupy the existing drying bed within the footprint of the current WWTP. The unit will be partially below-grade when viewed from Avila Beach Drive and will be below the current height of the existing WWTP facility and vegetation associated with San Luis Obispo Creek. In addition, the majority of the existing WWTP (including the project site) is blocked from view along the Bob Jones Trail. The installation of the MBR unit would avoid silhouetting as perceived from the public along Avila Beach Drive and the Bob Jones Trail and would be visually consistent with the existing WWTP. As such, aesthetic impacts are considered less than significant.

Mitigation/Conclusion. Impacts are considered less than significant and mitigation is not required.

II. AGRICULTURE AND FORESTRY RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

- | | | | | |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting. The project site is located upstream of the mouth of San Luis Obispo Creek, on an alluvial terrace in the Community of Avila Beach. The site is primarily developed and urbanized and includes a portion of Avila Beach Drive and the public parking lot, and the existing WWTP.

According to the Natural Resource Conservation Service soils map, both the pipeline realignment and WWTP sites consists of the Xererts-Xerolls-Urban land complex (0 to 15% slopes). This is a gently sloping, well-drained soil, with a very high runoff potential. This soil is considered to be “Class 8” with or without irrigation and is not considered to be Prime Farmland.

Impact. The project site is zoned Public Facility (WWTP) and Public Facility/Recreation (pipeline realignment). The project site does not support agriculture and is not eligible for agricultural activities. Impacts are considered less than significant.

Mitigation/Conclusion. No mitigation measures are necessary.

III. AIR QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:</i>				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting. San Luis Obispo County is part of the South Central Coast Air Basin, which also includes Santa Barbara and Ventura Counties. The area is influenced by its proximity to the Pacific Ocean. Air quality in the Avila Beach region of San Luis Obispo County is characteristically different than other regions of the County (i.e., the Upper Salinas River Valley and the East County Plain), although the physical features that divide them provide only limited barriers to transport pollutants between regions.

Both the US Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants representing safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called “criteria” pollutants because the health and other effects of each pollutant are described in criteria documents. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. Avila Beach is currently designated as nonattainment for the state and federal ambient air quality standards for ground-level ozone and PM_{2.5} as well as the state standards for PM₁₀.

Locally, the Air Pollution Control District (APCD) has developed and updated their CEQA Air Quality Handbook (2012) to evaluate project specific impacts and help determine if air quality mitigation measures are needed, or if potentially significant impacts could result. To evaluate long-term emissions, cumulative effects, and establish countywide programs to reach acceptable air quality levels, a Clean Air Plan has been adopted for the County (prepared by APCD).

In San Luis Obispo County, ozone and PM₁₀ are the pollutants of main concern, since exceeding the state health-based standards for those pollutants are experienced in certain parts of the air basin in most years. For this reason, the County of San Luis Obispo is designated nonattainment for the one-hour California Ambient Air Quality Standards (CAAQS) for ozone and the CAAQS for respirable particulate matter (PM₁₀). The County is designated attainment for national ambient air quality standards (NAAQS).

Naturally occurring asbestos (NOA) has been identified by the State Air Resources Board as a toxic air contaminant. Serpentine and ultramafic rocks are very common throughout California and may contain naturally occurring asbestos. However, the San Luis Obispo County APCD has recently reviewed and updated their NOA policy and current mapped NOA data-set and combined it with the

County serpentine map. As a result, the project site in the community of Avila Beach was determined to fall outside of the NOA occurrence buffer.

Construction Generated Emissions

Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but possess the potential to represent a significant air quality impact. The construction of the proposed project would result in the temporary generation of emissions resulting from site preparation and earth moving, as well as from motor vehicle exhaust associated with construction equipment and the movement of equipment across unpaved surfaces and worker trips. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with site preparation activities.

The San Luis Obispo County APCD is the agency primarily responsible for ensuring that NAAQS and California ambient air quality standards (CAAQS) are not exceeded and that air quality conditions are maintained in the region. The County of San Luis Obispo APCD adopted the Clean Air Plan in January 1992; the Plan was updated in 1998, and again in 2001. The Clean Air Plan is a comprehensive planning document designed to reduce emissions from traditional industrial and commercial sources, as well as from motor vehicle use. The purpose of the County's Clean Air Plan is to address the attainment and maintenance of state and federal ambient air quality standards by following a comprehensive set of emission control measures within the Plan.

Impact. Temporary impacts from the project, including but not limited to excavation and construction activities, vehicle emissions from heavy duty equipment, have the potential to create dust and emissions that exceed air quality standards during construction for temporary and intermediate periods.

Construction Emissions

Construction activities can generate fugitive dust, which could be a nuisance to local residents and businesses in close proximity to the proposed construction site. The proposed project is not expected to generate construction emissions in excess of the thresholds approved by the APCD [Ozone Precursors (ROG + NO_x) = 137 lbs. /day or 2.5 tons for projects lasting up to one quarter; Diesel Particulate Matter (DPM) = 7 lbs. /day or 0.13 tons for projects lasting up to one quarter; Fugitive Particulate Matter (PM₁₀) = 2.5 tons for projects lasting up to one quarter]. Because the project is within 1,000 feet of sensitive receptors, impacts related to fugitive dust emissions during proposed construction activities are considered significant but mitigable.

As proposed, the full project would result in the disturbance of approximately 10,260 square feet (0.235 acres), which would include moving a total of approximately 3,120 cubic yards of cut and fill. This will result in the creation of construction dust, as well as short- and long-term vehicle emissions.

Based on Table 2-1 and 2-2 of the APCD CEQA Air Quality Handbook, estimated construction related emissions are as follows.

Table 1. Estimated Construction Emissions

Pollutant	Rate Factors	Total Estimated Emissions	APCD Quarterly Threshold	Threshold Exceeded?
ROG + NO _x	(Grading Volume x 0.0203) + (Grading Volume x 0.0935)	355.056 lbs.	5,000 lbs. (2.5 tons)	No
Diesel Particulate Matter (DPM)	Grading Volume x 0.0049	15.288 lbs.	260 lbs. (0.13 tons)	No
Fugitive Particulate Matter (PM ₁₀)	(0.235 acres) x 0.75 tons/acre/month of activity	0.176 tons	2.5 tons	No

Rate Factors and APCD Quarterly Thresholds from Tables 2-1 and 2-2 of APCD Air Quality Handbook (2012).

As shown above, the project would not exceed APCD’s construction emissions thresholds for DPM, PM₁₀, or ROG + NO_x. However; the project’s construction activities would result in short-term emissions from heavy equipment and motor vehicles, as well as fugitive dust (PM₁₀) emissions that could affect localized air quality. As described in the SLOAPCD CEQA Air Quality Handbook (April 2012), any project with grading areas greater than 4.0 acres or that are within 1,000 feet of any sensitive receptor is required to implement standard mitigation measures. Because the project disturbance has the potential to be within 1,000 feet of sensitive receptors, impacts related to construction emissions are considered significant but mitigable.

Construction equipment itself can be the source of air quality emission impacts, and may be subject to California Air Resources Board or APCD permitting requirements. This includes portable equipment, 50 horsepower (hp) or greater or other equipment listed in the APCD’s 2012 CEQA Handbook, Technical Appendices. Truck trips associated with the materials that will be cut from the site may also be a source of emissions subject to APCD permitting requirements, subject to specific truck routing selected. Impacts related to vehicle and heavy equipment emissions are considered significant but mitigable.

Naturally occurring asbestos (NOA) has been identified by the state Air Resources Board as a toxic air contaminant. Serpentine and ultramafic rocks are very common throughout California and may contain naturally occurring asbestos. However, the San Luis Obispo County APCD has recently reviewed and updated their NOA policy and current mapped NOA data-set and combined it with the County serpentine map. As a result, the community of Avila Beach was determined to fall outside of the NOA occurrence buffer zone. Impacts related to NOA are considered less than significant.

The proposed project would include improvements and upgrades to existing water/wastewater utility infrastructure, which has the potential to disturb asbestos that is often found in underground utility pipes and pipelines. Demolition can have potential negative air quality impacts, including issues surrounding proper handling, demolition, and disposal of asbestos containing material (ACM). As such, the project may be subject to various regulatory jurisdictions, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M – asbestos NESHAP). Impacts related to the demolition or disposal of existing utility pipes are considered to be significant but mitigable.

Operational Impacts

The proposed project consists of the described pipeline realignment and installation of the proposed MBR unit at the existing WWTP and would not result in operational impacts. Air quality impacts are expected to be limited to construction related emissions.

Mitigation/Conclusions. The following mitigation shall be required in order to reduce impacts to less than significant levels:

AQ-1. To mitigate fugitive dust emissions related to project construction, the following shall be implemented:

- a) Reduce the amount of the disturbed area where possible;
- b) Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible;
- c) All dirt stock pile areas should be sprayed daily as needed;
- d) Permanent dust control measures identified in the approved project revegetation and landscape plans should be implemented as soon as possible following completion of any soil disturbing activities;
- e) Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading should be sown with a fast germinating, non-invasive grass seed and watered until vegetation is established;
- f) All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the APCD;
- g) All roadways, driveways, sidewalks, etc. to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used;
- h) Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site;
- i) All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114;
- j) Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site;
- k) Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible;
- l) All of these fugitive dust mitigation measures shall be shown on grading and building plans; and
- m) The contractor or builder shall designate a person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize dust complaints, reduce visible emissions below 20% opacity, and to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the APCD Compliance Division prior to the start of any grading, earthwork or demolition.

AQ-2. The required mitigation measures for reducing nitrogen oxides (NO_x), reactive organic gases (ROG), and diesel particulate matter (DPM) emissions from construction equipment are listed below:

- Maintain all construction equipment in proper tune according to manufacturer's specifications;
- Fuel all off-road and portable diesel powered equipment with ARB certified motor vehicle diesel fuel (non-taxed version suitable for use off-road);
- Use diesel construction equipment meeting ARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with the State off-Road Regulation;
- Use on-road heavy-duty trucks that meet the ARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation;
- Construction or trucking companies with fleets that do not have engines in their fleet that meet the engine standards identified in the above two measures (e.g. captive or NO_x exempt area fleets) may be eligible by proving alternative compliance;
- All on and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and or job sites to remind drivers and operators of the 5 minute idling limit;
- Diesel idling within 1,000 feet of sensitive receptors is not permitted;
- Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors;
- Electrify equipment when feasible;
- Substitute gasoline-powered in place of diesel-powered equipment, where feasible; and,
- Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel.

AQ-3. Any scheduled disturbance, removal, or relocation of utility pipelines shall be coordinated with the APCD Enforcement Division at (805) 781-5912 to ensure compliance with NESHAP, which include, but are not limited to: 1) written notification, within at least 10 business days of activities commencing, to the APCD, 2) asbestos survey conducted by a Certified Asbestos Consultant, and, 3) applicable removal and disposal requirements of identified ACM.

Implementation of the above measures will reduce impacts to less than significant levels.

IV. BIOLOGICAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting: In order to assess project site biological resources, a biological site investigation and detailed biological impact analysis was prepared by Oliveira Environmental Consulting LLC Biologist and Senior Project Manager, Kevin Merk (Kevin Merk Associates, LLC. August 19, 2020). The following discussion represents the findings of the project site biological investigation, regulatory research and impact analysis prepared by Kevin Merk Associates, LLC.

As provided under the biological investigation, the proposed force main realignment, gravity main replacement and MBR unit installation project site is located in the unincorporated community of Avila Beach (please refer to the attached Figure 1, Site Location Map). It is bounded by a narrow strip to the northwest of Avila Beach Drive by landscaping and the Bob Jones Trail; the existing WWTP on the north; San Miguel Street on the east-southeast; 1st Street on the south-southwest; and cuts through the Avila Public Parking Lot and residential development on the west (please refer to the attached Figure 2, Aerial Overview Map and Figure 3, Existing Conditions Map). The site is located on a floodplain terrace adjacent to the mouth of San Luis Obispo Creek, and elevations range from approximately five (5) to 15 feet above mean sea level.

The project site is entirely developed for urban uses, and no natural areas will be affected by project activities. The study area developed for the biological analysis consists of paved streets, a public parking area, residential development, a hotel, and other public and private buildings. The Bob Jones Trail is a paved recreational trail lined with large eucalyptus trees that runs along the Avila Beach Golf Resort. Other street trees, including ornamental palms, line Avila Beach Drive and adjacent residences are landscaped. The WWTP is surrounded by eucalyptus, planted oak, and other ornamental trees and shrubs. A constructed stormwater ditch is parallel to Beach Colony Drive, running along the northwestern edge of the parking lot, and discharges further west of the study area into San Luis Obispo Creek (refer to Figure 3, Existing Conditions Map). The ditch was constructed in an upland area, possibly as a component of the oil remediation project, to drain upland developed areas. Due to proximity to groundwater and regular nuisance runoff from landscape irrigation and street runoff, the ditch appears to contain permanent but shallow water. Groundwater in the area may also fluctuate due to tides given the location of the Pacific Ocean and San Luis Obispo Creek lagoon.

The lagoon of San Luis Obispo Creek bends around the study area on the northeast, north and northwest sides. An irrigated grass area that is mowed and used for parking by the Avila Beach Golf Resort and golf course holes are located outside of the project area, between the creek channel and the WWTP and study area developed for the project. The opposite side of the creek to the north has a low coastal hill vegetated by coastal scrub and coast live oak woodland, with residential development on the ridge, and other parts of the golf course in the surrounding area. The east and south sides of the study area consist of urban development, with the sandy beach located approximately 350 feet to the south.

The proposed project consists of two elements — the force main realignment/gravity main replacement project (Phases 1 and 2) and the MBR unit installation at the existing WWTP. Please refer to the attached project plans for further detail. The force main realignment (Phase 1) will re-route the Sanitary Sewer Force Main from under existing roadways into the Avila Parking Lot and through an easement between residential developments along Beach Colony Lane to tie into existing infrastructure in Avila Beach Drive. It has a general linear impact area running from the lift station near First Street to ties into the existing gravity sewer line in Avila Beach Drive. Phase 2 of the pipeline realignment would replace a section of the gravity sewer main at the intersection of San Miguel Street, Beach Colony Lane and Avila Beach Drive, extending under Avila Beach Drive to the existing WWTP (please refer to Figure 2, Aerial Overlay Map). The work would be conducted using jack and bore tunneling methodology, with open trenching limited to the entrance and receiver pits.

Jack and bore methods have been proposed by the ABCSD to install the pipeline under the stormwater ditch as a project design measure to avoid impacting the ditch and the potential to indirectly affect downstream resources in San Luis Obispo Creek. The MBR unit installation at the existing WWTP proposes improvements within the existing footprint of the WWTP to accommodate higher peak flows and higher loadings (increased wastewater strength due to water conservation efforts). Excavations would be limited to the pipeline entrance/receiver pits and disturbance within existing developed areas for the installation of 4- to 6-inch diameter pipelines. The MBR unit installation would be located on regularly disturbed ground within the WWTP facility.

Habitat Types

No natural habitat types exist within the study area, as the site has been entirely developed for urban uses (please refer to the attached Photo Plate). The study area includes paved surfaces, buildings, the WWTP, and the stormwater ditch as shown on Figure 3. Ornamental trees and shrubs occur within this habitat type, including street trees such as fan palms (*Washingtonia filifera*) and eucalyptus (*Eucalyptus* sp.). Planted Monterey cypress (*Hesperocyparis macrocarpa*) and several coast live oak (*Quercus agrifolia*) were also present near the WWTP facility. Ruderal areas included bare, disturbed ground with occasional weeds, such as near ongoing construction along Beach Colony Lane, street edges, dirt parking areas, and in the upper banks along the ditch. Ruderal areas were sparsely vegetated by non-native species including ripgut brome (*Bromus diandrus*), cheeseweed (*Malva neglecta*), and summer mustard (*Hirschfeldia incana*).

The stormwater ditch consisted of a narrow, approximately 15 foot wide zone constrained by Beach Colony Lane and the Avila Public Parking Lot. It is concrete-lined along the eastern half, with a trapezoidal concrete channel containing a narrow band of standing water, which appeared to be originating from nuisance flows from residential and urban development to the east (refer to the attached photo plate and project plans). In the western half, the stormwater ditch had a narrow earthen bottom (approximately 5 feet wide) with rock gabion baskets forming the banks on each side. It may have been constructed as part of the oil remediation project in the early 2000's. It had standing water that ranged from four to 12 inches deep during the first survey in June 2020 to approximately one to four inches as observed in August 2020. It appears that water fluctuates due to a shallow groundwater table as well as nuisance flows and runoff from surrounding development. The moisture regime and higher salinity from proximity to the ocean has allowed salt marsh species to persist along the channel. Plant species observed growing over the rock gabion baskets along the northern bank included fleshy jaumea (*Jaumea carnosa*), small fruited bulrush (*Scirpus microcarpus*), pickleweed (*Salicornia pacifica*), and saltgrass (*Distichlis spicata*). The rock gabions forming the southern bank did not contain any significant cover of wetland vegetation. The entire ditch was lined with planted street trees along Beach Colony Lane, and also supported patchy occurrences of the weedy, ruderal vegetation described above along with an occasional saw toothed goldenbush (*Hazardia squarrosa*) shrub. Further west of the study area, small pockets of water supported the non-native mosquito fish (*Gambusia affinis*) and a snowy egret (*Egretta thula*) was observed foraging in this area.

The urban or developed land use type in the study area is not a native plant community and is considered Urban under the California Wildlife Habitat Relations System (California Department of Fish and Wildlife [CDFW] 2020a). The stormwater ditch is also considered Urban, even though the

western half supported a narrow band (estimated at 3-4 feet wide) of wetland plants due to the presence of periodic standing water and saturated soils. Street trees and landscaped areas would also meet the urban land use designation.

Special-Status Plants

A background review was conducted by Kevin Merk Associates for special-status plant species recorded in the site vicinity to determine if any of these species had potential to occur in the study area. The review involved a query of the special-status plant species recorded in the California Natural Diversity Data Base (CNDDDB; CDFW 2020b) in the following U.S. Geological Survey (USGS) quadrangles: Morro Bay South, Port San Luis, San Luis Obispo, and Pismo Beach. Each of the species within five (5) miles of the site was mapped (please refer to Figure 4). Ecological information pertaining to each of the species' habitat requirements, elevational zone, blooming period and local records was reviewed to determine the potential for these species to occur onsite (see Special-status Biological Resources Summary table). Two site surveys were also conducted in June and August 2020 to assess existing conditions and search for rare plants.

The study area is almost entirely developed, and there are highly disturbed areas with ruderal vegetation, such as around structures, along road margins and adjacent to the stormwater ditch. The only native plant species observed in the study area were a limited amount of salt marsh vegetation that had formed in the western part of the constructed stormwater ditch where an earthen bottom was present. Out of the species list generated from the background review, no special-status plant species were determined to have potential to occur in the study area. None of those species would be able to persist in highly developed or disturbed habitats. Additionally, no rare plant species were observed during the June 11, 2020 or August 12, 2020 site surveys. No further special-status plant surveys are recommended because there is no potential for the site to support these species.

Sensitive Natural Communities

As described above, the site is highly disturbed and located entirely within an urban area. Numerous rare or sensitive natural communities are known to occur in the area, outside of the project site, with San Luis Obispo Creek supporting wetland, salt marsh and riparian habitats. The wetland vegetation observed along the northern rock gabions within the stormwater ditch consisted of species characteristic of Northern Coastal Salt Marsh. Please refer to the attached Special-status Biological Resources Summary for further habitat details. The Northern Salt Marsh community in its natural state, such as in the San Luis Obispo Creek lagoon, has a State Rarity Rank S3.2, and as such, is evaluated under CEQA. The plants observed growing in the stormwater ditch within the western portion generally meets this habitat type; however, the plants are growing in a disturbed area over rock gabion baskets. The extent of wetland plants was very narrow and does not support the extensive wildlife species that are typically found in salt marsh habitats in the San Luis Obispo Creek lagoon or further north in Morro Bay. The presence of fleshy jaumea, pickleweed and salt grass in the ditch generally meets the salt marsh habitat description. It is important to note that the majority of the vegetation occurs further west outside of the project area where the pipeline realignment would be located. To avoid the ditch and the associated plants, the jack and bore method was selected to install the sewer line under the ditch.

Wetland and Riparian Habitats

The National Wetland Inventory (NWI) map shows Estuarine and Marine Wetland in portions of San Luis Obispo Creek and along the active beach (please refer to Figure 3, Existing Conditions Map). The active channel of the creek outside of the study area is mapped as Estuarine and Marine Deepwater, and above the lagoon it is Riverine. Further upstream, more than 300 feet away from the study area, the channel is bordered by Freshwater Forested/Shrub Wetland (i.e., riparian habitat). No wetlands are mapped within the study area. As discussed above, the narrow band of wetland plants growing over the rock gabion baskets lining the northern part of the stormwater ditch generally meet the habitat definition as Northern Coastal Salt Marsh. However, the ditch was constructed in an upland area and is considered disturbed or Urban in nature.

Special-Status Wildlife

A background review including a query of the CNDDDB (CDFW 2020b) and eBird (The Cornell Lab of Ornithology 2020a) was conducted to determine special-status wildlife species recorded in the site vicinity. Ecological information, including habitat requirements, microhabitat preferences, migration/movements, and differences for various life history stages, were reviewed from numerous sources (see References) to determine the potential for these species to occur in the study area. The evaluation determined that there is potential for one rare invertebrate species, five special-status bird species, and three special-status mammal species to occur on-site (see attached Special-status Biological Resources Summary). These species, their status, and an evaluation of potential for occurrence are summarized below.

Monarch butterfly (*Danaus plexippus* population 1) - California overwintering population

This species overwinters in colonial roosts located in wind-protected groves of tall trees, such as eucalyptus. A roost site was formerly recorded at Avila Beach Golf Resort, but has not been observed in large numbers since 2001. The eucalyptus windrow near proposed work activities is too exposed to winds and human presence to provide suitable structure for roosting, but individuals could fly through the site while moving through the area. No suitable host plants were seen for foraging. This species is under federal review for potential listing on the Endangered Species Act, and is considered sensitive by CDFW for overwintering roost sites.

Great blue heron (*Ardea herodias*)

This species has been documented throughout urban Avila Beach, and roosting has been documented in the eucalyptus within and adjacent to the study area along the Bob Jones Trail (The Cornell Lab of Ornithology 2020a). They could occur periodically, and may roost onsite. No large nests were observed during the surveys indicative of this species, and there is a low probability to nest in the eucalyptus due to human activity. Nesting colonies of this species are considered sensitive by CDFW.

Great egret (*Ardea alba*)

This species has been recorded throughout Avila Beach, including San Luis Obispo Creek and urban areas in the town. Roosting has been recorded in the eucalyptus windrow along Bob Jones Trail (The Cornell Lab of Ornithology 2020a). They could roost in the eucalyptus but do not nest in this area. There is a low probability to occur infrequently in urban areas onsite. Nesting colonies of this species are considered sensitive by CDFW, and they do not nest in this region.

Loggerhead shrike (*Lanius ludovicianus*)

This species has been recorded at several locations in the project vicinity, including adjacent to the site in the San Luis Obispo Creek mouth (The Cornell Lab of Ornithology 2020a). They could occupy the creek-side areas and golf course, and occur onsite periodically. There is a chance they could nest in the ornamental trees at the wastewater treatment plant. This species is considered to be a Species of Special Concern for nesting by CDFW.

Snowy egret (*Egretta thula*)

There are numerous records of this species from throughout urban Avila Beach, including several from within the study area (The Cornell Lab of Ornithology 2020a). An individual was observed foraging in the stormwater ditch during the August site visit. Occurrence of this species is likely regular due to the proximity of San Luis Obispo Creek and presence of mosquito fish. They could roost in the eucalyptus but do not nest in this area. Low probability to occur infrequently in urban paved areas onsite. Nesting colonies of this species are considered sensitive by CDFW, and they do not nest in this region.

Yellow warbler (*Setophaga petechia*)

This species has been recorded along the lower San Luis Obispo Creek corridor (The Cornell Lab of Ornithology 2020a). This species is closely tied to riparian habitat for nesting and this habitat does not occur on-site. Since they are known to occur in close proximity, there is a chance they could periodically move through or forage on the site. This species is considered to be a Species of Special Concern by CDFW.

Pallid bat (*Antrozous pallidus*)

This Species of Special Concern is known to occur in the vicinity (CDFW 2020b). They could fly over the site while foraging, and potentially could night roost on buildings in the study area or on structures in the wastewater treatment plant. No suitable habitat is present for winter or maternity roosts.

Townsend's big-eared bat (*Corynorhinus townsendii*)

This Species of Special Concern is known to occur in the vicinity (CDFW 2020b), and could fly over the site while foraging. No suitable structures for roosting are present.

Western mastiff bat (*Eumops perotis californicus*)

This Species of Special Concern is known to occur in the vicinity (CDFW 2020b), and could fly over the site while foraging. No suitable structures for roosting are present.

Designated Critical Habitat

Designated critical habitat for the south-central California coast steelhead (*Oncorhynchus mykiss irideus*) is present within San Luis Obispo Creek, but does not occur within the project study area. The limits of critical habitat extend to the ordinary high water mark. The stormwater ditch would not be suitable for this species due to insufficient water depth and vegetation cover, and presence of a significant physical barrier preventing fish migration to the project site.

Combining Designations and Environmentally Sensitive Habitat Area (ESHA)

The County of San Luis Obispo Coastal Zone Land Use Ordinance (CZLUO) and corresponding San Luis Obispo Planning Area Rural Combining Designation Map specifies and maps Combining Designation areas in the San Luis Bay area. The site falls within the Coastal Zone, as well as the Avila Beach Urban Reserve Line and the Urban Service Line. The following Combining Designations are mapped on and near the project site:

- Flood Hazard Area - occurs along San Luis Obispo Creek to the northwest of Avila Beach Drive, including the area in which the Wastewater Treatment Plant is located;
- Visitor Serving Area; and
- Geologic Study Area - coastal hills surrounding the site.

Environmentally Sensitive Habitat Areas (ESHA) are defined in Section 23.11 of the CZLUO as a type of Sensitive Resource Area where plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could easily be disturbed or degraded by human activities and development. They include wetlands, coastal streams, riparian vegetation, and terrestrial and marine habitats. The Combining Designations Map identifies the following Environmentally Sensitive Habitat Areas (ESHA) near the site, but none of these are mapped within the study area:

- Wetland - occurring within lower San Luis Obispo Creek and potentially the salt marsh habitat in the ditch;
- Coastal stream - mapped as the centerline of San Luis Obispo Creek; and
- Riparian vegetation - occurring along San Luis Obispo Creek from near the Wastewater Treatment Plant and extending upstream.

As stated above, mapped ESHA does not occur on-site, and the small amount of salt marsh vegetation growing over the rock gabion baskets in the stormwater ditch does not equate to ESHA since it is growing in a highly disturbed, constructed feature. The CZLUO defines unmapped ESHA as areas containing features or natural resources with equivalent characteristics and natural function as mapped sensitive habitat areas or mapped ESHA. The salt marsh vegetation consists of a four to five foot wide swath growing along the northern rock gabion baskets. It is not naturally occurring salt marsh wetland and therefore does not meet the definition as ESHA.

In an effort to ensure the stormwater ditch is avoided during project construction activities, the project has been designed to be located more than 100 feet from this wetland vegetation in the ditch, and more than 100 feet from wetland/riparian areas mapped along San Luis Obispo Creek and its top of bank as stipulated under Section 23.07.170 (Environmentally Sensitive Habitats) of the CZLUO.

However, consistent with the CZLUO development standards for ESHA, the project has been designed in a manner that avoids and/or mitigates any significant disruption or degradation of habitat values. By using the proposed jack and bore methods to install the new sewer line under the stormwater ditch, no temporary or indirect impacts would occur from construction activities such as trenching or directional drilling requiring the use of drilling mud.

Impact. The proposed project consists of temporary construction activities within an urbanized landscape and the installation of the proposed MBR unit within the footprint of the existing WWTP and would not permanently affect biological resources. The project does not involve any tree removal or encroachment into natural habitat.

Special-Status Plant Impacts

No special-status plant species were observed during the project site surveys, and the background review determined that no special-status plant species have potential to occur in the study area. Therefore, special-status plant species would be avoided, and there are no suitable habitats in adjacent areas that could support special-status plant species that could be indirectly affected. Impacts related to special-status plant species are considered less than significant.

Special-Status Wildlife Impacts

Each of the special-status wildlife species determined to have potential to occur on-site would only use the area on a transitory basis while moving through the area or foraging over the site. There is no suitable habitat to support breeding or other key life history uses on the study area, except for breeding birds discussed below that could potentially be present in street trees. It is possible that the egrets and heron could roost in the eucalyptus trees in the study area, but the noise and disturbance caused by construction would not differ substantially from that of baseline conditions in the area. Further, no large stick nests that could potentially support these species or larger raptors was observed during the surveys. Avian species sensitive to regular human disturbance are expected to move away from the activity without harm. Impacts to special-status wildlife species are considered less than significant.

Protected Nesting Birds

Construction activities during the nesting season (February 1 to August 31) would have the potential to interrupt nesting behavior, which could lead to the abandonment of nests containing eggs or young, causing their mortality. Birds could nest in the trees surrounding the wastewater treatment plant, eucalyptus windrow, or other ornamental trees and shrubs that are in close enough proximity that they could be disrupted by the additional noise and physical disturbance. In addition to the special-status bird species with potential to occur in the area, nesting activities of common species of birds protected under the Migratory Bird Treaty Act and California Fish and Game Code could be affected by the project. Impacts related to nesting birds are considered significant but mitigable.

Riparian Habitat, Sensitive Natural Community and Wetland Impacts

No riparian habitat is present within or adjacent to the study area. The proposed project will not directly affect any natural habitats, as it is situated entirely within developed and disturbed areas. The small band of salt marsh habitat in the stormwater ditch does not constitute natural wetland habitat since it occurs in a constructed ditch used to drain urban areas. Nevertheless, the stormwater ditch and associated vegetation will be avoided by project activities, and the force main realignment will be installed by jack-and-bore methods to install the pipe under the ditch, avoiding the need for surface disturbance. The jack and bore methods do not require the use of drilling mud and no indirect impacts to the ditch or associated vegetation are anticipated with the proposed project.

The proposed project has been designed to minimize the amount of open trenching, and the project includes the requirement to prepare an Erosion Control Plan that would prevent sedimentation effects on the ditch or nearby wetland habitats in San Luis Obispo Creek. Additionally, project elements are located at least 100 feet away from wetland habitat. The installation of the proposed MBR unit and associated improvements would be located entirely within the existing WWTP disturbance footprint, which is surrounded by fencing and a concrete wall along the side facing San Luis Obispo Creek. Stormwater runoff on the site will be managed during construction as detailed in project plans. Therefore, direct and/or indirect impacts on sensitive natural communities, wetlands or riparian habitat are expected to be less than significant.

Since the stormwater ditch is a constructed feature in an upland area, and is not in a location of a historic drainage feature, it is not expected to fall under the U.S. Army Corps of Engineers' regulatory jurisdiction pursuant to Section 404 of the Clean Water Act. Similarly, the Regional Water Quality Control Board would not regulate this feature under Section 401 of the Clean Water Act and the California Department of Fish and Wildlife is not expected to claim jurisdiction over the ditch pursuant to Section 1600 et seq. of the California Fish and Game Code. The project does not propose to disturb the stormwater ditch, and will not trench or place any fill material within the ditch profile. The new sewer line will utilize jack and bore methods to tunnel underneath the ditch. As such, regulated wetland and riparian habitats would not be affected by the project.

Movement of Fish or Wildlife, Wildlife Corridors or Nursery Site Impacts

No suitable aquatic habitat for native fish is present in the project area, and there would be no indirect effects to off-site areas. The project would occur in a developed area that is not used as a wildlife corridor or any other significant wildlife uses, except potentially breeding birds in street trees (mitigation for nesting birds is described below). Construction activities and the final project would not affect wildlife movement or activities in the surrounding area. No effects are expected on the movement of fish or wildlife, and habitat onsite would not support a wildlife corridor or nursery site. This is considered a less than significant impact.

Local Policies or Ordinances Conflicts

Local planning documents and Coastal Act requirements do not identify any ESHA within the study area, and wetlands occurring outside of the study area in San Luis Obispo Creek would not be affected as a result of the overall project design and erosion control measures incorporated into the project plans. As stated throughout this section, the small band of salt marsh vegetation growing on the rock gabion basket does not constitute ESHA since it occurs on a constructed ditch in an historic upland area that is surrounded by urban development. The MBR unit installation element occurs within a flood zone Combining Designation, but would be located in the footprint of the existing wastewater treatment plant and as such does not represent any new development in comparison to existing conditions. No trees would be removed or impacted by the project. There would be no conflicts with local policies or ordinances protecting biological resources and impacts are considered less than significant.

Conservation Plan Conflicts

No Habitat Conservation Plans, Natural Community Conservation Plans or other local, regional, or state conservation plans have been prepared for the area in which the project is located. Therefore,

there would be no conflicts with any type of conservation plan. Impacts are considered less than significant.

Mitigation/Conclusion. In order to reduce impacts to biological resources to less than significant levels, the following mitigation measures shall be implemented:

- BIO-1 Construction activities shall be required outside of the nesting season. All initial site disturbance shall be limited to the time period between September 1 and January 31, if feasible. If initial site disturbance such as grading, boring and trenching cannot be conducted during this time period, implementation of Mitigation Measure BIO-2 shall be required.
- BIO-2 The applicant shall conduct a pre-construction nesting bird survey for each phase of the project, prepared by a qualified biologist. If it is not possible to schedule the initiation of construction between September 1 and January 31, a qualified biologist shall conduct a pre-construction survey for nesting birds within 250 feet of project impact areas to ensure that no active nests will be disturbed. The pre-construction survey shall be conducted no more than seven days before the initiation of construction activities in any given area of the project site. During this survey, the qualified biologist shall inspect all potential nest substrates within 250 feet from the impact area, and any nests identified will be monitored to determine if they are active. If no active nests are found, construction may proceed. If an active nest is found within 50 feet (250 feet for raptors) of the construction area, the biologist, in consultation with the ABCSD, shall determine the extent of a buffer to be established around the nest. No work shall take place within the buffer area until the young have left the nest, as determined by a qualified biologist.
- BIO-3 Prior to the start of construction activities, a qualified biologist shall prepare and present a Worker Environmental Awareness Program that will be presented to all construction personnel and employees before any ground-disturbing activities commence at the project site. This program shall detail the measures undertaken during project implementation to avoid and minimize impacts on biological resources. It shall include a description of the status of protected species and resources that may be present in the area and the measures to be undertaken during the project to avoid impacts on these resources. All attendees of the Worker Environmental Awareness Program shall sign an attendance form.

Implementation of the mitigation measures listed above will reduce impacts to biological resources to less than significant levels.

V. CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting. In order to determine the nature of the project site cultural resource landscape, and to inform the project cultural resource impact analysis, the project team coordinated with the County of San Luis Obispo Planning Department staff in order to determine the nature of past archaeological investigations prepared within the boundaries of the project site and to discuss the need for additional surveys.

Research with the County showed that the project site was the focus of past archaeological investigations associated with development at the existing WWTP (Parker, 1993). The results of this analysis indicated that a prehistoric archaeological site (CA-SLO-938) had been recorded in the vicinity of the WWTP and proposed force main realignment and gravity main replacement. Evidence of this cultural resource was observed by the archaeologist and test excavations were conducted in an effort to determine the depth of the disturbed fill material associated with the development of the area. Fill material was determined to be approximately 3-feet deep before encountering groundwater. Field investigations of the site confirmed the presence of intact prehistoric cultural deposits in the site area. Although the area has been disturbed by development, and subsurface testing showed that the fill material contained an unconsolidated mix of cultural resources (e.g., chert stone tool manufacturing remains and marine shell), the studies show that intact cultural resources still remain at the site.

Because the project site has been the subject of extensive archaeological surface and subsurface surveys, and because of the known sensitive and culturally significant nature of the project site, this analysis assumes that the proposed project area is likely to contain significant cultural resources.

Prehistoric and Ethnographic Context

As discussed in the Avila Community Plan Background Report (County of San Luis Obispo, 2018), the community of Avila Beach is within an area of central California with a history of prehistoric occupation extending over 9,000 years ago. The prehistory of Avila can essentially be divided into

three major time Periods: The Early Period, Middle Period, and Late Period. Archaeological evidence from Early Period sites (9,000-3,000 years before present [B.P.]) suggest coastal dwellers emphasized the processing of small seeds (as evidenced by mano and metate grinding stones), hunting of large land mammals and sea mammals, fishing, and collection of shellfish. Sites were often located on elevated land forms for protection and normally were relatively small (Gibson 1993).

The subsequent Middle Period (between approximately 3,000 and 950 years B.P.) is indicated by the use of mortar and pestle and increased fishing from boats. Village site locations tended to be larger than in the Early Period, suggesting increasing social interaction and cooperation over a wider geographical range. During the Late Period (between 950 and 200 years B.P.), subsistence practices continued to diversify, featuring use of the bow and arrow instead of spear to capture smaller land mammals, and greater use of boats for open ocean fishing with nets. Shell beads that had been used for exchange throughout previous time periods increased in number and size, suggesting a sophisticated economic exchange system. Along with technological and economic developments, Chumash social systems evolved with large villages governed by chiefs (Greenwood 1978). By 1805, most of the Native Americans in the Chumash villages were displaced (Gibson 1993). The area now encompassing the town of Avila Beach formerly was the home of the Obispeño Chumash Indian community of Sepjato (Greenwood 1978 in Parker 1992).

Historic Context

The Avila Community Plan Background Report states that the historic record of the community began with the Spanish explorer Juan Cabrillo, who was said to have entered San Luis Bay in 1592, which he named Todos Santos. When the Spanish began to settle California in the eighteenth century using a system of missions and Presidios, Mission San Luis Obispo de Tolosa was established in 1772 at San Luis Obispo, 10 miles inland from Avila Beach. When Mexico declared independence from Spain in 1822, it secularized the missions and began to give or to sell former mission lands to Presidio soldiers. In 1839, Miguel Avila, son of a soldier at the Santa Barbara Presidio, petitioned Governor Alvarado for land around San Luis Bay. In 1842, he was granted the Rancho San Miguelito, consisting of 22,135 acres, including the present location of Avila Beach. In 1867 he sold his adobe house and portions of the shoreline (to the west of present Avila Beach) to a San Luis Obispo businessman, John Harford.

By the 1870s, when the town was laid out, the bay had become a trading center, bringing goods and travelers to San Luis Obispo from Los Angeles and San Francisco, and providing those cities with agricultural produce from the inland San Luis Obispo valley. The first wharf, Mallagh's Landing, at Cave Landing to the east of the project area, was built in the 1850s and bought by David Mallagh in 1860. Peoples Wharf was built in 1869, in town between San Luis and San Miguel Streets, by John Harford. A hotel and warehouse were built on Front Street where the wharf met the shore.

In the early 1900s, the oil industry began development in Avila Beach. By 1907, three oil companies, Union Oil, Phillips, and Standard Oil shipped their products from Port San Luis and Avila. Between 1910 and 1997, Unocal Avila Terminal facility was used for petroleum hydrocarbon storage and transfer activities. Petroleum products including gasoline, diesel, fuel oil and crude oil were pumped from the terminal through a network of underground pipelines beneath Front Street to Avila Beach Drive and over the San Luis Obispo Creek Bridge to the Cal Poly Pier formerly the Unocal pier.

In 1997, Unocal was sued under Proposition 65 for illegally discharging toxic substances into a drinking water source. In 1998, Unocal agreed to pay up to \$200 million for the clean-up. Removal was completed by excavating much of the beachfront portion of the town and part of the beach itself, replacing with clean sand, and facilitating the reconstruction of the town. Most of Front Street was torn down, the contaminated soil excavated up to 15 feet deep, and the commercial properties rebuilt.

Tribal Coordination and AB52

Under the requirements of AB52, Native American outreach was initiated as part of the project coordination and research effort. The ABCSD contacted the Native American Heritage Commission and local Native American groups including the Northern Chumash Tribal Council, the San Luis Obispo County Chumash Council, the Santa Ynez Band of Chumash Indians, Barbareno/Ventureno Band of Mission Indians, Chumash Council of Bakersfield, Coastal Band of the Chumash Nation, Salinan Tribe of Monterey and San Luis Obispo Counties, the yak tit'yu tit'yu yak tithini Northern Chumash Tribe, and the Xolon Salinan Tribe; groups known to have knowledge of or ties to the project area. Please refer to Section XVIII, Tribal Cultural Resources, for an assessment of tribal outreach and additional mitigation measures.

Impact. The project area was surveyed for archaeological resources as part of a WWTP and community infrastructure project in 1993 (Parker and Associates). The results of this analysis indicated that a prehistoric archaeological site (CA-SLO-938) had been recorded in the vicinity of the WWTP and proposed force main realignment and gravity main relocation project.

Evidence of this cultural resource was observed by the archaeologist and test excavations were conducted in an effort to determine the depth of the disturbed fill material associated with the development of the area. Subsurface investigations of the site confirmed the presence of intact prehistoric cultural deposits in the site area. Although the area has been disturbed by development, and subsurface testing showed that the fill material contained an unconsolidated mix of cultural resources (e.g., chert stone tool manufacturing remains and marine shell), the studies show that intact cultural resources still remain.

Because the project site has been the subject of extensive archaeological surface and subsurface surveys, and because of the known sensitive and culturally significant nature of the project site, this analysis assumes that the proposed project area is likely to contain significant cultural resources. As such, impacts to cultural resources are considered significant but mitigable.

Mitigation/Conclusion. Based on discussions with County staff and the recommendations from the archaeological survey discussed above, the following mitigation shall be required to reduce impacts to less than significant levels.

CR-1 Prior to the start of construction, the applicant shall submit a monitoring plan, prepared by a subsurface-qualified archaeologist, for the review and approval by the Environmental Coordinator. The monitoring plan shall include at a minimum:

- a) List of personnel involved in the monitoring activities;

- b) Description of how the monitoring shall occur;
- c) Description of frequency of monitoring (e.g. full-time, part time, spot checking);
- d) Description of what resources are expected to be encountered;
- e) Description of circumstances that would result in the halting of work at the project site (e.g. what is considered “significant” archaeological resources);
- f) Description of procedures for halting work on the site and notification procedures; and
- g) Description of monitoring reporting procedures.

CR-2 During all ground disturbing construction activities, the applicant shall retain a qualified archaeologist (approved by the Environmental Coordinator) and Native American to monitor all earth disturbing activities, per the approved monitoring plan. If any significant archaeological resources or human remains are found during monitoring, work shall stop within the immediate vicinity (precise area to be determined by the archaeologist in the field) of the resource until such time as the resource can be evaluated by an archaeologist and any other appropriate individuals. The applicant shall implement the mitigation as required by the Environmental Coordinator.

CR-3 Upon completion of all monitoring/mitigation activities, the consulting archaeologist shall submit a report to the Environmental Coordinator summarizing all monitoring/mitigation activities.

Implementation of the above required mitigation measures will reduce impacts to less than significant levels.

VI. ENERGY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting: The proposed project entails short-term construction activities related to the pipeline realignment and addition of the MBR unit to the WWTP in the community of Avila Beach. The project does not include any development and does not include an operational phase that would have the potential to consume energy resources in the long run.

Standard diesel-fueled construction equipment is proposed for use. In accordance with applicable air quality regulations, the construction equipment will be equipped with fuel-efficient engines and properly maintained. At the completion of remediation, energy consumption will be limited to occasional vehicle trips and equipment used for temporary site construction activities.

Impact: As described above in Section III, Air Quality, the proposed project will incorporate several measures to reduce emissions during short-term construction activities. In turn, these measures will result in fuel efficiencies. For example, heavy equipment will be outfitted to meet current emissions standards and haul trucks will meet CARB’s emissions standards for fuel-efficient engines.

In addition, the proposed project will incorporate several measures to reduce emissions during short-term construction activities. In turn, these measures will result in fuel efficiencies. As such, impacts related to energy use are considered less than significant.

Mitigation/Conclusion: Impacts are considered less than significant with the required incorporation of mitigation measures listed above under Section III, Air Quality, and incorporation of emissions standards for fuel-efficient engines under CARB. No additional mitigation is required.

VII. GEOLOGY AND SOILS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii. Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv. Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting: The following discussion and analysis is based on the geotechnical report prepared for the proposed project (Geotechnical Report for the MBR Unit and Wastewater Treatment Plant Improvements. 2859 Avila Bew3ach Drive. San Luis Obispo County, CA. Yeh and Associates, Inc. December 27, 2019). Please refer to the attached report for additional details on the proposed project construction and geologic resources.

The project site is located within the Central Coast Range geologic/geomorphic province of California. This province is characterized by generally northwest-southeast trending mountain ranges composed of metamorphic, sedimentary and volcanic rocks ranging in age from Cretaceous to Recent. Major northeast-southwest trending folds, right-lateral strike-slip and reverse faults reflect regional seismic setting of the Coast Ranges.

Avila Beach is located on an alluvial plane near the mouth of San Luis Obispo Creek. The surface geology of the site is mapped as younger alluvium. The alluvium is composed of sediments that are likely a combination of material deposited by San Luis Obispo Creek in the estuary areas along the creek. The creek cuts through hillsides immediately upstream of the site. The hills are predominantly mapped as bedrock units composed of Tertiary-age Pismo, volcanic tuff of the Obispo and Monterey Formations. These rocks are exposed on hillsides above the north side of San Luis Obispo Creek opposite of the project area and are exposed in outcrops along Avila Beach Drive approximately 150 feet northeast of the existing WWTP. Bedrock has been measured at approximately 70 feet below the project area.

Geologic structures mapped in the site vicinity are west to northwest trending faults and folds. The predominant structure includes the San Miguelito fault mapped just upstream of the site at a bend in San Luis Obispo Creek, and the San Luis Bay fault mapped along the shoreline south of the project site. These faults are included as a seismic source within the overall San Luis Range fault system.

The Coast Range geomorphic province is characterized by a complex zone of active faulting and folding. Major strike-slip and reverse faults include the Hosgri-San Simeon, Oceanic, and Rinconada faults. The Hosgri-San Simeon fault is located directly offshore and approximately 40 miles north of the project site and the Oceanic fault, located approximately 40 miles northeast of the project site, and was the source of the 2003 Magnitude M6.6 San Simeon earthquake (USGS, 2014). An active fault is defined as a fault that has a historic seismic record (activity in the last 100 years) or displaces Holocene (11,000 years and younger) deposits. Faults that exhibit signs of geologically recent movement (active within the past 11,000 years) are considered the most likely to experience movement in the near future. Therefore, active faults are generally thought to have the greatest fault rupture potential. Most agencies, however, will consider potentially active faults (active within the past two million years) as being capable of generating future earthquakes. Faults classified as inactive are not considered to present a significant fault rupture hazard or seismic source. Structural damage associated with earthquake hazards can be minimized with proper foundation engineering based on an analysis of the soils on a given building site, thereby limiting the damage to habitable structures in areas most likely to have these occurrences.

The site and the town of Avila Beach are within the Tsunami Hazard Zone identified by the building code via the ASCE Tsunami Design Geodatabase. The County of San Luis Obispo Office of Emergency Services manages the tsunami warning and evacuation system for the area. The project site consists of the Xererts-Xerolls-Urban land complex (0 to 15% slopes). This is a gently sloping, well-drained soil, with a very high runoff potential. The site does not contain and is not located in proximity to mineral resource extraction.

Impact. Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. Ground rupture is most likely to occur along active faults. However, the potential for ground rupture also exists along potentially active faults. The project site is located in the seismically active portion of central California and the project most likely will be subjected to strong earthquake ground motion during its lifetime. The M6.6 San Simeon earthquake in 2003 generated strong ground motion at the site; however, the project geological report indicated that this event did not cause liquefaction or lateral spreading at the WWTP.

The results of the project site slope stability analysis for lateral spreading during a seismic event indicated that instability occurring from potential liquefaction of loose sand layers within the profile could extend into or near the site, including the WWTP location, is generally constrained by thinning of the upper sand layer and was estimated to potentially impact the north end of the existing WWTP. With respect to slope stability, the estimated factor of safety for the slope at the proposed retaining wall behind the MBR unit to be installed was approximately 1.2.

The project site is located approximately 40 miles from the San Gregorio-Hosgri Fault System, including the San Simeon Fault Zone, and is approximately 80 miles from the San Andreas Fault.

The project site is not located within an Earthquake Fault Zone as established in accordance with the Alquist-Priolo Earthquake Fault Zoning Act of 1972 and no known active or potentially active faults cross or trend toward the site. The potential for surface rupture to occur on the site is determined to be low, and impacts are considered less than significant.

Small to moderate earthquakes (with magnitudes less than 5.0 on the Richter Scale) are common in San Luis Obispo County. As such, strong shaking should be expected during the lifetime of the proposed project. Although the pipeline realignment project does not include any structural development, the installation of the proposed MBR unit and associated site improvements have been designed and would be constructed to meet California Building Code (CBC) standards for seismic zone compliance. In addition, the proposed project would require adherence to the County of San Luis Obispo General Plan policies and program created to mitigate seismic impacts. With implementation of the policies discussed in detail in the project geotechnical report and adherence to the CBC and County standards, impacts related to seismic hazards are considered less than significant.

Liquefaction is the loss of strength in saturated granular soils produced by seismic shaking. For this to occur, the soils must be saturated at a relatively shallow depth, of a granular (non-cohesive) nature, and be relatively loose. If those criteria are met and strong ground motion occurs, then those soils may liquefy. Based on the available data, the potential for lateral spreading and liquefaction to occur as a result of a seismic event is considered to be significant but mitigable.

The project site is located on the alluvial terrace associated with San Luis Obispo Creek and is not located to steep slopes or in proximity to hazards associated with landslides. Landslide impacts are considered less than significant.

According to the County of San Luis Obispo General Plan, the area including the project site is listed under the Combining Designation map as a Flood Hazard Area, limited to the WWTP site along San Luis Obispo Creek. However, the installation of the proposed MBR unit would be located within the footprint of the existing WWTP which has been designed to avoid flood hazards through the engineered height of the facility and the installation of a perimeter wall to block and redirect floodwaters. In addition, storm runoff volumes and rates will not be altered as a result of the proposed pipeline realignment and MBR unit installation at the WWTP.

To adequately manage storm water runoff within the county resulting from new construction, the County requires the preparation of a Stormwater and Erosion Control Plan. The Plan requires adherence to Best Management Practices and improvements to adequately manage and control storm water runoff, erosion and sedimentation, including measures as needed to ensure that runoff from any source during construction and post-construction will be retained on-site or disposed off-site to an adequate storm water facility. Compliance with this requirement will ensure that storm water impacts will be less than significant.

The majority of the more granular soils encountered in the project site exploration are considered to have low expansion potential. However, the project geotechnical report identifies impacts related to settlement and provides recommendations to address potential settlement related to the MBR unit

installation and retaining wall construction. Impacts related to settlement are considered significant but mitigable. It is important to note that the remaining elements of the proposed project are limited to infrastructure improvements and pipeline realignment and would not result in significant impacts.

The proposed project does not include any development outside of the MBR unit installation and impacts related to septic systems are considered less than significant. With respect to paleontological resources, these resources have been identified within certain geologic formations within the County. Such resources are generally found within bedrock. The proposed remediation project and excavations are limited to soil and will not excavate into bedrock. Therefore, the probability of encountering paleontological resources is considered low and impacts are considered less than significant.

Mitigation/Conclusion. In order to address the potential project impacts related to lateral spreading and liquefaction associated with installation of the proposed MBR unit at the existing WWTP, the project geotechnical report includes recommendations to address multiple details of the project design and construction.

GEO-1. In order to address the potential for geologic impacts related to the proposed project construction, the mitigation measure recommendations listed in Sections 7.0 and 8.0 of the project geotechnical report shall be considered required elements of project construction. Please refer to the attached project geotechnical report for a detailed discussion of construction and design recommendations to address potential geologic and soils impacts related to the proposed MBR unit installation, construction of the associated retaining wall, and infrastructure improvements.

Implementation of the measures recommended in the project geotechnical report will reduce impacts to less than significant levels.

VIII. GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting. Data compiled by the United Nations Framework Convention on Climate Change indicates that, in 2010, total worldwide greenhouse gas (GHG) emissions were estimated to be 48,629 million

metric tons of carbon dioxide equivalent (MMTCO₂e), including emissions/removals from land use, land use change, and forestry; greenhouse gas emissions in the U.S. were 6,809 MMTCO₂e, and emissions in California were 450 MMTCO₂e.

Prominent GHG emissions contributing to the greenhouse effect are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). GHG emissions in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of global climate change or global warming. Global sources of GHG emissions include fossil fuel combustion in both stationary and mobile sources, fugitive emissions from landfills, wastewater treatment, agricultural sources, deforestation, high global warming potential (GWP) gases from industrial and chemical sources, and other activities.

While California's greenhouse gas emissions inventory is large, it has low emissions per capita. California ranks fourth lowest of the 50 states in CO₂ emissions per capita. The largest source of greenhouse gases in California is transportation. According to the most recent ARB Scoping Plan Inventory (2017) transportation contributed an average of 41% of the State's total greenhouse gas emissions between 2000 and 2017. Industrial emissions generation was the second-largest source at 24%.

Statewide legislation, rules and regulations that apply to GHG emissions associated with the project setting include the Sustainable Communities and Climate Protection Act of 2008 (Senate Bill [SB] 375), the Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32), Advanced Clean Cars Rule, Low Carbon Fuel Standard, Renewable Portfolio Standard, California Building Codes, and recent amendments to the California Environmental Quality Act (CEQA) pursuant to SB 97 with respect to analysis of GHG emissions and climate change impacts.

The California Air Resources Board (CARB), the California Environmental Protection Agency, San Luis Obispo County APCD and other governmental agencies with jurisdiction have developed guidelines and thresholds to address a project's cumulative contribution to GHG in the South Central Coast Air Basin. In order to assess GHG impacts, the APCD produced the "Greenhouse Gas Thresholds and Supporting Evidence" publication (March 28, 2012), which addresses GHG emission thresholds for significance.

Impact. In order to assess GHG impacts, the APCD produced the "Greenhouse Gas Thresholds and Supporting Evidence" publication (March 28, 2012), which addresses GHG emission thresholds for significance. According to the APCD, in the absence of a Qualified GHG Reduction Strategy, the "Bright-Line" numeric threshold of 1,150 metric tons of CO₂e per year represents an emissions level below which a project's contribution to global climate change would be deemed less than "cumulatively considerable." This threshold is equivalent to a project size of approximately 70 single-family dwelling units, or a 70,000 square-foot office building; it is anticipated to capture approximately 5% of all future projects, which equates to approximately 19% of future unmitigated emission. Based on the project description discussed above and the mitigation measures required under Section III, Air Quality, the construction activities associated with the proposed pipeline

realignment and the MRB unit installation at the WWTP would not have the potential to exceed the Bright-Line threshold GHG impacts would be considered less than significant.

Mitigation/Conclusion. With implementation of the mitigation measures required under Section III, Air Quality, greenhouse gas emission impacts are considered less than Significant.

IX. HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting. Hazardous Materials: Hazardous materials are defined as substances with physical and chemical properties of ignitability, corrosivity, reactivity, or toxicity which may pose a threat to human health or the environment. This includes, for example, chemical materials such as petroleum products, solvents, pesticides, herbicides, paints, metals, asbestos, and other regulated chemical materials. Additionally, hazards include known historical spills, leaks, illegal dumping, or other methods of release of hazardous materials to soil, sediment, groundwater, or surface water. If a historical release exists, then there is a risk associated with disturbing the historical release area. The potential for risks associated with hazardous materials are varied regionally. The primary risk concerns within the project area are expected to focus on the transportation of hazardous materials in and around the community. Most of these incidents are related to the increasing frequency of transport of chemicals over roadways, railways or through industrial accidents.

Fire Hazards: Fires have the potential to cause significant losses to life, property, and the environment. Urban fire hazards result from the materials that make up the built environment, the size and organization of structures, and spacing of buildings. Additional factors that can accelerate fire hazards are availability of emergency access, available water volume and pressure for fire suppression, and response time for fire fighters. Fire hazard severity in rural areas, including areas on the edge between urban and rural land (commonly called the wildland interface), are highly influenced by the slope of the landscape and site vegetation and climate. Where wildland fires may be a threat, plant fuels are often managed by replacement planting, grazing, plowing, or mechanical clearing.

Airport Hazards: The project site is not in the vicinity of any airports.

Impact. The proposed project would not create a significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous materials. Construction of the proposed project would be required to comply with applicable building, health, fire, and safety codes. Hazardous materials would be used in varying amounts during construction of the project. Construction and maintenance activities would use hazardous materials such as fuels (gasoline and diesel), oils, and lubricants; paints and paint thinners; glues; cleaners (which could include solvents and corrosives in addition to soaps and detergents); and possibly pesticides and herbicides. The amount of materials used would be small, so the project would not create a significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous materials, assuming such use complies with applicable federal, state, and local regulations, including but not limited to Titles 8 and 22 of the CCR, the Uniform Fire Code, and Chapter 6.95 of the California Health

and Safety Code. The project is not located in an area of known hazardous material contamination and is not listed on the “Cortese List” of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

The pipeline realignment would result in a minor alteration of the location of existing wastewater infrastructure, and is not considered to be a new use or one that would add to the potential for hazardous material impacts. The proposed pipeline realignment, MBR unit installation at the existing WWTP and infrastructure upgrades, do not propose the use of hazardous materials. Treatment and transfer of wastewater is currently ongoing at the ABSSCSD and regulated by the Regional Water Quality Control Board and would not change as a result of the proposed project.

The proposed project would not result in the routine transport, use, disposal, handling, or emission of any hazardous materials that would create a significant hazard to the public or to the environment. Implementation of Title 49, Parts 171–180, of the Code of Federal Regulations and stipulations in the General Plan Safety Element would reduce any impacts associated with the potential for accidental release during construction. These regulations establish standards by which hazardous materials would be transported, within and adjacent to the proposed project. Where transport of these materials occurs on roads, the California Highway Patrol is the responsible agency for enforcement of regulations.

The proposed project is not located in proximity to any schools.

Fire protection is provided by CalFire Department, Station 62, located at 1551 Sparrow Street, approximately 2 miles north of the Community of Avila Beach, CA. The Fire station is in close proximity to the project site, providing timely emergency support if needed. No airports are nearby, and as a result the project is not within an Airport Review area. There are no private airstrips in the vicinity of the project site that would result in a safety hazard for people residing or working in the project area.

Based on the discussion above, impacts related to hazardous materials are considered less than significant.

Mitigation/Conclusion. With implementation of applicable local, State and Federal regulations discussed above, impacts are considered less than significant. No mitigation measures are required.

X. HYDROLOGY AND WATER QUALITY

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

Setting. As discussed in the Avila Community Plan Background Report (County of San Luis Obispo, 2018), water is supplied in the Community of Avila Beach from two water sources: State Water Project (SWP) and Lopez Lake Reservoir. In the Avila URL, the water purveyors include the Avila Beach

CSD, Avila Valley Mutual Water Company (MWC), San Miguelito MWC, County Service Area (CSA 12), and Port San Luis.

The State Water Project (SWP) supplies the most water to the community at 49% (this number varies year to year). Four of five water purveyors in Avila Beach receive part of their water supply from the SWP including Avila Beach CSD, Avila Valley MWC, San Miguelito MWC, and CSA 12. The SWP is considered a supplementary source of water since hydrologic variability, maintenance schedules, and repair requirements can cause reduced deliveries or complete shutdown of the delivery system.

The Lopez Lake Reservoir supplies 39% of the water in Avila Beach (this number varies year to year). Avila Beach CSD, Avila Valley MWC, CSA 12 and Port San Luis receive water from Lopez Lake. The County Flood Control and Water Conservation District Zone 3 (Zone 3) funds the operations of the Lopez Project which includes Lopez Lake and Dam, Lopez Terminal Reservoir, Lopez Water Treatment Plant, and Distribution System. Zone 3 provides drinking water to the five cities communities of Arroyo Grande, Avila Beach, Grover Beach, Oceano CSD, and Pismo Beach.

The Avila Valley Sub-Basin supplies 18% of the water in the community distributed by Avila Valley MWC and San Miguelito MWC. The sub-basin is a part of the San Luis Valley Ground Water Basin. The Avila Valley Sub-Basin (WPA 6) encompasses approximately 1,100 acres along the San Luis Obispo Creek floodplain between the Los Osos Valley fault and the Pacific Ocean, which is almost 7 miles (Master Water Plan). This Sub-Basin is made up of alluvial deposits of San Luis Obispo Creek and tributaries to the ocean at Avila Beach.

The primary constraints on water availability in the Avila Valley Sub-Basin are physical limitations, environmental demand, and elevated nitrates. Since it is a shallow alluvial deposit, the sub-basin is more susceptible to drought and the release from the City of San Luis Obispo Water Reclamation Facility into San Luis Obispo Creek significantly offsets storage losses, but are intended to support steelhead habitat.

Impact. The project's soil types and descriptions are discussed in detail in the Agriculture, Biological Resources and Geology and Soils Sections above. As described in the NRCS Soil Survey, the project's soil erodibility is considered to be moderate. A sedimentation and erosion control plan is required for all construction and grading projects (LUO Sec. 22.52.120) to minimize these impacts. When required, the plan is prepared by a civil engineer to address both temporary and long-term sedimentation and erosion impacts. In addition, the County's Land Use Ordinance requires that temporary erosion and sedimentation measures to be installed when work is scheduled during the rainy season.

The proposed project would be constructed in an area with generally level topography. The proposed MBR unit installation portion of the proposed project located at the existing WWTP is within a 100-year Flood Hazard designation associated with San Luis Obispo Creek. However, the existing WWTP is designed to address flood potential through elevated pad construction and flood walls. Underlying soils have moderate erodibility. Please refer to Sections IV (Biological Resources) and VII (Geology and Soils) for a detailed discussion of erosion and sedimentation impacts and required mitigation to reduce impacts to less than significant levels.

The proposed project is intended to improve wastewater transmission and water treatment in the community. The proposed project would be considered an overall benefit to the community water services.

Mitigation/Conclusion. With the incorporation of water quality mitigation required under the Biological Resources and Geology and Soils Sections and implementation of the County’s Sedimentation and Erosion Control Plan requirements, construction impacts are considered less than significant. No additional mitigation is required.

XI. LAND USE AND PLANNING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting/Impact. The County’s LUO was established to guide and manage the future growth in the County in accordance with the General Plan, to regulate land use in a manner that will encourage and support orderly development and beneficial use of lands, to minimize adverse effects on the public resulting from inappropriate creation, location, use or design of buildings or land uses, and to protect and enhance significant natural, historic, archeological, and scenic resources within the county.

The County Land Use Element (LUE) provides policies and standards for the management of growth and development in each unincorporated community and rural areas of the county and serves as a reference point and guide for future land use planning studies throughout the county.

The Local Coastal Plan (LCP) also contains the area plans of each of the four coastal planning areas: Estero, North Coast, San Luis Bay Coastal, and South County Coastal. The area plans establish policies and programs for land use, circulation, public facilities, services, and resources that apply “areawide”, in rural areas, and in unincorporated urban areas within each planning area.

Surrounding uses neighboring the project site are dominated by Recreation, Public Facility, Residential Multi-Family and Commercial zoning land uses. The proposed project site consists of the property along the pipeline realignment (considering that the pipeline will be installed using tunneling methods beneath the surface) and the existing WWTP and consists of Recreation and Public Facility zoning designations. The proposed project was reviewed for consistency with policy and/or

regulatory documents relating to the environment and appropriate land use (e.g., County Land Use Ordinance, Local Coastal Plan, General Plan, etc.). Based on a review of the County’s Coastal Zone Land Use Ordinance and confirmation with County staff (Kerry Brown, email, 7/6/2020), the project qualifies for an exemption from permit requirements pursuant to CZLUO Section 23.03.040(8)(iii). With the required implementation of the mitigation measures listed under this Initial Study, the project was found to be consistent with these documents.

The project is not within or adjacent to a habitat or community conservation plan. The project is consistent or compatible with the surrounding uses as discussed in this Initial Study. Impacts are considered less than significant.

Mitigation/Conclusion. No inconsistencies were identified and therefore no additional measures above what will already be required are determined necessary. Impacts are considered less than significant.

XII. MINERAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting. The California Surface Mining and Reclamation Act of 1975 (SMARA) requires that the State Geologist classify land into mineral resource zones (MRZ) according to the known or inferred mineral potential of the land (Public Resources Code Sections 2710–2796).

The County LUO provides regulations for development in delineated Energy and Extractive Resource Areas (EX) and Extractive Resource Areas (EX1). The purpose of this combining designation is to protect significant resource extraction and energy production areas identified by the County LUE from encroachment by incompatible land uses that could hinder resource extraction or energy production operations, or land uses that would be adversely affected by extraction or energy production.

Impact. The proposed project is limited to proposed community infrastructure improvements. The proposed pipeline realignment is limited to temporary construction activities, after which the site will be returned to its previous state. The proposed installation of the MBR unit would take place within

the footprint of the existing WWTP and no physical development is proposed that would impact future mineral extraction. This impact is considered to be less than significant.

Mitigation/Conclusions. The site for the proposed pipeline realignment and WWTP project is not zoned for and does not support mineral extraction. Impacts are considered less than significant and no mitigation is required.

XIII. NOISE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project result in:</i>				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting. The major noise source in the community of Avila Beach, as in most other communities, is traffic. Although the Avila Beach Resort hosts concerts and events, the relatively small community does not exhibit other common noise generators such as railroads, aircraft, farming activities, quarry activities, and industrial and food packaging facilities can contribute to local ambient noise levels.

Some land uses are less tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than commercial or industrial activities. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design of new developments. As ambient noise levels affect the perceived livability of a development, the mismanagement or neglect of noise impacts can impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work.

The San Luis Obispo County Noise Element of the General Plan provides goals and a policy framework for addressing potential noise impacts in the planning process. The purpose of these goals, policies

and implementation measures is to reduce the various potential effects of noise on people. The Noise Element sets maximum allowable noise exposure from both transportation and stationary sources.

The County Noise Element requires that interior noise exposure from exterior noise sources (traffic) within residential dwellings not exceed 45 dB LDN (or CNEL), regardless of exterior noise exposure. The County has established an exterior noise level criterion of less than 60 dB LDN (or CNEL) within residential uses, hotels, motels, hospitals and nursing homes and offices. These are considered to be the “Normally Acceptable” levels, and may be adjusted upward to 70 dB LDN for outdoor recreational areas.

The proposed project is not within close proximity of loud noise sources. Additionally, the project is not considered a “noise sensitive land use”. The proposed project is located within a recreational and residential area and based on the Noise Element’s projected future noise generation from known stationary and vehicle-generated noise sources, the project is within an acceptable threshold area. The nearest sensitive receptors consist of the residential units located along Avila Beach Drive, where the proposed pipeline alignment would cross beneath. Infrastructure upgrades within the community have the potential to result in noise generation from intermittent/temporary construction activities.

Impact. The proposed project is located within a primarily recreational, public facility, residential and commercial area and based on the Noise Element’s projected future noise generation from known stationary and vehicle-generated noise sources, the project is within an acceptable threshold area. The proposed pipeline realignment would not generate loud noises as a result of operations, nor conflict with the surrounding uses. Operation of the proposed MBR unit at the existing WWTP would not generate an increase in existing noise levels and the project would not expose people to significant increased noise levels.

During the construction phase of the project, noise generated from construction activities may intermittently dominate the noise environment in the immediate area. Short-term construction noise would be limited in nature and duration; however, pipeline realignment and construction within the WWTP would occur within close proximity of sensitive receptors in the community (residential and commercial uses). Construction-related noise would be limited to the daytime hours of 7:00 a.m. to 9:00 p.m. Monday through Friday, and 8:00 a.m. to 5:00 p.m. on Saturday or Sunday, consistent with County construction noise exception standards (County Code Section 22.10.120.A). Potential construction-related noise impacts resulting from the proposed project construction activities could result in significant but mitigable impacts.

The proposed project is not expected to result in a significant long-term increase in traffic noise levels. The proposed pipeline installation does not include an operational phase. In addition, installation of the proposed MBR unit would be consistent with the existing noise levels at the WWTP. As such, noise-related impacts resulting from operation of the proposed project would be less than significant.

The proposed project site is not located within an airport land use plan.

Mitigation/Conclusion. In order to reduce noise impacts related to project construction to less than significant levels, the following mitigation is required:

- N-1. Stationary construction equipment used for proposed construction within the community that generates noise exceeding 65 dBA at the project boundaries shall be shielded with the most modern and effective noise control devices (i.e., mufflers, lagging, and/or motor enclosures). Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction within the community shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed-air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used. All equipment shall be properly maintained to ensure that no additional noise, due to worn or improperly maintained parts, is generated. Stockpiling and vehicle staging areas shall be located as far as practical from sensitive noise receptors. Every effort shall be made to create the greatest distance between noise sources and sensitive receptors during construction activities within the community.

Implementation of the above mitigation measure will reduce impacts to less than significant levels.

XIV. POPULATION AND HOUSING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting. The County of San Luis Obispo General Plan Housing Element recognizes the difficulty for residents to find suitable and affordable housing within San Luis Obispo County. The Housing Element includes an analysis of vacant and underutilized land located in urban areas that is suitable for residential development and considers zoning provisions and development standards to encourage development of these areas.

The County’s Inclusionary Housing Ordinance requires the provision of new affordable housing in conjunction with both residential and nonresidential development and subdivisions.

The proposed project is limited to temporary construction activity associated with the pipeline realignment and MBR unit installation. Although the MBR unit installation will be operational, the operations will be consistent with the existing WWTP. The proposed improvements are designed to accommodate existing use and community buildout under the current General Plan. The project does not include any potential to introduce populations to the area or displace existing housing.

Impact. No additional roads or new infrastructure will be constructed for the proposed project. Project implementation is intended to provide community infrastructure upgrades to meet existing demand and demand under existing buildout under the General Plan and will not induce further planned housing development. Therefore, impacts related to population and housing are considered less than significant.

The project would not displace any existing housing. Project energy use and related impacts are discussed under Impact Section VI, Energy. Impacts are considered less than significant.

Mitigation/Conclusion. No significant population and housing impacts are anticipated, and no mitigation measures are necessary.

XV. PUBLIC SERVICES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting. Police and Fire. Fire protection and emergency response services within the community of Avila Beach are provided by CalFire Station 62. Currently, Station 62 responds an ICS Type-1 Engine and a regional Breathing Support. A Personal Water Craft is assigned to Station 62 for water rescues.

Engine 62 is staffed with two permanent CAL FIRE employees, one Fire Apparatus Engineer and a Fire Captain. They are supported by 25 member Paid Call Firefighters (PCF's) who are dispatched via radio pager. Depending on the type of call and its location PCF's will either respond to the incident or will report to the fire station. Police services are provided by the San Luis Obispo County Sheriff Coast Station, located in Los Osos.

Schools. The San Luis Coastal Unified School District provides public school services for the community of Avila Beach. The San Luis Coastal Unified School District is consists of 10 elementary schools (Kindergarten through 6th grade), two middle schools (7th through 8th grade), and three high schools (9th through 12th grade). The District also includes two adult schools.

Recreation. Within the County's unincorporated areas, there are currently 23 parks, three golf courses, four trails/staging areas, and eight Special Areas that include natural areas, coastal access, and historic facilities currently operated and maintained by the County. The community of Avila Beach is a relatively small community; however, it is a popular location for locals and tourists to enjoy outdoor recreational opportunities related to the coastal environment and beaches.

Solid Waste. South County Sanitation Services provides solid waste services to the community of Avila Beach.

Public facilities fees, Quimby fees, and developer conditions are several ways the County currently funds public services. A public facility fee program (i.e., development impact fee program) has been adopted to address impacts related to public facilities (county) and schools (State Government Code 65995 et seq.).

Impact. Implementation of the proposed project will not result in additional residential development that could contribute to a cumulative demand on public services including schools, police, fire and other services including solid waste. The project's direct and cumulative impacts are within the general assumptions of allowed uses within the community that were used to estimate the fees in place. Construction within utility easements will be coordinated with the County of San Luis Obispo. As such, public service impacts are considered less than significant.

Mitigation/Conclusion. Impacts are considered less than significant, no mitigation is required.

XVI. RECREATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting. The County of San Luis Obispo Parks and Recreation Element (Recreation Element) establishes goals, policies, and implementation measures for the management, renovation, and expansion of existing, and the development of new, parks and recreation facilities in order to meet existing and projected needs and to assure an equitable distribution of parks throughout the county.

The County’s Parks and Recreation Element does not identify any public trails, parks, or recreational facilities on the project site. However, Phase I of the proposed pipeline realignment would be located beneath the community public parking lot. Disturbance within the parking lot would be limited to the receiver access pit. Public parking will remain available during and after project construction.

Public facilities fees, Quimby fees, and developer conditions are several ways the County currently funds public parks and recreational facilities. Public facility fees are collected upon construction of new residential units and currently provide funding for new community-serving recreation facilities.

Impact. The proposed project would not create a significant need for additional park, Natural Area, and/or recreational resources. The proposed project is limited to the pipeline realignment and installation of the MBR unit at the existing WWTP. Construction activities and operation of the proposed MBR unit would not have any adverse effects on existing or planned recreational opportunities in the County.

Mitigation/Conclusion. Impacts are considered less than significant and no additional measures are required.

XVII. TRANSPORTATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting. Regional access to the Community of Avila Beach is provided by Avila Beach Drive, and access to the project site vicinity is provided by San Miguel Street and First Street. The County has established the acceptable Level of Service (LOS) on roads for this rural area as “C” or better. The existing road network in the area, including the project’s access, is operating at acceptable levels. Based on existing road speeds and configuration, sight distance is considered acceptable.

Impact. The proposed project is limited to construction activities associated with the pipeline realignment and installation and operation of the MBR unit at the existing WWTP discussed above in detail under the Project Description. No development is proposed that would have the potential to increase traffic on local roadways or regional transportation corridors (e.g., Highway 101). Project traffic impacts are limited to temporary construction activities associated with the pipeline realignment and installation and operation of the MBR unit and operational traffic increases are not expected. Therefore, transportation and traffic impacts are considered less than significant.

The project will require construction activity within Avila Beach Drive and San Miguel Streets. This is anticipated to require a traffic monitor/flagger to route traffic around construction activities. However, both streets are anticipated to remain open during temporary construction activities. The project would not substantially increase hazards due to a design feature or incompatible use. Impacts are considered less than significant.

The proposed project would not conflict with adopted policies, plans, or programs supporting alternative transportation. Project construction staging will not be allowed to obstruct traffic access to community residences. Impacts are considered less than significant.

Mitigation/Conclusion. Traffic and circulation impacts are considered less than significant. Further mitigation is not required.

XVIII. TRIBAL CULTURAL RESOURCES

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

Setting. Approved in 2014, AB 52 added tribal cultural resources to the categories of resources that must be evaluated under CEQA. Tribal cultural resources are defined as either of the following:

- 1) Sites, features, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
 - a. Included or determined to be eligible for inclusion in the California Register of Historical Resources; or
 - b. Included in a local register of historical resources as defined in subdivision (k) of California Public Resources Code Section 5020.1.
- 2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of California Public Resources Code Section 5024.1. In applying these criteria for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American Tribe.

Recognizing that tribes have expertise with regard to their tribal history and practices, AB 52 requires lead agencies to provide notice to tribes that are traditionally and culturally affiliated with the geographic area of a proposed project if they have requested notice of projects proposed within that area.

As discussed under Section V, Cultural Resources, in order to determine the nature of the project site tribal cultural landscape, and to inform the project cultural resource impact analysis, the project team coordinated with the County of San Luis Obispo Planning Department staff in order to determine the nature of past archaeological investigations prepared within the boundaries of the project site and to discuss the need for additional surveys.

Research with the County showed that the project site was the focus of past archaeological investigations associated with the development of the existing WWTP (Parker, 1993). The results of this analysis indicated that a prehistoric archaeological site (CA-SLO-938) had been recorded in the vicinity of the WWTP and proposed pipeline realignment. Evidence of this cultural resource was observed by the archaeologist and test excavations were conducted in an effort to determine the depth of the disturbed fill material associated with the development of the area.

Field investigations of the site confirmed the presence of intact prehistoric cultural deposits in the site area. Although the area has been disturbed by development, and subsurface testing showed that the fill material contained an unconsolidated mix of cultural resources (e.g., chert stone tool manufacturing remains and marine shell), the studies show that intact cultural resources still remain.

Because the project site has been the subject of extensive archaeological surface and subsurface surveys, and because of the known sensitive and culturally significant nature of the project site, this analysis assumes that the proposed project area is likely to contain significant cultural resources.

The project site does not contain any historic resources or structures.

Tribal Coordination and AB52

Under the requirements of AB52, Native American outreach was initiated as part of the project coordination and research effort. The ABCSD contacted the Native American Heritage Commission on June 1, 2020 and received a list of tribal representatives in order to initiate consultation on June 2, 2020. Tribal representative contacts include the Northern Chumash Tribal Council, the San Luis Obispo County Chumash Council, the Santa Ynez Band of Chumash Indians, Barbareno/Ventureno Band of Mission Indians, Chumash Council of Bakersfield, Coastal Band of the Chumash Nation, Salinan Tribe of Monterey and San Luis Obispo Counties, the yak tit^yu tit^yu yak ti^hini (YTT) Northern Chumash Tribe, and the Xolon Salinan Tribe; groups known to have knowledge of or ties to the project area.

Consultation invitations were sent to all of the listed Native American tribal representatives on June 23, 2020. As a result, the ABCSD received two consultation requests and engaged in project consultation with the YTT Northern Chumash Tribe (Mona Tucker, July 31, 2020) and the Northern Chumash Tribal Council (Fred Collins, August 4, 2020), respectively.

As a result of the Native American tribal consultation, the primary questions and concerns were related to the acknowledgement that Avila Beach is a special place for Native Americans. The tribal representatives agree that the project is located within a known archaeologically sensitive area and the Lead Agency agrees to assume the presence of significant tribal cultural resources within the project footprint based on previous studies. Project construction techniques were discussed and recommendations including the minimization of earth disturbance were also discussed. Curation of any unearthened resources was requested and an overall request for full construction monitoring for the project was made.

Impact. The project site archaeological and cultural landscape has been studied and well documented as part of the previous cultural resource investigations and tribal coordination. The project site contains known and potentially undiscovered cultural resources, discussed in Section V, Cultural Resources.

Project activities would result in the disturbance of archaeological site, CA-SLO-938. However, disturbance would be limited to the excavation of the two access and two receiver pits as part of the proposed force main realignment and gravity main replacement and grading within the current drying bed inside the existing WWTP for the MBR unit installation. It is important to note that tunneling and jack and bore technology is proposed for the force and gravity main project construction, further limiting earth disturbance associated with the proposed project.

As such, the project will result in significant but mitigable impacts to tribal cultural resources.

Mitigation/Conclusion. In addition to the mitigation measures listed under Section V, Cultural Resources, the following mitigation measures shall be required:

TCR-1: In order to reduce impacts to known and potentially unidentified tribal cultural resources as a result of project construction activities, the ABCSD shall limit earth disturbance to the maximum extent feasible. This shall include implementing a slab foundation for the installation of the proposed MBR unit, as opposed to the use of deep piers or pilings for foundation support. This also includes limiting excavation associated with the force main realignment and gravity main replacement to the four proposed access/receiver pits and use of tunneling and jack and bore construction methods to avoid excavation to the maximum extent feasible.

Implementation of the above mitigation measure, in addition to the measures listed under Section V, Cultural Resources, will reduce impacts to less than significant levels.

XIX. UTILITIES AND SERVICE SYSTEMS

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

Setting. The ABCSD provides water and wastewater services for the community of Avila Beach

Per the County's Stormwater Program, the Public Works Department is responsible for ensuring that new construction sites implement best management practices during construction, and that site plans incorporate appropriate post-construction stormwater runoff controls. Construction sites that disturb 1.0 acre or more must obtain coverage under the SWRCB's Construction General Permit.

Pacific Gas & Electric Company (PG&E) is the primary electricity provider and both PG&E and Southern California Gas Company provide natural gas services for urban and rural communities within the County of San Luis Obispo. There are three landfills in San Luis Obispo County: Cold Canyon Landfill, located near the City of San Luis Obispo, Chicago Grade Landfill, located near the community of Templeton, and Paso Robles Landfill, located east of the City of Paso Robles.

As it relates to the proposed pipeline realignment and MRB unit installation project, there is no housing or permanent population existing or projected within the project footprint and the project will not include any residential development. Hence, there is no additional demand for permanent public utilities or services.

The project is, in and of itself, a community utility upgrade for wastewater transfer and treatment. The project would be beneficial to the community utility systems.

Please refer to Section X, Hydrology and Water Quality, for a discussion of project area water resources and community water supply.

Impact. The proposed project would not generate wastewater or require wastewater disposal during project construction or operation. Construction-related wastewater would be accommodated by licensed on-site portable restroom and hand-washing facilities and disposed of in accordance with existing regulations. The project will not require water use outside of temporary construction activities. The project will not generate significant solid waste, outside of construction garbage generation, which will be collected by a construction site dumpster and transferred to the Cold Canyon Landfill. Utility and service system impacts are considered less than significant.

Mitigation/Conclusion. Mitigation measures are not required. Impacts are considered less than significant.

XX. WILDFIRE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:</i>				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting. In central California, the fire season usually extends from roughly May through October, however, recent events indicate that wildfire behavior, frequency, and duration of the fire season are changing in California. Fire Hazard Severity Zones (FHSZ) are defined by the California Department of Forestry and Fire Protection (CalFire) based on the presence of fire-prone vegetation, climate, topography, assets at risk (e.g., high population centers), and a fire protection agency’s ability to provide service to the area (CAL FIRE 2007).

The County Emergency Operations Plan (EOP) addresses several overall policy and coordination functions related to emergency management. The County of San Luis Obispo Safety Element establishes goals, policies, and programs to reduce the threat to life, structures, and the environment caused by fire.

The California Fire Code provides minimum standards for many aspects of fire prevention and suppression activities. These standards include provisions for emergency vehicle access, water supply, fire protection systems, and the use of fire resistant building materials.

According to the San Luis Obispo County Safety Element, the project area is in a zone of moderate fire hazard. The project area is fairly urbanized and absent of vegetation with the exception of the area surrounding the existing WWTP. The topography of the Ranch varies, but is considered relatively flat in association with the San Luis Obispo Creek alluvial terrace.

Impact. The proposed project is limited to temporary construction activity and operation of the proposed MBR unit within the existing WWTP. The project does not include any structural development outside of the MBR unit installation and would not introduce population that could be potentially impacted by a wildfire.

Appropriate measures would be followed to avoid conflicts with emergency response activities and other potential traffic conflicts. Proposed measures include communication protocols and procedures to suspend Project-related trips during emergency situations; use of traffic control flagger when trucks are entering or leaving the project site; and halting traffic in the event of an emergency situation.

As noted in discussions above, excavation activity will result in short-term potential for off-site sedimentation/erosion. There are no existing structures, or population, in proposed project areas that could be potentially impacted by impacts following a wildfire. The proposed project includes implementation of a SWPPP with BMPs to avoid off-site sedimentation. There will be no substantive change in long-term drainage patterns. Upon completion of construction activities, final grade

contours will be replaced to pre-project conditions. Impacts related to wildfires are considered less than significant.

Mitigation/Conclusions. Impacts related to wildfires are considered less than significant. No mitigation is required.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

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

Setting. The lead agency shall find that a project may have a significant effect on the environment and thereby require an EIR to be prepared for the project where there is substantial evidence, in light of the whole record, that any of the following conditions may occur. Where prior to commencement of the environmental analysis a project proponent agrees to mitigation measures or project modifications that would avoid any significant effect on the environment or would mitigate the significant environmental effect, a lead agency need not prepare an EIR solely because without mitigation the environmental effects would have been significant (per State CEQA Guidelines § 15065).

Impact.

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

Incorporation of Mitigation Measures AQ-1 through AQ-3 under Section III, Air Quality, will reduce air quality impacts to less than significant levels. Mitigation Measures BIO-1 through BIO-3 under Section IV, Biological Resources, will reduce impacts to biological resources to less than significant levels. Mitigation Measures CR-1 through CR-3, listed under Section V, Cultural Resources, and Mitigation Measure TCR-1 under Section XVIII, Tribal Cultural Resources of this Initial Study will lessen cultural and tribal cultural resource impacts to less than significant levels. Mitigation Measure GEO-1 under Section V, Geology and Soils, will reduce geologic impacts to less than significant levels. Mitigation Measure N-1 under Section XII, Noise, will reduce noise impacts to less than significant levels.

- (b) *Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*

Project construction activities will be temporary, and no permanent uses will be established outside of the installation of the MBR unit at the existing WWTP. Project activities will not affect present or future development of the surrounding area. No cumulative effects are expected from the short-term project activity.

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

As discussed in each resource section above, the proposed project may result in significant but mitigable impacts to air quality, biological resources, Cultural Resources, Geology and Soils, Noise, and Tribal Cultural Resources.

For further information on CEQA or the environmental review process, please contact the Avila Beach Community Services District, the County of San Luis Obispo Department of Planning and Building, or the California Environmental Resources Evaluation System at “http://ceres.ca.gov/topic/env_law/ceqa/guidelines/” for information about the California Environmental Quality Act.

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7. MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure/Condition of Approval	Action Required	When Monitoring to Occur	Monitoring Frequency	Responsible Agency or Party	Compliance Verification		
					Initial	Date	Comments
Air Quality							
<p>AQ-1. To mitigate fugitive dust emissions related to project construction, the following shall be implemented:</p> <ul style="list-style-type: none"> a. Reduce the amount of the disturbed area where possible; b. Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible; c. All dirt stock pile areas should be sprayed daily as needed; d. Permanent dust control measures identified in the approved project revegetation and landscape plans should be implemented as soon as possible following completion of any soil disturbing activities; e. Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading should be sown with a fast germinating, non-invasive grass seed and watered until vegetation is established; f. All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the APCD; g. All roadways, driveways, sidewalks, etc. to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used; h. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site; 	<p>Required mitigation shall be shown on building plans and shall be incorporated into project design prior to final approvals.</p>	<p>County staff shall ensure required measures are included in project design prior to project approval.</p>	<p>Prior to project approval.</p>	<p>County of San Luis Obispo, ABCSD</p>			

Mitigation Measure/Condition of Approval	Action Required	When Monitoring to Occur	Monitoring Frequency	Responsible Agency or Party	Compliance Verification		
					Initial	Date	Comments
<p>i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114;</p> <p>j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site;</p> <p>k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible;</p> <p>l. All of these fugitive dust mitigation measures shall be shown on grading and building plans; and</p> <p>m. The contractor or builder shall designate a person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize dust complaints, reduce visible emissions below 20% opacity, and to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the APCD Compliance Division prior to the start of any grading, earthwork or demolition.</p>							
<p>AQ-2. The required mitigation measures for reducing nitrogen oxides (NOx), reactive organic gases (ROG), and diesel particulate matter (DPM) emissions from construction equipment are listed below:</p> <ul style="list-style-type: none"> • Maintain all construction equipment in proper tune according to manufacturer's specifications; • Fuel all off-road and portable diesel powered equipment with ARB certified motor vehicle • diesel fuel (non-taxed version suitable for use off- 	<p>Required mitigation shall be shown on building plans and shall be incorporated into project design prior to final approvals.</p>	<p>County staff shall ensure required measures are included in project design prior to project approval.</p>	<p>Prior to project approvals.</p>	<p>County of San Luis Obispo, ABCSD</p>			

Mitigation Measure/Condition of Approval	Action Required	When Monitoring to Occur	Monitoring Frequency	Responsible Agency or Party	Compliance Verification		
					Initial	Date	Comments
<p>road);</p> <ul style="list-style-type: none"> • Use diesel construction equipment meeting ARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with the State off-Road Regulation; • Use on-road heavy-duty trucks that meet the ARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation; • Construction or trucking companies with fleets that do not have engines in their fleet that meet the engine standards identified in the above two measures (e.g. captive or NOx exempt area fleets) may be eligible by proving alternative compliance; • All on and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and or job sites to remind drivers and operators of the 5 minute idling limit; • Diesel idling within 1,000 feet of sensitive receptors is not permitted; • Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors; • Electrify equipment when feasible; • Substitute gasoline-powered in place of diesel-powered equipment, where feasible; and, • Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel. 							
<p>AQ-3. Any scheduled disturbance, removal, or relocation of utility pipelines shall be coordinated with the APCD Enforcement Division at (805) 781-5912 to ensure compliance with NESHAP, which include, but are not limited to: 1) written notification, within at least 10 business days of activities commencing, to the APCD, 2) asbestos survey conducted by a</p>	<p>Verification of required mitigation measure shall be provided prior to construction.</p>	<p>Prior to construction.</p>	<p>Prior to construction activities.</p>	<p>ABCSD</p>			

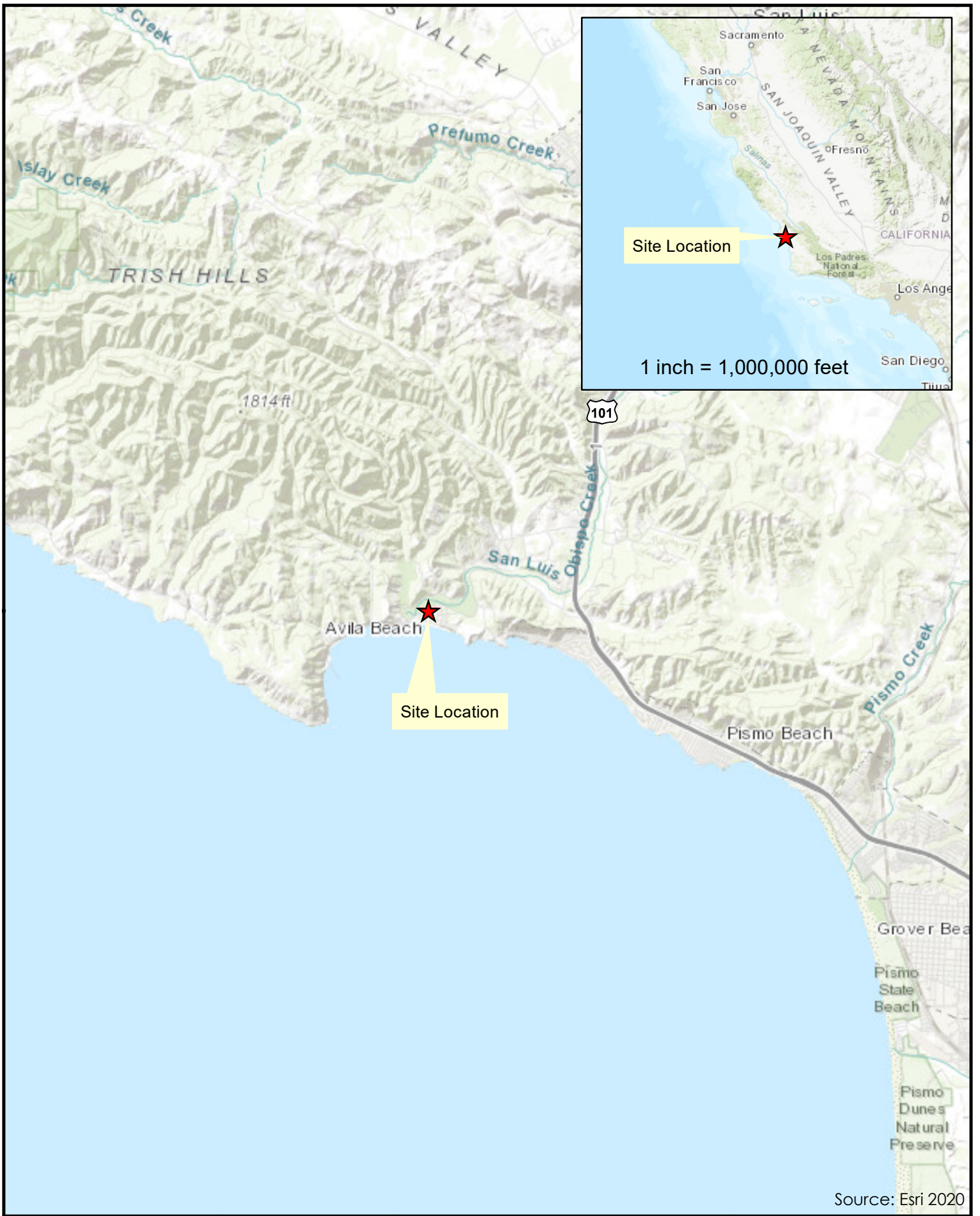
Mitigation Measure/Condition of Approval	Action Required	When Monitoring to Occur	Monitoring Frequency	Responsible Agency or Party	Compliance Verification		
					Initial	Date	Comments
Certified Asbestos Consultant, and, 3) applicable removal and disposal requirements of identified ACM.							
Biological Resources							
BIO-1. Construction activities shall be required outside of the nesting season. All initial site disturbance shall be limited to the time period between September 1 and January 31, if feasible. If initial site disturbance such as grading, boring and trenching cannot be conducted during this time period, implementation of Mitigation Measure BIO-2 shall be required.	Measure shall be factored into construction schedule.	At time of construction	Prior to construction kick off.	ABCSD			
BIO-2. The applicant shall conduct a pre-construction nesting bird survey for each phase of the project, prepared by a qualified biologist. If it is not possible to schedule the initiation of construction between September 1 and January 31, a qualified biologist shall conduct a pre-construction survey for nesting birds within 250 feet of project impact areas to ensure that no active nests will be disturbed. The pre-construction survey shall be conducted no more than seven days before the initiation of construction activities in any given area of the project site. During this survey, the qualified biologist shall inspect all potential nest substrates within 250 feet from the impact area, and any nests identified will be monitored to determine if they are active. If no active nests are found, construction may proceed. If an active nest is found within 50 feet (250 feet for raptors) of the construction area, the biologist, in consultation with the ABCSD, shall determine the extent of a buffer to be established around the nest. No work shall take place within the buffer area until the young have left the nest, as determined by a qualified biologist.	Measure shall be factored into construction schedule and reported to County for monitoring.	At time of construction.	Prior to construction kick off	ABCSD			
BIO-3. Prior to the start of construction activities, a qualified biologist shall prepare and present a Worker Environmental Awareness Program that will be presented to all construction personnel and employees before any ground-disturbing	Measure shall be implemented prior to construction kick-off.	Measure shall be implemented	Once.	ABCSD			

Mitigation Measure/Condition of Approval	Action Required	When Monitoring to Occur	Monitoring Frequency	Responsible Agency or Party	Compliance Verification		
					Initial	Date	Comments
activities commence at the project site. This program shall detail the measures undertaken during project implementation to avoid and minimize impacts on biological resources. It shall include a description of the status of protected species and resources that may be present in the area and the measures to be undertaken during the project to avoid impacts on these resources. All attendees of the Worker Environmental Awareness Program shall sign an attendance form.		prior to construction.					
Cultural Resources							
<p>CR-1. Prior to the start of construction, the applicant shall submit a monitoring plan, prepared by a subsurface-qualified archaeologist, for the review and approval by the Environmental Coordinator. The monitoring plan shall include at a minimum:</p> <ul style="list-style-type: none"> a. List of personnel involved in the monitoring activities; b. Description of how the monitoring shall occur; c. Description of frequency of monitoring (e.g. full-time, part time, spot checking); d. Description of what resources are expected to be encountered; e. Description of circumstances that would result in the halting of work at the project site (e.g. what is considered “significant” archaeological resources); f. Description of procedures for halting work on the site and notification procedures; and g. Description of monitoring reporting procedures. 	Monitoring plan shall be submitted to County Planning and Building Department and ABCSD for review and approval. Monitoring to be implemented during all ground disturbance.	Prior construction efforts.	Prior construction activity.	ABCSD, County of SLO			
<p>CR-2 During all ground disturbing construction activities, the applicant shall retain a qualified archaeologist (approved by the Environmental Coordinator) and Native American to monitor all earth disturbing activities, per the approved monitoring plan. If any significant archaeological resources or human remains are found during monitoring, work shall stop</p>	Monitoring shall be implemented during all ground disturbance.	During all ground disturbance	During all ground disturbance	County of SLO, ABCSD			

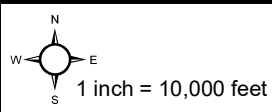
Mitigation Measure/Condition of Approval	Action Required	When Monitoring to Occur	Monitoring Frequency	Responsible Agency or Party	Compliance Verification		
					Initial	Date	Comments
within the immediate vicinity (precise area to be determined by the archaeologist in the field) of the resource until such time as the resource can be evaluated by an archaeologist and any other appropriate individuals. The applicant shall implement the mitigation as required by the Environmental Coordinator.							
CR-3 Upon completion of all monitoring/mitigation activities, the consulting archaeologist shall submit a report to the Environmental Coordinator summarizing all monitoring/mitigation activities.	Monitoring Report to be submitted to County Planning and Building Department and ABCSD prior to project finalization.	Upon construction finalization	Once, upon construction finalization	County of SLO, ABCSD			
Geology and Soils							
GEO-1. In order to address the potential for geologic impacts related to the proposed project construction, the mitigation measure recommendations listed in Sections 7.0 and 8.0 of the project geotechnical report shall be considered required elements of project construction. Please refer to the attached project geotechnical report for a detailed discussion of construction and design recommendations to address potential geologic and soils impacts related to the proposed MBR unit installation, construction of the associated retaining wall, and infrastructure improvements.	Measures shall be incorporated into project design.	Prior to issuance of construction permit.	Once prior to issuance of construction permit.	ABCSD, County of SLO			
Noise							
N-1. Stationary construction equipment used for proposed utility and infrastructure upgrades within the community that generates noise exceeding 65 dBA at the project boundaries shall be shielded with the most modern and effective noise control devices (i.e., mufflers, lagging, and/or motor enclosures). Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction within the community shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed-	Required mitigation measures shall be printed on building plans.	Monitoring shall be required at periodic inspections.	Throughout construction activities.	ABCSD, County of SLO			

Mitigation Measure/Condition of Approval	Action Required	When Monitoring to Occur	Monitoring Frequency	Responsible Agency or Party	Compliance Verification		
					Initial	Date	Comments
air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used. All equipment shall be properly maintained to ensure that no additional noise, due to worn or improperly maintained parts, is generated. Stockpiling and vehicle staging areas shall be located as far as practical from sensitive noise receptors. Every effort shall be made to create the greatest distance between noise sources and sensitive receptors during construction activities within the community.							
<i>Tribal Cultural Resources</i>							
TCR-1: In order to reduce impacts to known and potentially unidentified tribal cultural resources as a result of project construction activities, the applicant shall limit earth disturbance to the extent feasible. This shall include implementing a slab foundation for the installation of the proposed MBR unit, as opposed to the use of deep piers or pilings for foundation support. This also includes limiting excavation associated with the pipeline realignment to the four proposed access/receiver pits and use of tunneling and jack and bore construction methods to avoid excavation to the extent feasible.	Required mitigation measures shall be printed on building plans.	Once prior to approval of construction permits	Once prior to construction permit issuance	ABCSD, County of SLO			

**Attachment A:
Project Figures**



Source: Esri 2020



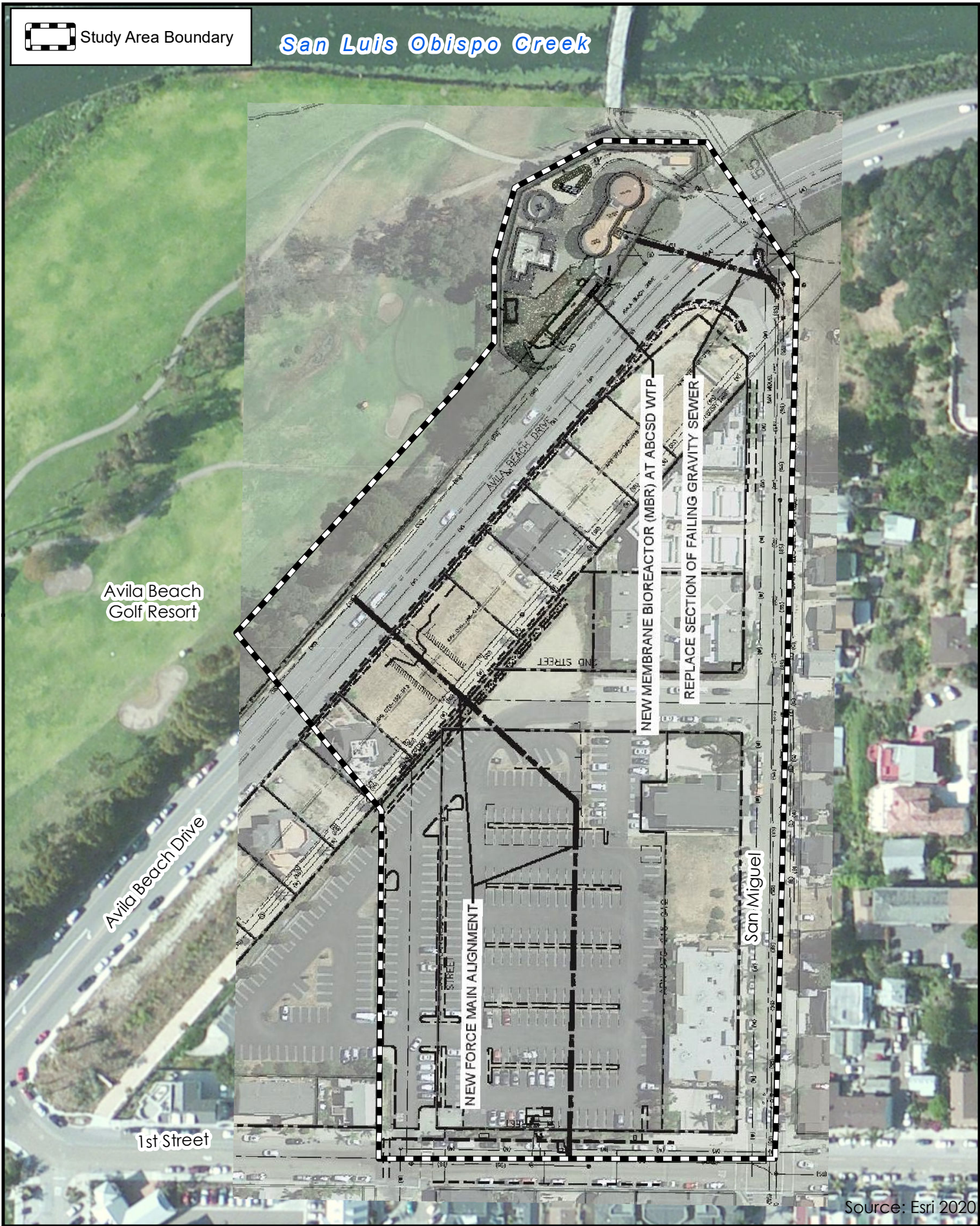
**ABCSD Force Main Realignment and
WWTP Redundancy Project**
Avila Beach CSD

Figure 1
Site Location Map



Study Area Boundary

San Luis Obispo Creek



Source: Esri 2020



1 inch = 125 feet

ABCSD Force Main Realignment and WWTP Redundancy Project

Avila Beach CSD

Figure 2

Aerial Overview Map

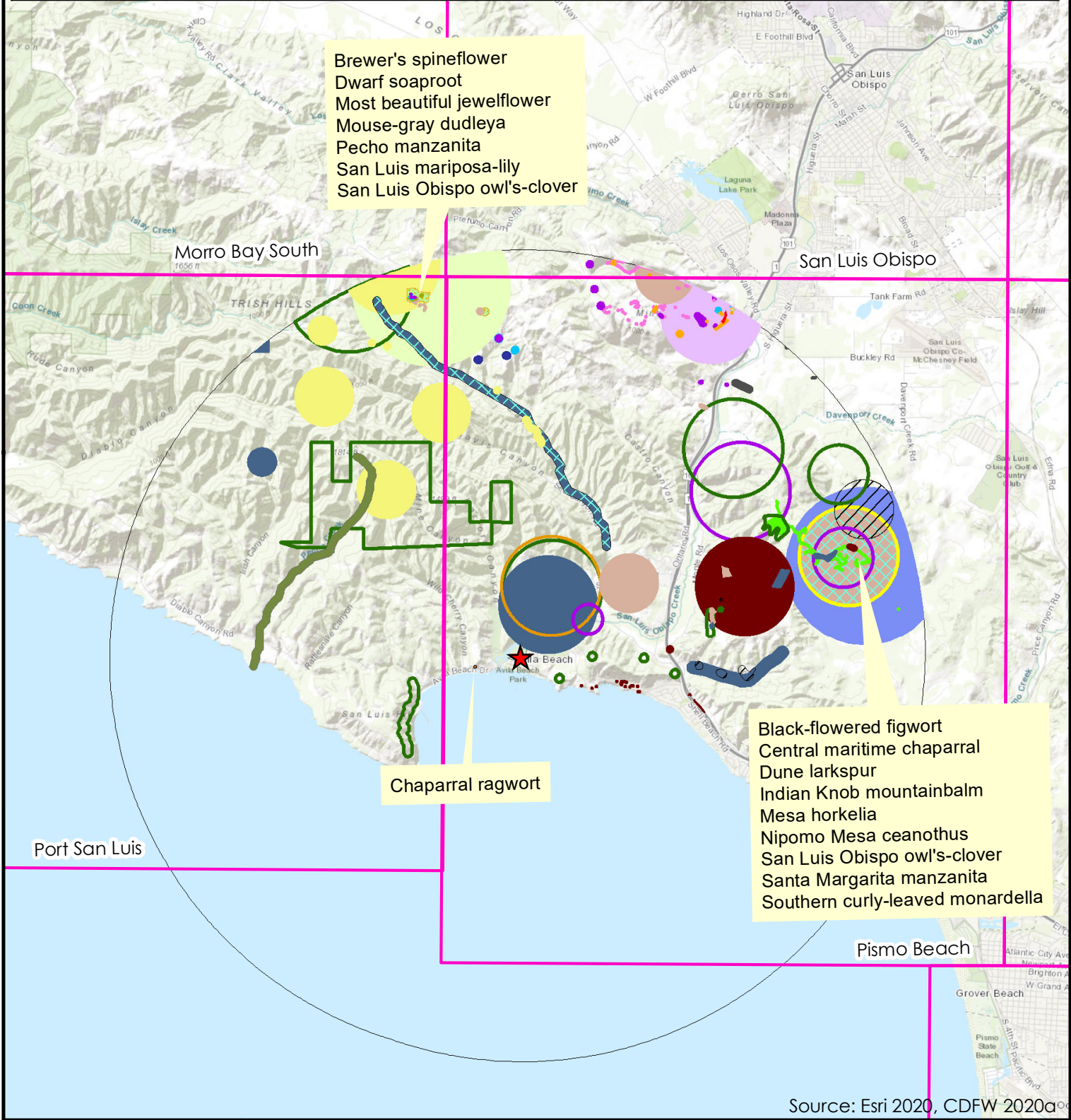
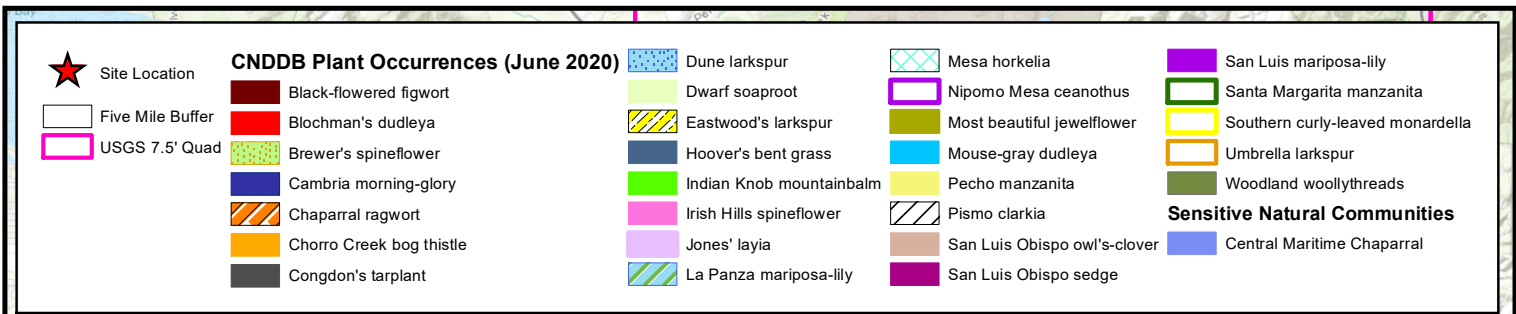


 Study Area Boundary

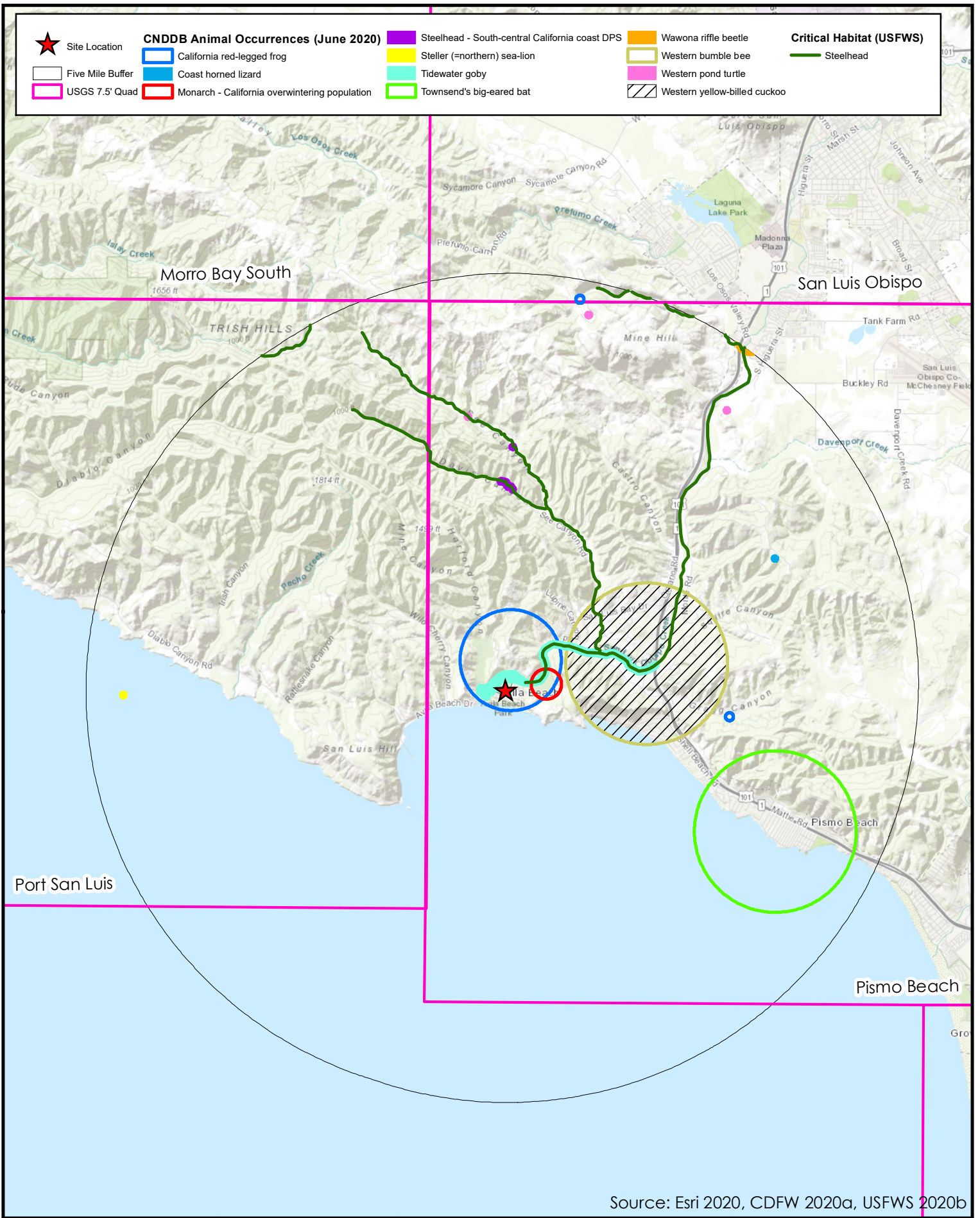
National Wetlands Inventory (USFWS)

-  Estuarine and Marine Deepwater
-  Estuarine and Marine Wetland
-  Riverine

Source: Esri 2020, USFWS 2020b



Source: Esri 2020, CDFW 2020a



**Attachment B:
Project Site Photo Plate**

Photo Plate



Photo 1. The Project would tie the new force main sewer line into an existing sewer line on Avila Beach Drive. Note landscaping and planted eucalyptus trees to the left.



Photo 2. The new sewer line would cross under Avila Beach Drive and be sited within an easement between new residences on Beach Colony Lane, avoiding the palm trees.



Photo 3. The stormwater ditch between Beach Colony Lane and Avila Public Parking Lot where it exists as a trapezoidal concrete channel lacking vegetation.



Photo 4. Southwesterly view of ditch where it transitions from concrete to earthen bottom and the new force main sewer line (FMRP) would be cross underground. Rock gabion baskets line both banks and salt marsh vegetation covered the northwestern (right) bank.



Photo 5. Close up view of wetland plants growing on rock gabion baskets. Nuisance runoff from surrounding residences and streets, along with shallow groundwater, appeared to be responsible for supporting several inches of standing water and allowed salt marsh species, such as fleshy jaumea and pickleweed, to persist.



Photo 6. The new force main sewer line would run through disturbed and developed areas, such as the Avila Public Parking Lot, and connect with existing infrastructure along 1st Street.



Photo 7. The FMRP would connect with existing infrastructure at this lift station on 1st Street.



Photo 6. Phase II of the FMRP would be located within paved areas at the intersection of San Miguel Street and Avila Beach Drive, and involve replacing a section of the gravity main.



Photo 7. The project also involves installing a Side Stream Organic Loading Redundancy Treatment System in this location within the existing Wastewater Treatment Facility.



Photo 8. Additional view of the disturbance area for work within the existing Wastewater Treatment Facility. All construction activities would be sited in disturbed/developed areas and surrounding vegetation would be avoided.

Attachment C
Special Status Biological Resources Summary Table

Special-status Biological Resources Summary

Common Name	Scientific Name	Fed	CA	CRPR	Ecological Information	Evaluation of Occurrence/ Site Suitability / Local Records
PLANTS/LICHENS/BRYOPHYTES						
Betty's dudleya	<i>Dudleya abramsii</i> ssp. <i>bettinae</i>	—	—	1B.2	Perennial herb; chaparral, coastal scrub and valley and foothill grassland on rocky, serpentine soils; 20-180 meters in elevation; blooms May to July.	Not expected. No suitable soils or rocky areas are present onsite. No suitable habitat is present as all areas are developed.
Black-flowered figwort	<i>Scrophularia atrata</i>	—	—	1B.2	Perennial herb; coniferous forest, chaparral, coastal dunes, coastal scrub and riparian scrub on sand or diatomaceous shale; 10-500 meters in elevation; blooms March to July.	Not expected. No suitable habitat is present and this perennial species would not occur in developed or disturbed areas. There are numerous records near the site on coastal hills.
Blochman's dudleya	<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i>	—	—	1B.1	Perennial herb; coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland on rocky, often clay or serpentine soils and sandstone rock outcrops; 5 - 450 meters in elevation; blooms April to June.	Not expected. No suitable soils or rocky areas are present onsite. Site is entirely developed and disturbed.
Blochman's leafy daisy	<i>Erigeron blochmaniae</i>	—	—	1B.2	Perennial rhizomatous herb; stabilized coastal dunes and coastal scrub; 3-45 meters in elevation; blooms June to August.	Not expected. No suitable dune habitat is present and the site is almost entirely developed and remaining areas are disturbed.
Brewer's spineflower	<i>Chorizanthe breweri</i>	—	—	1B.3	Annual herb; coniferous forest, chaparral, cismontane woodland and coastal scrub on serpentinite or gravelly soils; 45-800 meters in elevation; blooms April to August.	Not expected. No suitable habitat or soils are present and the site is outside of the species' elevational range.
Cambria morning-glory	<i>Calystegia subacaulis</i> ssp. <i>episcopalis</i>	—	—	4.2	Perennial rhizomatous herb; chaparral, cismontane woodland, coastal prairie, and valley and foothill grassland usually on clay soils; 30-500 meters in elevation; blooms March to July.	Not expected. No suitable habitat or soils are present, and the site is significantly developed and disturbed.

Common Name	Scientific Name	Fed	CA	CRPR	Ecological Information	Evaluation of Occurrence/ Site Suitability / Local Records
Chaparral ragwort	<i>Senecio aphanactis</i>	—	—	2B.2	Annual herb; chaparral, cismontane woodland, coastal scrub in drying alkaline flats; 15-800 meters in elevation; blooms January to April.	Not expected. No suitable habitat is present as the site is developed/disturbed. Recorded very close to the site on a coastal bluff with shale soil.
Chorro Creek bog thistle	<i>Cirsium fontinale</i> var. <i>obispoense</i>	E	E	1B.2	Perennial herb; chaparral, cismontane woodland, coastal scrub, valley and foothill grassland in seeps and drainages with serpentine; 35-385 meters in elevation; blooms February to September.	Not expected. No suitable soils or habitat area are present. Would not occur in the ditch due to saline conditions.
Congdon's tarplant	<i>Centromadia parryi</i> ssp. <i>congdonii</i>	—	—	1B.1	Annual herb; valley and foothill grassland and disturbed sites on alkaline soils; 0-230 meters in elevation; blooms May to November.	Not expected. No suitable soils are present and the site is outside the species' local distribution.
Dune larkspur	<i>Delphinium parryi</i> ssp. <i>blochmaniae</i>	—	—	1B.2	Perennial herb; maritime chaparral and coastal dunes; 0-200 meters in elevation; blooms April to June.	Not expected. No suitable habitat is present and the site is developed/disturbed.
Dwarf soaproot	<i>Chlorogalum pomeridianum</i> var. <i>minus</i>	—	—	1B.2	Perennial bulbiferous herb; chaparral on serpentine soils; 305-1000 meters in elevation; blooms May to August.	Not expected. No suitable habitat or soils are present, and the site is greatly outside of the species' elevational range. Species is restricted to more inland areas near the city of San Luis Obispo, and is not recorded along the coast. Perennial species that would have been eliminated by disturbance.
Eastwood's larkspur	<i>Delphinium parryi</i> ssp. <i>eastwoodiae</i>	—	—	1B.2	Perennial herb; chaparral and valley and foothill grassland generally in serpentine soils; 75-500 meters in elevation; blooms February to March.	Not expected. No suitable soils are present and the site is outside of the species' elevational range. Would not occur in developed or disturbed areas.
Hoover's bent grass	<i>Agrostis hooveri</i>	—	—	1B.2	Stoloniferous perennial herb; chaparral, cismontane woodland, and valley and foothill grassland habitats in sandy soils; 60-600 meters in elevation; blooms April to July.	Not expected. No suitable habitat is present, the site is outside of the species' elevational range, and perennial species that would be eliminated by disturbance.

Common Name	Scientific Name	Fed	CA	CRPR	Ecological Information	Evaluation of Occurrence/ Site Suitability / Local Records
Indian Knob mountainbalm	<i>Eriodictyon altissimum</i>	E	E	1B.1	Perennial evergreen shrub; maritime chaparral, cismontane woodland, and coastal scrub in sandstone soils; 80-270 meters in elevation; blooms March to June.	Not expected. No suitable soils or habitat are present, the site is outside of the species' elevational range, and perennial shrub that would be eliminated by disturbance.
Irish Hills spineflower	<i>Chorizanthe aphanantha</i>	—	—	1B.1	Annual herb; openings in chaparral and restricted to serpentine; approx. 305 meters in elevation; blooms from April to August.	Not expected. Known only from a very restricted area in the Irish Hills to the southwest of San Luis Obispo; no suitable habitat or soils are present.
Jones' layia	<i>Layia jonesii</i>	—	—	1B.2	Annual herb; chaparral and valley and foothill grassland on clay or serpentine; 5-400 meters in elevation; blooms March to May.	Not expected. No suitable habitat or soils are present, and the site is developed and disturbed.
La Panza mariposa-lily	<i>Calochortus simulans</i>	—	—	1B.3	Perennial bulbiferous herb; chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland on sandy and often granitic soils and sometimes on serpentine; 325-1150 meters in elevation; blooms April through June.	Not expected. No suitable habitat or soils are present, disturbance would preclude this species, and the site is outside of the elevational range of the species.
Mesa horkelia	<i>Horkelia cuneata</i> var. <i>puberula</i>	—	—	1B.1	Perennial herb; chaparral, cismontane woodland, and coastal scrub on sandy or gravelly soils; 70- 810 meters in elevation; blooms February to September.	Not expected. No suitable habitat is present, the site is outside of the species' elevational range, and disturbance would have eliminated this perennial species. The species has been recorded to the south of Morro Bay and has a wide range in the county.
Most beautiful jewelflower	<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	—	—	1B.2	Annual herb; chaparral, cismontane woodland, and valley and foothill grassland on serpentine soils; 94-1000 meters in elevation; blooms March to October.	Not expected. No suitable soils are present and the site is outside of the species' elevational range.
Mouse-gray dudleya	<i>Dudleya abramsii</i> ssp. <i>murina</i>	—	—	1B.3	Perennial leaf succulent; chaparral, cismontane woodland and valley and foothill grassland on serpentine soils; 50-525 meters in elevation; blooms May to June.	Not expected. No suitable soils or habitat are present and the site is outside of the species' elevational range.

Common Name	Scientific Name	Fed	CA	CRPR	Ecological Information	Evaluation of Occurrence/ Site Suitability / Local Records
Nipomo Mesa ceanothus	<i>Ceanothus impressus</i> var. <i>nipomensis</i>	—	—	1B.2	Perennial shrub; chaparral on sandy soil; 30-245 meters in elevation; blooms February to April.	Not expected. No suitable habitat is present, and this perennial shrub would have been removed by site development.
Pecho manzanita	<i>Arctostaphylos pechoensis</i>	—	—	1B.2	Perennial evergreen shrub; coniferous forest, chaparral and coastal scrub on siliceous shale soils; 125-850 meters in elevation; blooms November to March.	Not expected. No suitable soils are present, the site is outside of the species' elevational range, and no manzanita shrubs were seen during the survey or would occur on this developed site.
Salt marsh bird's-beak	<i>Cordylanthus maritimus</i> ssp. <i>maritimus</i>	E	E	1B.2	Hemiparasitic annual herb; coastal dunes and coastal salt marshes and swamps; 0-30 meters in elevation; blooms May to November.	Not expected. Marginally suitable salt marsh habitat is present in the ditch. Recorded in the higher zones of the Morro Bay estuary, but no records are from the San Luis Obispo Creek lagoon. Not observed during surveys.
San Luis mariposa-lily	<i>Calochortus obispoensis</i>	—	—	1B.2	Bulbiferous, perennial herb; chaparral, coastal scrub and valley and foothill grassland on sandstone, serpentine and/or sandy soils; 75-730 meters in elevation; blooms May to July.	Not expected. No suitable habitat is present and would not occur in disturbed habitats. Distribution is inland around the city of San Luis Obispo.
San Luis Obispo owl's-clover	<i>Castilleja densiflora</i> var. <i>obispoensis</i>	—	—	1B.2	Annual herb; meadows, seeps, and valley and foothill grassland sometimes on serpentine; 10-400 meters in elevation; blooms March to May.	Not expected. No suitable habitat is present as the site is entirely developed and disturbed. Has been recorded nearby and is relatively common in the vicinity.
San Luis Obispo sedge	<i>Carex obispoensis</i>	—	—	1B.2	Perennial herb; coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland, often on serpentine and clay soils in seeps; 10-820 meters in elevation; blooms April to June.	Not expected. No suitable habitat or soils are present, and this species would not occur in developed or disturbed areas.
Santa Margarita manzanita	<i>Arctostaphylos pilosula</i> (=A. <i>wellsii</i>)	—	—	1B.2	Evergreen perennial shrub; occurs in closed-cone coniferous forests, broadleafed upland forest, cismontane woodland, and maritime chaparral sometimes on sandstone; ranges from 75-1100 meters in elevation; blooms December to May.	Not expected. No suitable soils are present, the site is outside of the species' elevational range, and no manzanita shrubs were seen during the survey or would occur on this developed site. Recorded in coastal hills nearby.

Common Name	Scientific Name	Fed	CA	CRPR	Ecological Information	Evaluation of Occurrence/ Site Suitability / Local Records
Southern curly-leaved monardella	<i>Monardella sinuata</i> ssp. <i>sinuata</i>	—	—	1B.2	Annual herb; chaparral, cismontane woodland, coastal dunes, and openings in coastal scrub on sandy soils; elevations below 300 meters; blooms May to September.	Not expected. No suitable habitat is present as the site is developed and disturbed.
Umbrella larkspur	<i>Delphinium umbracolorum</i>	—	—	1B.3	Perennial herb; cismontane woodland and chaparral often on disintegrating shale; 85-1,035 meters in elevation; blooms April to June.	Not expected. No suitable habitat or soils are present, and the site is outside of the elevational range of the species.
Woodland woollythreads	<i>Monolopia gracilens</i>	—	—	1B.2	Annual herb; openings of broad-leaved upland forest, chaparral, cismontane woodland, north coast coniferous forest, and valley and foothill grassland on sandy rocky soils sometimes on serpentine; 100 to 1,200 meters in elevation; blooms February to July.	Not expected. No suitable habitat or soils are present, and the site is outside of the elevational range of the species. The only record in the vicinity is from 1908.

*E = Endangered; T = Threatened; R = Rare; '—' = no status; CRPR: Rank 1A - Presumed extirpated in California and either rare or extinct elsewhere; Rank 1B – Rare, threatened or endangered in California and elsewhere; Rank 2A – Presumed extirpated in California, but more common elsewhere; Rank 2B – Rare, threatened, or endangered in California, but more common elsewhere; Rank 3 - Plants needing more information, a review list; Rank 4 – Limited distribution, a watch list. Sources: California Natural Diversity Database (California Department of Fish and Wildlife 2020b); Special Vascular Plants, Bryophytes, and Lichens List (California Department of Fish and Wildlife 2020c); Inventory of Rare and Endangered Plants of California (California Native Plant Society 2020); Information on Wild California Plants for Conservation, Education, and Appreciation (Calflora 2020).

SENSITIVE NATURAL COMMUNITIES	
Central Coast Arroyo Willow Forest — State Rarity Rank S3.2	Absent. Dense closed-canopy forest characterized by arroyo willow (<i>Salix lasiolepis</i>) and/or Pacific willow (<i>S. lasiandra</i>). Occurs on moist to saturated sandy or gravelly soil in floodplains, low-gradient stream reaches and dune slack ponds. No riparian habitat is present on the developed site.
Central Coast Live Oak Riparian Forest — State Rarity Rank 3.2	Absent. Band of riparian on drier, outer floodplains along perennial streams between the more mesic cottonwood or willow-dominated communities and more xeric chaparral. Dominated by coast live oak (<i>Quercus agrifolia</i>) with a relatively open understory of grasses. Other species in the understory include coyote brush (<i>Baccharis pilularis</i>), California rose (<i>Rosa californica</i>), fragrant sumac (<i>Rhus aromatica</i>), and blue elderberry (<i>Sambucus mexicana</i>). No riparian habitat occurs on this developed site, and coast live oak trees at the WWTP are planted.
Central Coast Riparian Scrub — State Rarity Rank S3	Absent. A dense, shrubby streamside thicket dominated by any of several species of willows (<i>Salix</i> spp.) and has coyote brush (<i>Baccharis pilularis</i>) as a secondary component. Occurs on sand or gravel bars along rivers and streams with ground water close to the surface. Also occurs around dune slack ponds. No riparian habitat is present on this developed site. Occurs along the San Luis Obispo Creek corridor further upstream but not adjacent to the site.
Central Dune Scrub — State Rarity Rank S2.2	Absent. Restricted to coastal strip on stabilized backdunes. It is composed of low-growing scattered shrubs, subshrubs and herbs and is indicated by the presence of mock heather (<i>Ericameria ericoides</i>), beach blue lupine (<i>Lupinus chamissonis</i>), and beach sagewort (<i>Artemisia pycnocephala</i>). Site is developed and lacks native plant communities on dune habitat.
Central Foredunes — State Rarity Rank S1.2	Absent. Areas of sand accumulation that are exposed to onshore winds and sparsely vegetated by suffrutescent plant species including sand verbena (<i>Abronia</i> sp.), sea rocket (<i>Cakile</i> sp.), and primrose (<i>Camissonia</i> sp.). Site is developed and lacks native plant communities on dune habitat.
Central Maritime Chaparral — State Rarity Rank S2.2	Absent. Occurs on well-drained, sandy soils within the summer fog zone. Composed of sclerophyll shrubs dominated by one or more species of manzanita (<i>Arctostaphylos</i> spp.). No manzanita species occur on the site and the site is developed lacking native plant communities.
Coastal and Valley Freshwater Marsh — State Rarity Rank S2.1	Absent. Occurs in permanently flooded sites with freshwater and lacking significant flow, dominated by perennial, emergent vegetation such as bulrushes (<i>Scirpus</i> sp. and <i>Schoenoplectus</i> sp.) and cattails (<i>Typha</i> sp.). Freshwater emergent vegetation was not present in the ditch, and salt-tolerant species characteristic of salt marsh occurred in a limited area.

SENSITIVE NATURAL COMMUNITIES	
Coastal Brackish Marsh — State Rarity Rank S2.1	Absent. Occurs along the inland edges of coastal bays, lagoons and estuaries at the interface between saltwater and freshwater. Salinity may vary due to tides and seasonal freshwater runoff. It has dense cover by perennial emergent species such as bulrushes (<i>Scirpus</i> sp. or <i>Schoenoplectus</i> sp.), broadleaf cattail (<i>Typha latifolia</i>), sedges (<i>Carex</i> spp.) and saltgrass (<i>Distichlis spicata</i>). The ditch has a limited amount of salt marsh habitat but lacks sufficient freshwater to intermix and support brackish water species. Occurs in San Luis Obispo Creek upstream from the study area.
Northern Coastal Salt Marsh — State Rarity Rank S3.2	Present. This community occurs in sheltered inland margins of bays, lagoons and estuaries. These areas are subject to regular tidal inundation of saltwater for at least part of the year. Salt-tolerant hydrophytes up to 1 meter tall forming moderate to dense stands. Characteristic species include fleshy jaumea (<i>Jaumea carnosa</i>), Pacific cordgrass (<i>Spartina foliosa</i>), pickleweed (<i>Salicornia</i> sp.), and saltgrass (<i>Distichlis spicata</i>). Occurs from the Oregon border to Morro Bay. Limited areas of this community occurred in the ditch onsite, and it was also present in the San Luis Obispo Creek lagoon. Will not be affected by project activities.
Northern Interior Cypress Forest — State Rarity Rank S2.2	Absent. Occurs on dry, rocky, and often serpentine soils. Stands are open and scrubby, being maintained by fires. It is dominated by one or more native cypress species (<i>Hesperocyparis</i> spp.). Suitable soils are not present onsite and the Monterey cypress are planted.
Serpentine Bunchgrass — State Rarity Rank S2.2	Absent. Restricted to areas with serpentine soils. Dominated by native perennial bunchgrasses and herbs with low total cover. Characteristic species include needlegrass (<i>Stipa</i> spp.), California poppy (<i>Eschscholtzia californica</i>), and small fescue (<i>Festuca microstachys</i>). Serpentine soils are not present, no purple needlegrass was observed, and the site is entirely developed and disturbed.
Valley Needlegrass Grassland — State Rarity Rank S3.1	Absent. Often occurs on clay soils that are moist or saturated in winter and very dry in the summer. It is dominated by purple needlegrass (<i>Stipa pulchra</i>), but may have higher percent cover overall by native and introduced annual grassland species. No purple needlegrass was observed, and the site is entirely developed and disturbed.

Sources: Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986); California Natural Community List (California Department of Fish and Wildlife 2020a); California Natural Diversity Database (California Department of Fish and Wildlife 2020b).

Common Name	Scientific Name	Fed	CA	CDFW	Ecological Information	Evaluation of Occurrence/ Site Suitability / Local Records
ANIMALS						
INVERTEBRATES						
Monarch butterfly	<i>Danaus plexippus</i> pop. 1	— (under review)	—	— (overwintering population)	Adults feed on the nectar of various blooming plants. During breeding can be found in fields, pastures, residential areas, grassland and scrub. Eggs are laid on and caterpillars feed on milkweed. Overwinters in wind-protected tree groves of eucalyptus, Monterey pine and cypress along the coast.	Potential. Individuals could occur periodically while moving through the area, but no suitable host plants are present for foraging. The eucalyptus windrow does not have sufficient structure to support overwintering roosting. Historic roost site reported on the Avila Beach Golf Resort but apparently no longer occupied.
San Luis Obispo pyrg	<i>Pyrgulopsis taylori</i>	—	—	—	Freshwater snail with planktonic larvae. Also has been recorded on rocks and in leaf litter.	Not expected. Would not occur in saltwater conditions in the ditch or lower San Luis Obispo Creek. Recorded in reaches upstream from the site.
Wawona riffle beetle	<i>Atractelmis wawona</i>	—	—	—	Small- to medium-sized clear mountain streams with riffles; uses submerged algae. Elevational range reported to be 2000-5000 feet from Mariposa County north to Oregon and Idaho, but there is a record in San Luis Obispo Creek at 98 feet elevation.	Not expected. No suitable habitat is present in the study area and would not occur in the ditch. There is only one record in the vicinity and it is greatly outside of the known distribution of the species.
Western bumble bee	<i>Bombus occidentalis</i>	—	CE	—	Generalist foragers and found on agricultural crops such as tomatoes, peppers, cranberries, alfalfa, avocado, apples, cherries, blackberries, and blueberries. Only females survive the winter and establish new colonies the following spring. Colonies contain one queen, female workers, larvae, and when the season nears, male and female reproductive members. Nests are underground in cavities or burrows.	Not expected. No suitable host plants are present. Species has undergone substantial range reduction, and no longer occurs in central California. The record nearby is from 1936.

Common Name	Scientific Name	Fed	CA	CDFW	Ecological Information	Evaluation of Occurrence/ Site Suitability / Local Records
FISH						
South-central California coast DPS steelhead	<i>Oncorhynchus mykiss irideus</i> pop. 9	T	—	—	Adults spawn in freshwater streams with clear, well-oxygenated, cool water and clean gravel substrate. Also require instream cover (branches, logs) and streamside vegetation. Juveniles rear in freshwater reaches or lagoons before going to the ocean to mature, and then return to freshwater to reproduce.	Not expected. No suitable habitat is present in the study area. Would not occur in the ditch due to shallow water, high temperature and low oxygen. Has been recorded in the San Luis Obispo Creek watershed.
Tidewater goby	<i>Eucyclogobius newberryi</i>	E	—	SSC	Small, euryhaline, benthic fish that inhabits coastal lagoons, estuaries, stream mouths, and backwater marshes, rarely in open ocean. Usually in brackish lower reaches but can occur up to 7 miles upstream from the ocean. Requires shallow water with little to no flow and fine substrate.	Not expected. No suitable habitat is present in the study area. Unlikely to access the ditch through the outfall structure. Recorded in lower San Luis Obispo Creek adjacent to the study area.
AMPHIBIANS/REPTILES						
Blainville's (=coast) horned lizard	<i>Phrynosoma blainvillii</i>	—	—	SSC	Grasslands, sandy washes, coastal scrub, chaparral, coniferous forest and woodlands with patches of open areas for sunning and bushes for cover. Often with loose sandy soils for burial, but also uses small mammal burrows. Preys on native species of ants and other small invertebrates.	Not expected. No suitable habitat and would not occur in urban areas. Infrequently recorded in the general vicinity.
California red-legged frog	<i>Rana draytonii</i>	T	—	SSC	Forages and breeds in streams with deep slow-moving pools, stock ponds, reservoirs, springs, lagoons, and marshes; usually with emergent or riparian vegetation but also found at sites lacking vegetation. Uses riparian and various upland habitats in winter and for dispersal.	Not expected. Developed habitat onsite is unsuitable for upland dispersal or estivation. Would not use the ditch due to low water depth and saline conditions. Has been recorded in lower San Luis Obispo Creek in 1998 away from project activities.

Common Name	Scientific Name	Fed	CA	CDFW	Ecological Information	Evaluation of Occurrence/ Site Suitability / Local Records
Northern California legless lizard	<i>Anniella pulchra</i>	—	—	SSC	Beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, oak woodland, and stream terraces with riparian vegetation. Fossorial species requires moist, loose soils or leaf litter with plant cover or surface objects (rocks, boards, logs, etc.). Can occur in residential areas.	Not expected. Can occur in residential areas, but the ruderal habitat occurs in small patches surrounded by pavement lacking suitable shrubs for moisture and cover. Has been recorded in the site vicinity but no records are from Avila Beach.
Southwestern pond turtle (=western pond turtle)	<i>Actinemys pallida</i> (= <i>Emys marmorata</i>)	—	—	SSC	Ponds, lakes, rivers, streams, marshes, brackish lagoons, and irrigation ditches with a mosaic of vegetation and open areas for basking. Uses upland areas for nesting and in winter, including woodland, forest, grassland, chaparral, and grasslands.	Not expected. No suitable habitat is present. The ditch has insufficient water and habitat structure. Has been recorded in the San Luis Obispo Creek watershed but there are no records in the lower reaches.
BIRDS						
Great blue heron	<i>Ardea herodias</i>	—	—	— (nesting colony)	Freshwater and saltwater marshes, also foraging in grasslands and agricultural fields. Nesting colonies are near lakes, ponds and wetlands bordered by forests. Nests are placed mainly in trees, but may also nest on the ground, in bushes or artificial structures. Occurs year-round in this area.	Potential. Could occur infrequently. There are numerous records in eBird from around urban Avila Beach, including roosting in the eucalyptus in the study area.
Great egret	<i>Ardea alba</i>	—	—	— (nesting colony)	Forages in marshes, swamps, streams, rivers, ponds, lakes, lagoons, tidal flats, canals, ditches, flooded fields, and sometimes in upland where they prey on fish, amphibians, reptiles, crustaceans, and invertebrates. Roosts communally in trees. Nesting colonies are on lakes, ponds, marshes, and estuaries, but does not nest in this area. Occurs in this area during non-breeding season.	Potential. Could roost in the eucalyptus trees along the Bob Jones Trail. There are numerous records in eBird from the surrounding area, including roosting in that windrow and urban areas of Avila Beach.

Common Name	Scientific Name	Fed	CA	CDFW	Ecological Information	Evaluation of Occurrence/ Site Suitability / Local Records
Loggerhead shrike	<i>Lanius ludovicianus</i>	—	—	SSC (nesting)	Open country with low vegetation and well-spaced shrubs or trees such as coastal scrub, grasslands, agricultural fields, pastures, riparian areas, desert scrub, savannas, prairies, golf courses, and along roadsides where they prey on insects, amphibians, reptiles and small mammals. Nests in trees, shrubs, or brush piles. Occurs in this area year-round.	Potential. Could occur along San Luis Obispo Creek and the golf course and periodically occur onsite. Could nest in ornamental trees at the WWTP. Has been recorded in eBird adjacent to the study area.
Snowy egret	<i>Egretta thula</i>	—	—	— (nesting colony)	Lagoons, freshwater wetlands, ponds, temporary pools, and wet fields where they prey on aquatic animals and insects. Nesting colonies are in dense vegetation of islands and marshes. Occurs in this area outside of the breeding season.	Potential. Could occur periodically on the site. Has been recorded along San Luis Obispo Creek and in urban Avila Beach in eBird, including from the study area. Does not nest in this area.
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	T	E	—	Riparian, desert riparian, and orchards with dense cover and a water source. Preys primarily on caterpillars, but food includes other invertebrates, amphibians, reptiles, fruits and seeds. Once common in CA's central and coastal valleys, now breeds only along a few inland rivers. Dense willows required for roosting and nesting. Migratory only occurring in CA in summer.	Not expected. No suitable riparian habitat is present and does not occur in urban areas. Historic records from the general area are from 1921 and 1932 and there are no recent records nearby.
Yellow warbler	<i>Setophaga petechia</i>	—	—	SSC	Wetland and riparian habitats with willows, cottonwoods, bay, maple, sycamores and alders where they eat insects. Also uses gardens, orchards, residential areas and roadside thickets. Nesting is in shrubs or small trees. Occurs year-round in this area, although is rare in winter.	Potential. Could occur onsite while foraging, but unlikely to nest due to being closely tied to riparian habitats. Has been recorded nearby in eBird.

Common Name	Scientific Name	Fed	CA	CDFW	Ecological Information	Evaluation of Occurrence/ Site Suitability / Local Records
MAMMALS						
Pallid bat	<i>Antrozous pallidus</i>	—	—	SSC	Open dry habitats including deserts, grasslands, shrublands, woodlands, and forests. Roosts in rocky outcrops, caves, crevasses, mines, hollow trees, and buildings that moderate temperature. Night roosts on porches and open buildings.	Potential. Could forage over the site but no roosting habitat is present for maternal roosts. Could night roost on structures or at the WWTP. Has been recorded in the vicinity.
San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	—	—	SSC	Moderate to dense coastal scrub, especially in rocky areas with slopes.	Not expected. No suitable habitat is present. Species has been documented at Diablo Canyon property.
Steller (=northern) sea-lion	<i>Eumetopias jubatus</i>	—	—	SSC	Coastal waters, feeding in ocean and estuaries, and haul-out onto land to reproduce, molt and rest. Prey on marine species, such as fish and smaller marine mammals.	Not expected. No suitable habitat is present. Recorded in offshore areas nearby.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	—	—	SSC	Desert scrub, grassland, sagebrush, chaparral, oak woodlands, riparian and coniferous forests; prefers mesic habitats and closely tied to rock cliffs with crevasses. Roosts in caves, cliffs, mines, tunnels and bridges.	Potential. Could forage onsite, but no suitable structures for roosting are present. Individuals and roost sites have been recorded in the vicinity.
Western mastiff bat	<i>Eumops perotis californicus</i>	—	—	SSC	Desert scrub, coastal scrub, chaparral, oak woodland, and coniferous forest. Roosts colonially in rock crevasses, buildings, tunnels and in trees. Does not undergo seasonal migrations or prolonged hibernation, and is present in this area year-round.	Potential. Could forage onsite but there is no roosting habitat. Recorded in the vicinity.

*E = Endangered; T = Threatened; C = Candidate; BCC = Birds of Conservation Concern; SSC = Species of Special Concern; FP = Fully Protected; WL = Watch List; '—' = no status; California Natural Diversity Database (California Department of Fish and Wildlife 2020b); Special Animals List (California Department of Fish and Wildlife 2019); California Wildlife Habitat Relationships System (CDFW 2020d); A Guide to the Amphibians and Reptiles of California (California Herps 2020); eBird (The Cornell Lab of Ornithology 2020a); All About Birds (The Cornell Lab of Ornithology 2020b); Guide to North American Birds (Audubon 2020).

DESIGNATED CRITICAL HABITAT	
South-central California coast DPS Steelhead	Absent. San Luis Obispo Creek adjacent to the site is designated critical habitat, and does not extend outside of the stream channel. The ditch onsite would not support this species.

Source: *Threatened and Endangered Species Active Critical Habitat Report (United States Fish and Wildlife Service 2020b)*.

Attachment D
Project Site Plans

SANITARY SEWER FORCE MAIN RE-ALIGNMENT AND GRAVITY SEWER REPLACEMENT FOR AVILA BEACH COMMUNITY SERVICE DISTRICT SAN LUIS OBISPO COUNTY, CALIFORNIA

GENERAL NOTES

- NO CONSTRUCTION SHALL BE STARTED WITHOUT PLANS APPROVED BY THE SLO COUNTY DEPARTMENT OF PUBLIC WORKS. THE DEPARTMENT OF PUBLIC WORKS SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO STARTING OF CONSTRUCTION AND OF THE TIME LOCATION OF THE PRECONSTRUCTION CONFERENCE. ANY CONSTRUCTION PERFORMED WITHOUT APPROVED PLANS OR PRIOR NOTIFICATION TO THE DEPARTMENT OF PUBLIC WORKS WILL BE REJECTED AND WILL BE AT THE CONTRACTOR'S AND/OR OWNER'S RISK.
- FOR ANY CONSTRUCTION PERFORMED THAT IS NOT IN COMPLIANCE WITH PLANS OR PERMITS APPROVED FOR THE PROJECT THE PUBLIC WORKS DEPARTMENT MAY REVOKE ALL ACTIVE PERMITS AND RECOMMEND THAT COUNTY CODE ENFORCEMENT PROVIDE A WRITTEN NOTICE OR STOP WORK ORDER IN ACCORDANCE WITH SECTION 22.52.140 [23.10] OF THE LAND USE ORDINANCE.
- ALL CONSTRUCTION WORK AND INSTALLATIONS SHALL CONFORM TO THE COUNTY OF SAN LUIS OBISPO PUBLIC IMPROVEMENT STANDARDS AND ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE DEPARTMENT OF PUBLIC WORKS.
- THE PROJECT OWNER AND CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND/OR MAINTAINING ALL WEATHER ACCESS AT ALL TIMES TO EXISTING PROPERTIES LOCATED IN THE VICINITY OF WORK. ADDITIONALLY, THEY SHALL BE RESPONSIBLE FOR MAINTAINING ALL EXISTING SERVICES, INCLUDING UTILITY, GARBAGE COLLECTION, MAIL DISTRIBUTION, ETC., TO ALL EXISTING PROPERTIES LOCATED IN THE VICINITY OF WORK. UTILITIES SHALL ADDITIONALLY CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE OCEANO COMMUNITY SERVICES DISTRICT. SHOULD THERE BE ANY DISCREPANCY BETWEEN SLO COUNTY PUBLIC WORKS REQUIREMENTS AND OCSO REQUIREMENTS, THE MORE STRINGENT REQUIREMENT SHALL TAKE PRECEDENT.
- ON-SITE HAZARDS TO PUBLIC SAFETY SHALL BE SHIELDED BY CONSTRUCTION FENCING. FENCING SHALL BE MAINTAINED BY THE PROJECT OWNER AND CONTRACTOR UNTIL SUCH TIME THAT THE PROJECT IS COMPLETED AND OCCUPIED. POTENTIAL HAZARDS HAVE BEEN MITIGATED, OR ALTERNATIVE PROTECTIVE MEASURES HAVE BEEN INSTALLED.
- SOILS TESTS SHALL BE DONE IN ACCORDANCE WITH THE SLO COUNTY PUBLIC STANDARDS STANDARDS, SECTION 3.2.3. ALL TESTS MUST BE MADE WITHIN 15 DAYS PRIOR TO THE PLACING MATERIAL. THE TEST RESULTS SHALL CLEARLY INDICATE THE LOCATION AND SOURCE OF THE MATERIAL.
- COMPACTION TESTS SHALL BE MADE ON SUBGRADE MATERIAL, AGGREGATE BASE MATERIAL, AND MATERIAL AS SPECIFIED BY THE ENGINEER. SDA TESTS SHALL BE MADE PRIOR TO THE PLACEMENT OF THE NEXT MATERIAL LIFT.
- SUBGRADE MATERIAL SHALL BE COMPACTED TO A RELATIVE COMPACTION OF 95% IN THE ZONE BETWEEN FINISHED SUBGRADE ELEVATION AND A MINIMUM OF ONE FOOT BELOW. ALL MATERIAL IN FILL SECTIONS BELOW THE ZONE MENTIONED ABOVE SHALL BE COMPACTED TO 90% RELATIVE COMPACTION.
- A REGISTERED CIVIL ENGINEER SHALL CERTIFY THAT THE IMPROVEMENTS WHEN COMPLETED ARE IN ACCORDANCE WITH THE PLANS PRIOR TO THE REQUEST FOR A FINAL INSPECTION. RECORD DRAWINGS SHALL BE PREPARED AFTER CONSTRUCTION IS COMPLETED. THE CIVIL ENGINEER CERTIFYING THE IMPROVEMENTS AND PREPARING AS-BUILT PLANS MAY BE PRESENT WHEN THE FINAL INSPECTION IS MADE BY THE COUNTY.
- AN ENGINEER OF WORK AGREEMENT AND AN ENGINEER CHECKING AND INSPECTION AGREEMENT ARE REQUIRED PRIOR TO THE START OF CONSTRUCTION. THE PUBLIC WORKS DEPARTMENT SHALL BE NOTIFIED IN WRITING OF ANY CHANGES TO THE ENGINEER OF WORK AGREEMENT. CONSTRUCTION SHALL NOT PROCEED WITHOUT AN ENGINEER OF WORK.
- ALL UTILITY COMPANIES SHALL BE NOTIFIED PRIOR TO THE START OF CONSTRUCTION.
- A SLO COUNTY ENCROACHMENT PERMIT IS REQUIRED FOR ALL WORK DONE WITHIN THE COUNTY RIGHT-OF-WAY. THE ENCROACHMENT PERMIT MAY ESTABLISH ADDITIONAL UTILITY AND TRAFFIC CONTROL REQUIREMENTS.
- THE SLO COUNTY INSPECTOR ACTING ON BEHALF OF THE SLO COUNTY DEPARTMENT OF PUBLIC WORKS MAY REQUIRE REVISIONS IN THE PLANS TO SOLVE UNFORESEEN PROBLEMS THAT MAY ARISE IN THE FIELD. ALL REVISIONS SHALL BE SUBJECT TO THE APPROVAL OF THE DEVELOPER'S ENGINEER OF WORK.
- THE STRUCTURAL SECTION SHALL BE BASED ON SOILS TESTS TAKEN AT THE TIME OF CONSTRUCTION AND USING A TRAFFIC INDEX OF 6.5 FOR AVILA BEACH DRIVE. THE STRUCTURAL SECTION SHALL BE APPROVED BY THE PUBLIC WORKS DEPARTMENT PRIOR TO ROAD CONSTRUCTION.
- HYDROSEEDING OR OTHER PERMANENT EROSION CONTROL SHALL BE PLACED AND ESTABLISHED WITH 90% COVERAGE ON ALL DISTURBED SURFACES (OTHER THAN PAVED OR GRAVEL SURFACES), PRIOR TO FINAL INSPECTION.
- FOR ANY PUBLIC IMPROVEMENTS TO BE MAINTAINED BY THE SLO COUNTY, IF ENVIRONMENTAL PERMITS FROM THE U.S. ARMY CORPS OF ENGINEERS, THE CALIFORNIA REGIONAL WATERQUALITY CONTROL BOARD/STATE WATER RESOURCES CONTROL BOARD, OR THE CALIFORNIA DEPARTMENT OF FISH AND GAME ARE REQUIRED, THE DEVELOPER SHALL:
 - SUBMIT A COPY OF ALL SUCH COMPLETED PERMITS TO THE SLO COUNTY DEPARTMENT OF PUBLIC WORKS OR;
 - DOCUMENT THAT THE REGULATORY AGENCIES DETERMINED THAT SAID PROJECT IS NOT REQUIRED;
 PRIOR TO ACCEPTANCE OF THE COMPLETED IMPROVEMENTS FOR THE SLO COUNTY MAINTENANCE AND RELEASE OF IMPROVEMENT SECURITY. ANY MITIGATION MONITORING REQUIREMENTS BY SAID PERMITS WILL REMAIN THE RESPONSIBILITY OF THE DEVELOPER.

GRADING NOTES

- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ITEMS SHOWN ON THE PLANS.
- THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR PLACEMENT OF SAFETY DEVICES SUCH AS FENCING, BARRICADES, SAFETY TAPE, ETC., AND SHALL FOLLOW ALL APPLICABLE INDUSTRIAL SAFETY REGULATIONS, THE COUNTY AND ITS OFFICIALS, THE ENGINEER, AND THE OWNER SHALL NOT BE RESPONSIBLE FOR ENFORCING SAFETY REGULATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OR PROPER RESETTING OF ALL EXISTING MONUMENTS AND OTHER SURVEY MARKERS. ANY SURVEY MONUMENTS DESTROYED BY THE CONTRACTOR SHALL BE REPLACED IN ACCORDANCE WITH THE STATE LAND SURVEYOR'S ACT AT THE CONTRACTOR'S OWN EXPENSE.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT "UNDERGROUND SERVICE ALERT" AT 1-800-642-2444 FOR LOCATION OF POWER, GAS, OIL, AND TELEPHONE UNDERGROUND FACILITIES. CONTRACTOR WILL ALSO BE RESPONSIBLE FOR CONTACTING THE APPROPRIATE AGENCY FOR THE LOCATION OF ALL UNDERGROUND FACILITIES.
- THESE PLANS DO NOT AUTHORIZE SITE DISTURBANCE BEYOND THE LIMITS OF GRADING SHOWN. OBTAIN NECESSARY PERMITS TO GRADE ELSEWHERE.
- OBTAIN PERMISSION TO ENTER UPON ADJOINING PROPERTY IF NECESSARY TO GRADE PRIOR TO CONSTRUCTION. THE COUNTY ENGINEER DOES NOT AUTHORIZE ENTRY PER THESE APPROVED PLANS.
- ANY DEVIATION FROM THESE PLANS WITHOUT PRIOR APPROVAL FROM THE DESIGN ENGINEER SHALL BE AT THE CONTRACTOR'S OWN RISK AND EXPENSE.
- THE CONTRACTOR SHALL PROVIDE DUST CONTROL DURING ALL PHASES OF THE WORK.
- ALL GRADING SHALL BE CONDUCTED IN ACCORDANCE WITH CHAPTER 33 OF THE U.B.C., AND COUNTY GRADING ORDINANCE.
- OWNER SHALL CONTRACT WITH A CERTIFIED SOILS ENGINEER FOR INSPECTION AND COMPACTION TESTING DURING ROUGH AND FINISH GRADING OPERATIONS.
- MATERIAL TO BE USED AS BACK FILL OR EMBANKMENT SHALL BE APPROVED BY THE SOILS ENGINEER AND BE FREE OF OBJECTIONAL MATERIAL SUCH AS TREES, STUMPS, ROOTS, LOGS OR OTHERWISE DELETERIOUS MATERIAL. THE CONTRACTOR SHALL FOLLOW THE SITE DEVELOPMENT RECOMMENDATIONS AS NOTED IN THE SOILS REPORT AND PER NOTE 15 ABOVE.
- SOILS TESTS SHALL BE DONE IN ACCORDANCE WITH COUNTY STANDARDS AND SPECIFICATIONS. ALL TESTS MUST BE MADE WITHIN 15 DAYS PRIOR TO PLACING MATERIAL. THE TEST RESULTS SHALL CLEARLY INDICATE THE LOCATION AND SOURCE OF THE MATERIAL. THE GROUND WATER ELEVATION SHALL BE PROVIDED.
- A REGISTERED CIVIL ENGINEER MUST CERTIFY THAT THE IMPROVEMENTS, WHEN COMPLETED, ARE IN ACCORDANCE WITH THE APPROVED PLANS. PRIOR TO THE REQUEST FOR FINAL INSPECTION, AS-BUILT PLANS ARE TO BE PREPARED AFTER CONSTRUCTION IS COMPLETE. THE CIVIL ENGINEER CERTIFYING THE IMPROVEMENTS AND PREPARING AS-BUILT PLANS SHALL BE PRESENT WHEN THE FINAL INSPECTION IS MADE.
- PROVIDE EROSION CONTROL PLANTING FOR ALL FRESH CUT AND FILL SLOPES AND ON ALL DISTURBED SURFACES OTHER THAN PAVED OR GRAVEL SURFACES. PERMANENT VEGETATION SHALL BE ESTABLISHED PRIOR TO FINAL SURFACES. PERMANENT VEGETATION SHALL BE ESTABLISHED PRIOR TO FINAL INSPECTION.

- FINAL REPORTS SHALL BE REQUIRED IN ACCORDANCE WITH TITLE 19 FOR ENGINEERING GRADING.
- A SOIL OR CIVIL ENGINEER SHALL DETERMINE GRADING PERFORMED IS IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED PLANS AND IS SUITABLE TO SUPPORT THE INTENDED STRUCTURE.
- PROVIDE COMPACTION REPORT IN COMPLIANCE FOR UTILITIES.
- AT THE PRE-CONSTRUCTION MEETING THE FREQUENCY OF FIELD REPORTS SHALL BE DETERMINED BY THE ENGINEER OF WORK TO THE GRADING INSPECTOR.

ABBREVIATIONS

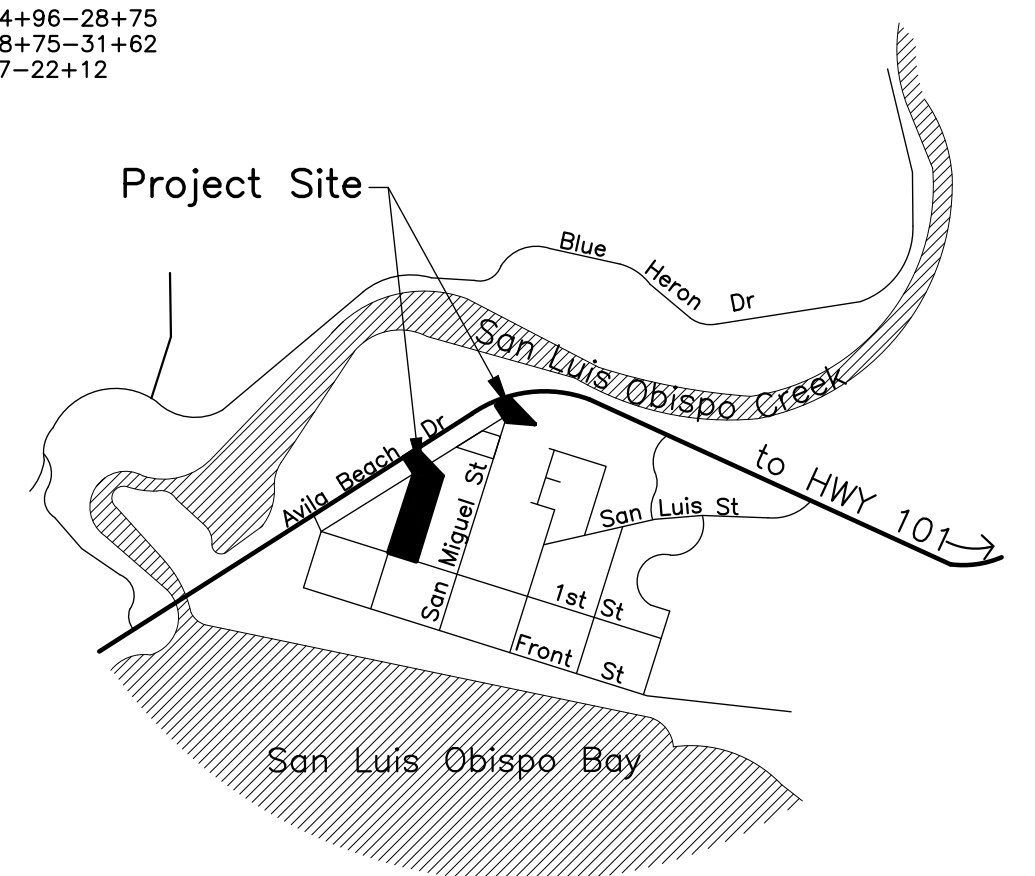
AB - AGGREGATE BASE	G - GAS	REF - REFERENCE
ABN - ABANDON	GB - GRADE BREAK	REQ - REQUIRED
AC - ASPHALT CONCRETE	GM - GAS METER	ROW (R/W) - RIGHT OF WAY
ACD - ASPHALT CONCRETE DIKE	GP - GRADING PLAN	RSP - ROCK SLOPE PROTECTION
ADJ - ADJUST	GR - GRATE	RT - RIGHT
ADT - AVERAGE DAILY TRIPS	GV - GAS VALVE	S/W - SIDEWALK
ANG - ANGLE	HDPE - HIGH DENSITY POLYETHYLENE	SD - STORM DRAIN
APPROX - APPROXIMATE	HORIZ - HORIZONTAL	SHLDR - SHOULDER
ASBLY - ASSEMBLY	HP - HIGH POINT	SHT - SHEET
AV - AIR VACUUM	HW - HEADWALL	SLOCO - SAN LUIS OBISPO COUNTY
AVO - AVOCADO TREE	ICV - IRRIGATION CONTROL VALVE	SS - SANITARY SEWER
BLDG - BUILDING	IE - INVERT ELEVATION	STA - STATION
BM - BENCHMARK	IPR - IRRIGATION PRESSURE REDUCER	STD - STANDARD
BTM - BOTTOM	IRR - IRRIGATION	TB - THRUST BLOCK
BVC - BEGIN VERTICAL CURVE	JB - JUNCTION BOX	TBA - TO BE ABANDONED IN PLACE
BW - BACK OF WALK (GRADE)	JP - JUNCTION POLE	TBM - TEMPORARY BENCHMARK
CATV - CABLE TELEVISION (LINE)	LAT - LATERAL	TBR - TO BE REMOVED
CB - CATCH BASIN	LF - LINEAR FEET	TBP - TO BE PROTECTED
CIP - CAST IRON PIPE	LP - LOW POINT	TC - TOP OF CURB
CL - CENTERLINE	LT - LEFT	TEL - TELEPHONE
CNTR - CENTER	MH - MAN HOLE	TEMP - TEMPORARY
CMU - CONCRETE MASONRY UNIT	MAX - MAXIMUM	TF - TOP OF FOOTING
CO - CLEANOUT	MIN - MINIMUM	TG - TOP OF GRADE
COM - COMMUNICATIONS	MON - MONUMENT	TRVL - TRAVELED LANE
CONC - CONCRETE	NTS - NOT TO SCALE	TYP - TYPICAL
CSP - CORRUGATED STEEL PIPE	OAE - OR APPROVED EQUAL	OW - ORIGINAL (EXISTING) GROUND
D/W - DRIVEWAY	OG - ORIGINAL (EXISTING) GROUND	UP - UNDER DRAIN
DDCV - DOUBLE DETECTOR CHECK VALVE	OHW - OVERHEAD WIRE	UP - UTILITY POLE
DI - DROP INLET	OPT - OPTION	VERT - VERTICAL
EJ - EXPANSION JOINT	OS - ORIGINAL SURFACE	VC - VERTICAL CURVE
ELEC - ELECTRICAL	PCC - PORTLAND CEMENT CONCRETE	VCP - VITRIFIED CLAY PIPE
ELEV - ELEVATION	PCCL - POINT OF COMPOUND CURVE LEFT	VL - VAULT
EP - EDGE OF PAVEMENT	PCCR - POINT OF COMPOUND CRUVE RIGHT	VLV - VALVE
ESMT - EASEMENT	PI - POINT OF INTERSECTION	WL - WATER LINE
ETW - EDGE OF TRAVELED WAY	PIC - POINT OF INTERSECTION VERTICAL CURVE	WM - WATER METER BOX
EUC - EUCALYPTUS TREE	POC - POINT OF CONNECTION	WPU - WEAKENED PLANE JOINT
EV - END VERTICAL CURVE	PRC - POINT OF REVERSE CURVE	WS - WATER SERVICE
EXIST - EXISTING	PRCL - POINT OF REVERSE CURVE LEFT	W.S. - WATER SURFACE
FG - FINISH GRADE	PRCR - POINT OF REVERSE CURVE RIGHT	WW - WATER VALVE
FH - FIRE HYDRANT	PVC - POLYVINYL CHLORIDE	WW - WING WALL
FL - FLOW LINE	PVMT - PAVEMENT	WWW - WELDED WIRE MESH
FM - FORCE MAIN	RCP - REINFORCED CONCRETE PIPE	Ø (DIA) - DIAMETER
FNC - FENCE	RAD (R) - RADIUS	
FS - FINISHED SURFACE	RD - ROAD	
FUT - FUTURE		

SCOPE

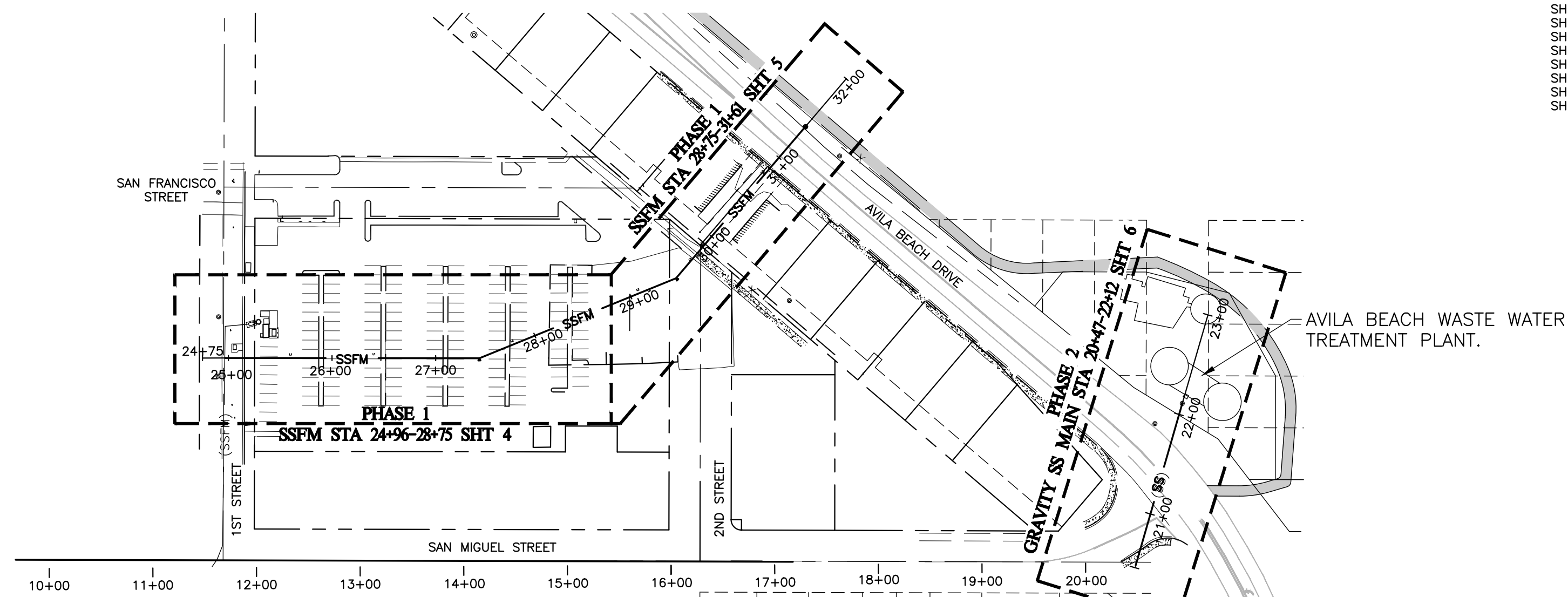
THE PROJECT WILL BE RE-ROUTING THE SSFM FROM THE LIFT STATION AT FIRST STREET, THROUGH THE PORT SAN LUIS PARKING LOT AND CONTINUING TO A NEWLY CONSTRUCTED MANHOLE ON AVILA BEACH DRIVE VIA A WATER AND SEWER EASEMENT AT THE BEACH COLONY LANE DEVELOPMENT. THE PROJECT WILL ALSO BE REPLACING A SECTION OF GRAVITY MAIN AT SAN MIGUEL STREET (MHB1-2) AND CONTINUING TO THE TREATMENT PLANT.

SHEET INDEX

SHEET 1	TITLE SHEET
SHEET 2	EXISTING CONDITIONS PHASE I
SHEET 3	EXISTING CONDITIONS PHASE II
SHEET 4	SSFM DESIGN PLAN AND PROFILE STA 24+96-28+75
SHEET 5	SSFM DESIGN PLAN AND PROFILE STA 28+75-31+62
SHEET 6	GRAVITY SS PLAN & PROFILE STA 20+47-22+12
SHEET 7	EROSION CONTROL PLAN
SHEET 8	EROSION CONTROL DETAILS
SHEET 9	TRAFFIC CONTROL PHASE I
SHEET 10	TRAFFIC CONTROL PHASE II



VICINITY MAP
AVILA BEACH, CALIFORNIA SCALE: NTS



SCALE: 1" = 100'

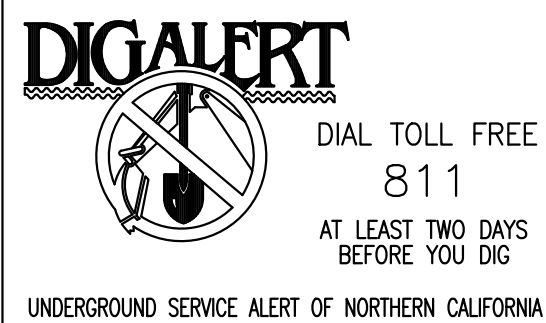
BENCH MARK

NATIONAL GEODETIC SURVEY BENCHMARK
PERMANENT IDENTIFICATION NUMBER: FV1989
ELEVATION: 69.51'
DATUM: NAVD 1988

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS MAP: N77°01'44"E AS SHOWN BETWEEN FOUND MONUMENTS. PER PARCEL MAP 96-112, BOOK 54 AT PAGE 73, RECORDED IN THE OFFICE OF THE RECORDER OF THE COUNTY OF SAN LUIS OBISPO.

SITE KEY MAP PHASE I & PHASE II



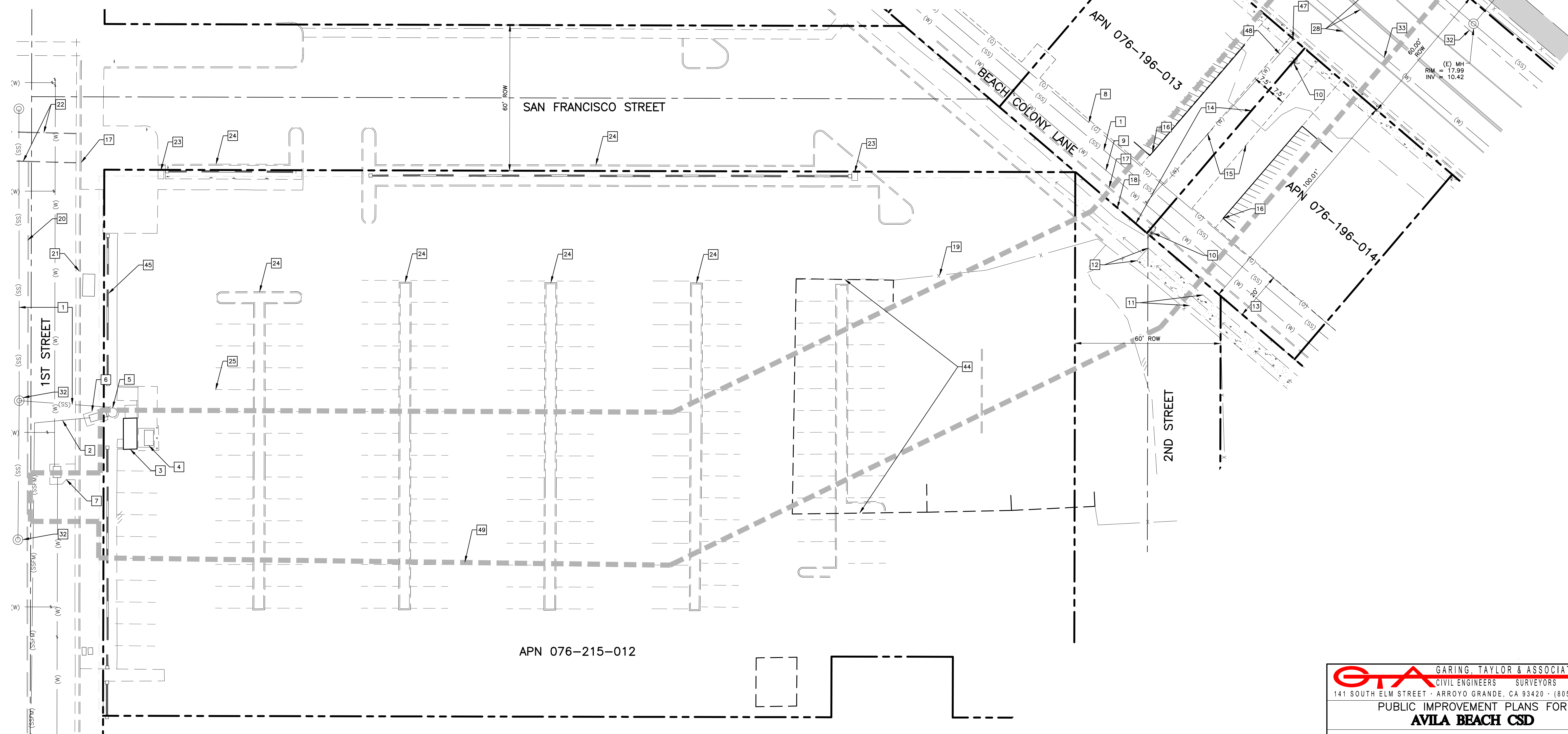
PLOT DATE: 1/20/2020 2:34 PM
PLOT BY: TONY COSCIA
SAVE DATE: 1/20/2020 12:59 PM

GTA GARING, TAYLOR & ASSOCIATES, INC. CIVIL ENGINEERS SURVEYORS PLANNERS			
141 SOUTH ELM STREET · ARROYO GRANDE, CA 93420 · (805) 489-1321			
PUBLIC IMPROVEMENT PLANS FOR AVILA BEACH CSD			
TITLE SHEET			
DESIGN/DRAWN	CO. PLAN CHECKER	APPROVED FOR COUNTY REQUIREMENTS	
ARC		DEVELOPMENT SERVICES ENGINEER	DATE
JOB NO.	CO. W.O. NO.		
18-743		RONALD G. REILLY, PE 78107	DATE
CALIFORNIA COORDINATES	CO. ROAD NO.	SHEET:	
	M 222	1 OF 10	

PLOT DATE: 1/20/2020
T:\18-743 - Avila Beach CSD\CivilDrawings\Sheet18-743.RIP TITLE 1.dwg, 1/20/2020 2:34:28 PM

EXISTING CONDITION NOTES:

- | | | | |
|--|---|---|--|
| 1 (E) GRAVITY SEWER | 14 (E) PROPERTY LINE (TYP) | 27 NOT USED | 40 (E) SAN MIGUEL MANHOLE TO TREATMENT PLANT |
| 2 (E) SANITARY SEWER FORCE MAIN @ 1ST STREET | 15 (E) 15' WATER AND SEWER EASEMENT | 28 (E) TRAFFIC STRIPING (PROTECT IN PLACE) | 41 (E) MAN HOLE @ TREATMENT PLANT |
| 3 (E) LIFT STATION MECHANICAL/CONTROL ROOM | 16 (E) RESIDENTIAL STRUCTURE @ BEACH COLONY DEVELOPMENT | 29 (E) AC DIKE | 42 NOT USED |
| 4 (E) LIFT STATION GENERATOR | 17 (E) CURB | 30 (E) BOB JONES BIKE PATH | 43 NOT USED |
| 5 (E) LIFT STATION WET WELL | 18 (E) WIRE FENCE | 31 NOT USED | 44 (E) TEMPORARY SHIPPING CONTAINER STORAGE AREA |
| 6 (E) LIFT STATION DRY WELL | 19 (E) TEMPORARY FENCE FOR TEMPORARY SHIPPING CONTAINER STORAGE | 32 (E) MAN HOLE | 45 (E) SCREENING WALL |
| 7 (E) UTILITY VAULT | 20 (E) CENTER LINE STRIPING | 33 NOT USED | 46 (E) ROW |
| 8 (E) GAS LINE | 21 NOT USED | 34 NOT USED | 47 (E) HYDRANT |
| 9 (E) WATER MAIN | 22 (E) CROSS WALK | 35 (E) ELECTRICAL UTILITY MAIN | 48 (E) HYDRANT LATERAL (DEPTH UNKNOWN) |
| 10 (E) PALM TREE (PROTECT IN PLACE) | 23 (E) PAY KIOSK | 36 (E) WATER MAIN | 49 AREA OF WORK |
| 11 (E) CONCRETE DRAINAGE SWALE @ BEACH COLONY | 24 (E) PARKING LOT ISLAND (TYP) | 37 (E) GRAVITY SEWER OUTFALL TO PACIFIC OCEAN | |
| 12 (E) EARTHEN DRAINAGE SWALE @ BEACH COLONY | 25 (E) PARKING STALL STRIPING (TYP) | 38 (E) GRAVITY SEWER MAIN @ SAN MIGUEL TO TREATMENT PLANT | |
| 13 (E) BEACH COLONY LANE ACCESS AND UTILITY EASEMENT | 26 (E) SIDEWALK | 39 (E) OUTFALL MANHOLE | |



SAVE DATE: 1/20/2020 1:18 PM PLOT DATE: 1/22/2020 8:04 AM
 PLOT BY: TONY COSCIA

DIGALERT
 DIAL TOLL FREE 811
 AT LEAST TWO DAYS BEFORE YOU DIG
 UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA

PHASE I
 EXISTING CONDITIONS AND SITE MAP

SCALE: 1" = 20'

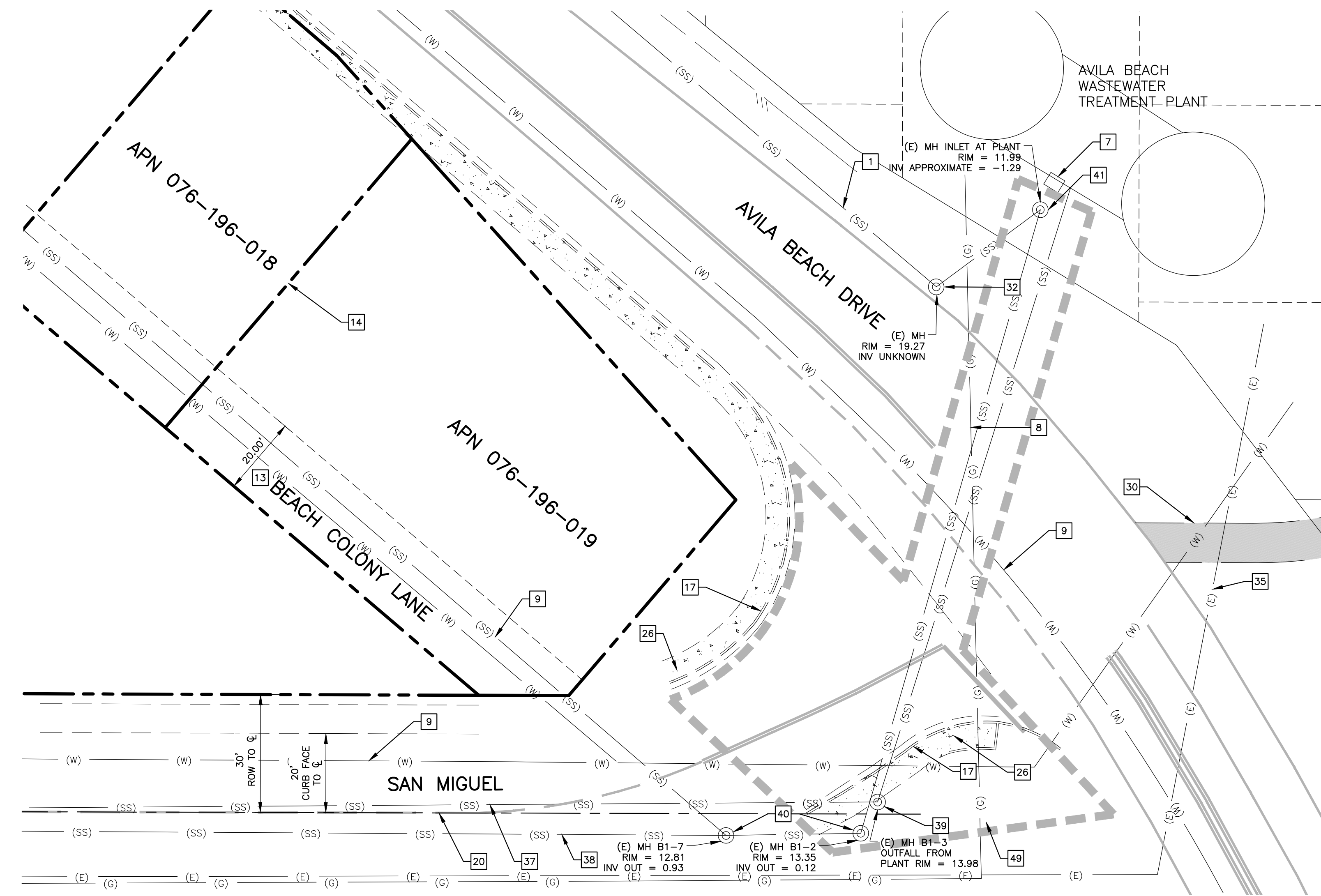
GTA GARING, TAYLOR & ASSOCIATES, INC.
 CIVIL ENGINEERS SURVEYORS PLANNERS
 141 SOUTH ELM STREET • ARROYO GRANDE, CA 93420 • (805) 489-1321

PUBLIC IMPROVEMENT PLANS FOR AVILA BEACH CSD

EXISTING CONDITIONS PHASE I

DESIGN/DRAWN	CO. PLAN CHECKER	APPROVED FOR COUNTY REQUIREMENTS	
AJC		DEVELOPMENT SERVICES ENGINEER	DATE
JOB NO. 18-743	CO. W.O. NO.	RONALD G. REILLY, PE 78107	DATE
CALIFORNIA COORDINATES	CO. POST MILES	CO. ROAD NO.	SHEET: M 2022 2 OF 10

PLOT DATE: 1/22/2020
 T:\18-743 - Avila Beach CSD\CivilDrawings\Sheet18-743-PP-TITLE 2 Existing Phase I.dwg, 1/22/2020 8:04:23 AM

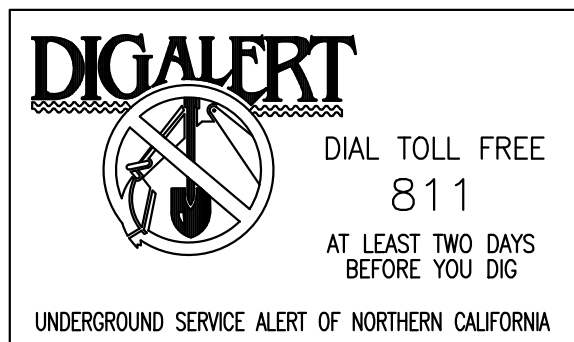


PHASE II
EXISTING CONDITIONS AND SITE MAP

SCALE: 1" = 20'

EXISTING CONDITION NOTES:

- | | | | |
|--|---|---|--|
| 1 (E) GRAVITY SEWER | 14 (E) PROPERTY LINE (TYP) | 27 NOT USED | 40 (E) SAN MIGUEL MANHOLE TO TREATMENT PLANT |
| 2 (E) SANITARY SEWER FORCE MAIN @ 1ST STREET | 15 (E) 15' WATER AND SEWER EASEMENT | 28 (E) TRAFFIC STRIPING (PROTECT IN PLACE) | 41 (E) MAN HOLE @ TREATMENT PLANT |
| 3 (E) LIFT STATION MECHANICAL/CONTROL ROOM | 16 (E) RESIDENTIAL STRUCTURE @ BEACH COLONY DEVELOPMENT | 29 (E) AC DIKE | 42 NOT USED |
| 4 (E) LIFT STATION GENERATOR | 17 (E) CURB | 30 (E) BOB JONES BIKE PATH | 43 NOT USED |
| 5 (E) LIFT STATION WET WELL | 18 (E) WIRE FENCE | 31 NOT USED | 44 (E) TEMPORARY SHIPPING CONTAINER STORAGE AREA |
| 6 (E) LIFT STATION DRY WELL | 19 (E) TEMPORARY FENCE FOR TEMPORARY SHIPPING CONTAINER STORAGE | 32 (E) MAN HOLE | 45 (E) SCREENING WALL |
| 7 (E) UTILITY VAULT | 20 (E) CENTER LINE STRIPING | 33 NOT USED | 46 (E) ROW |
| 8 (E) GAS LINE | 21 NOT USED | 34 NOT USED | 47 (E) HYDRANT |
| 9 (E) WATER MAIN | 22 (E) CROSS WALK | 35 (E) ELECTRICAL UTILITY MAIN | 48 (E) HYDRANT LATERAL (DEPTH UNKNOWN) |
| 10 (E) PALM TREE (PROTECT IN PLACE) | 23 (E) PAY KIOSK | 36 (E) WATER MAIN | 49 AREA OF WORK |
| 11 (E) CONCRETE DRAINAGE SWALE @ BEACH COLONY | 24 (E) PARKING LOT ISLAND (TYP) | 37 (E) GRAVITY SEWER OUTFALL TO PACIFIC OCEAN | |
| 12 (E) EARTHEN DRAINAGE SWALE @ BEACH COLONY | 25 (E) PARKING STALL STRIPING (TYP) | 38 (E) GRAVITY SEWER MAIN @ SAN MIGUEL TO TREATMENT PLANT | |
| 13 (E) BEACH COLONY LANE ACCESS AND UTILITY EASEMENT | 26 (E) SIDEWALK | 39 (E) OUTFALL MANHOLE | |

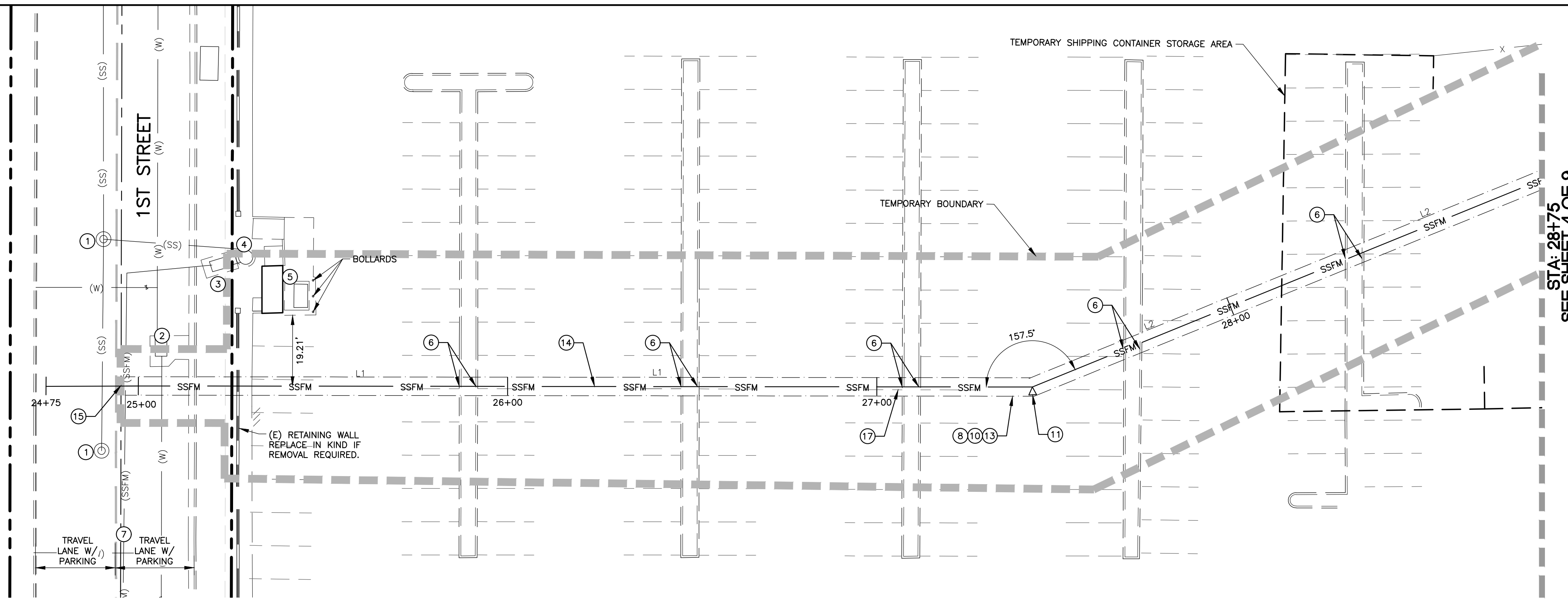


GARING, TAYLOR & ASSOCIATES, INC. CIVIL ENGINEERS SURVEYORS PLANNERS 141 SOUTH ELM STREET · ARROYO GRANDE, CA 93420 · (805) 489-1321			
PUBLIC IMPROVEMENT PLANS FOR AVILA BEACH CSD			
EXISTING CONDITIONS PHASE II			
DESIGN/DRAWN	CO. PLAN CHECKER	APPROVED FOR COUNTY REQUIREMENTS	
AJC		DEVELOPMENT SERVICES ENGINEER	DATE
JOB NO.	CO. W.O. NO.		
18-743		RONALD G. REILLY, PE 78107	DATE
CALIFORNIA COORDINATES	CO. POST MILES	CO. ROAD NO.	SHEET:
		M 2122	3 OF 10

SAVE DATE: 1/20/2020 1:18 PM PLOT DATE: 1/22/2020 8:14 AM
 PLOT BY: TONY COSCIA

T:\18-743 - Avila Beach CSD\CivilDrawings\Sheet18-743-PIP Title 3 Existing Phase II.dwg, 1/22/2020 8:14:40 AM

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N19°32'24"E	245.6'
L2	N2°39'36"W	204.9'
L3	N30°03'00"W	189.54'



STA: 28+75
SEE SHEET 4 OF 9

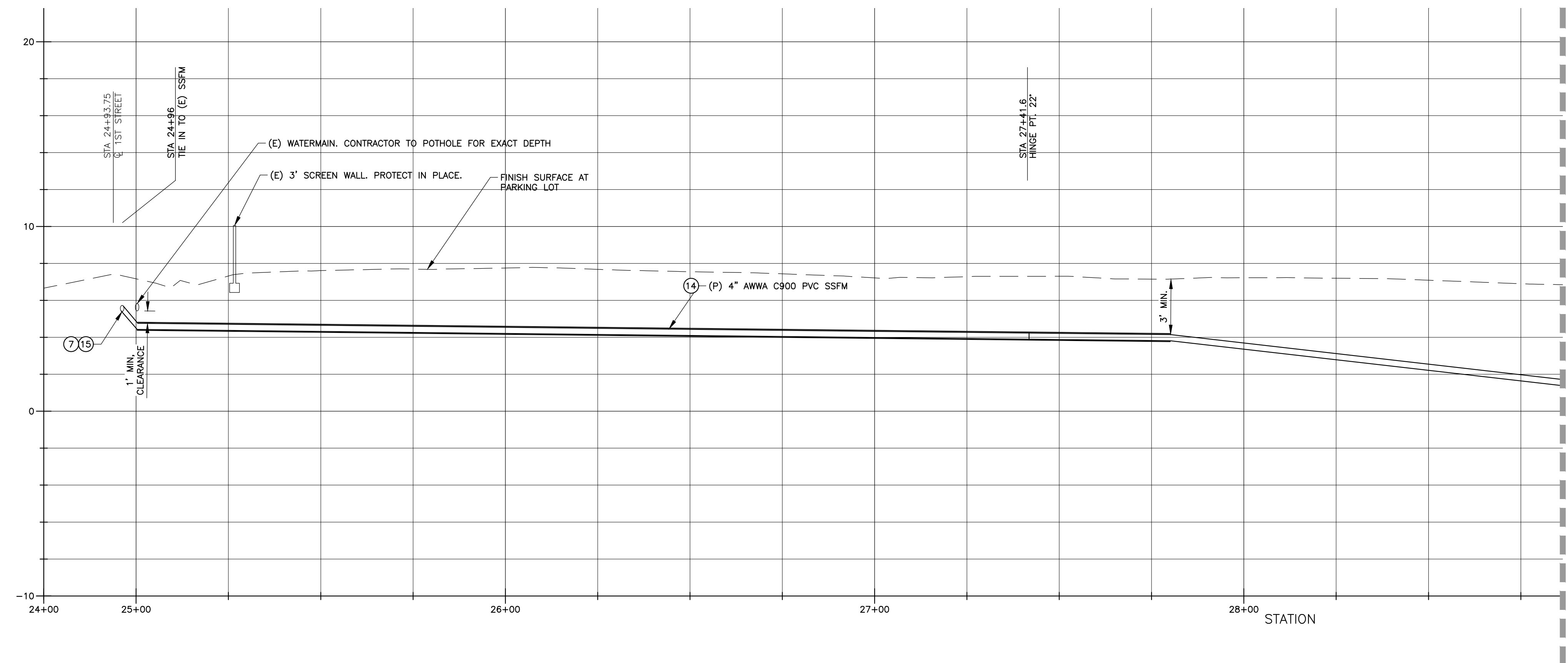
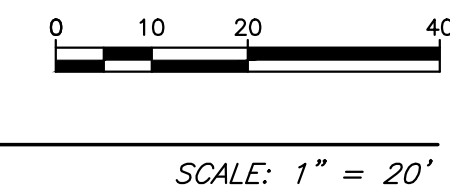
CONSTRUCTION NOTES

1. ALL TRENCH REPAIR TO BE PER SLO CO STD DRAWING U-4 FOR PAVED AREAS AND U-4a FOR UNPAVED AREAS.
2. NEW SEWER MAINS TO FOLLOW SLO CO STD DRAWING U-3a.
3. NEW SANITARY SEWER MANHOLES TO BE INSTALLED PER SLO CO STD DRAWING S-1.
4. CONCRETE PAVEMENT REPAIR TO BE INSTALLED PER SLO CO STD DRAWING R-4.
5. PAVEMENT REPAIR IN EXISTING TRAVEL LANES TO BE INSTALLED PER SLO CO STD DRAWING R-3.
6. PAVEMENT STRUCTURAL REPAIR IN DRIVE LANES ON SAN MIGUEL STREET AND 1ST STREET TO BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE R-VALUE OF THE NATIVE MATERIAL AND A MINIMUM TRAFFIC INDEX OF 5.5. MINIMAL SECTION TO BE 3" OF AC ON 8" CL II BASE.
7. ALL EXISTING UTILITIES TO BE PROTECTED IN PLACE. CONTRACTOR TO POT HOLE FOR EXACT LOCATION AND DEPTHS.
8. A DEWATERING PLAN SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW 1 WEEK BEFORE THE START OF WORK.
9. A SHORING PLAN SHALL BE PREPARED BY A LICENSED STRUCTURAL ENGINEER AND SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW 1 WEEK BEFORE THE START OF WORK.

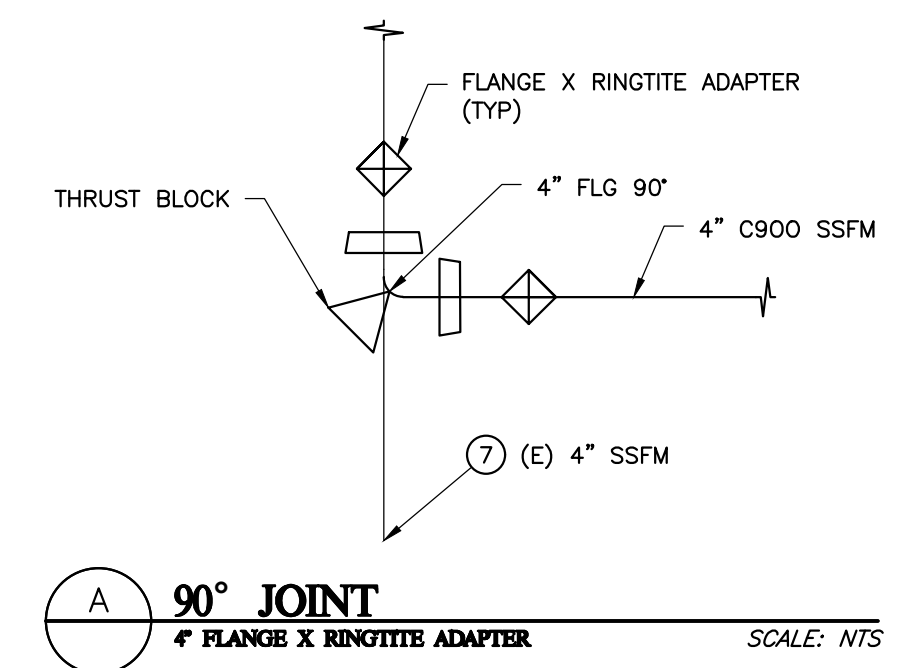
REFERENCE NOTES

- 1 (E) SS MANHOLE. PROTECT IN PLACE.
- 2 (E) UTILITY VAULT. PROTECT IN PLACE.
- 3 (E) UTILITY VAULT FOR SSFM PUMP. PROTECT IN PLACE.
- 4 (E) SSFM HOLDING TANK/WET WELL. PROTECT IN PLACE.
- 5 (E) LIFT STATION EQUIPMENT ROOM AND GENERATOR.
- 6 (E) RETAINING CURB AND LANDSCAPE ELEMENTS (PROTECT IN PLACE OR REMOVE AND REPLACE IN KIND).
- 7 (E) SSFM TO BE PLUGGED AND ABANDONED IN PLACE AFTER DISCONNECTION.
- 8 SAWCUT LINE PER SLO COUNTY STD. R-2a.
- 9 DEWATERING REQUIRED. SEE ABOVE CONSTRUCTION NOTE 8.
- 10 REMOVE EXISTING ASPHALT CONCRETE.
- 11 CONSTRUCT THRUST BLOCK PER SAN LUIS OBISPO COUNTY STANDARD W-1.
- 12 CONSTRUCT SANITARY SEWER MANHOLE PER SLO CO STD. S-1.
- 13 CONSTRUCT TRENCH REPAIR PER SLO CO. STD. R-3.
- 14 CONSTRUCT 4" AWWA C900 PVC SSFM PER SLO CO STANDARDS AND SPECIFICATIONS VIA OPEN TRENCH OR HORIZONTAL DIRECTIONAL DRILLING.
- 15 INSTALL 90° JOINT. SEE DETAIL "A" THIS SHEET.
- 16 NOT USED.
- 17 REPLACE DAMAGED PARKING STRIPPING IN KIND (TYP)

IMPROVEMENT PLAN SSFM TRENCHLESS CONSTRUCTION
SSFM STA 24+96.2 - STA 28+75

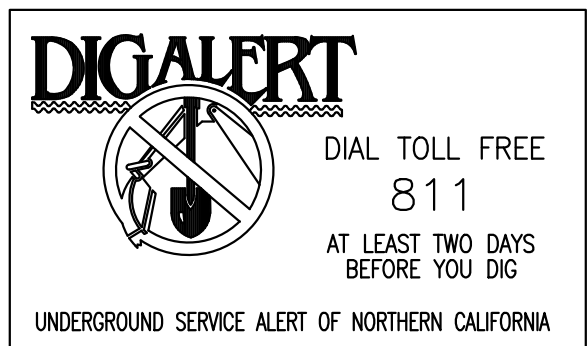


STA: 28+75
SEE SHEET 4 OF 9



VERTICAL PROFILE
SSFM STA 24+96.2 - STA 28+75

SCALE: HORIZONTAL 1" = 20' VERTICAL 1" = 4'



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141 SOUTH ELM STREET · ARROYO GRANDE, CA 93420 · (805) 489-1321

PUBLIC IMPROVEMENT PLANS FOR AVILA BEACH CSD

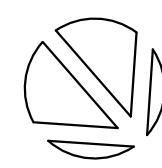
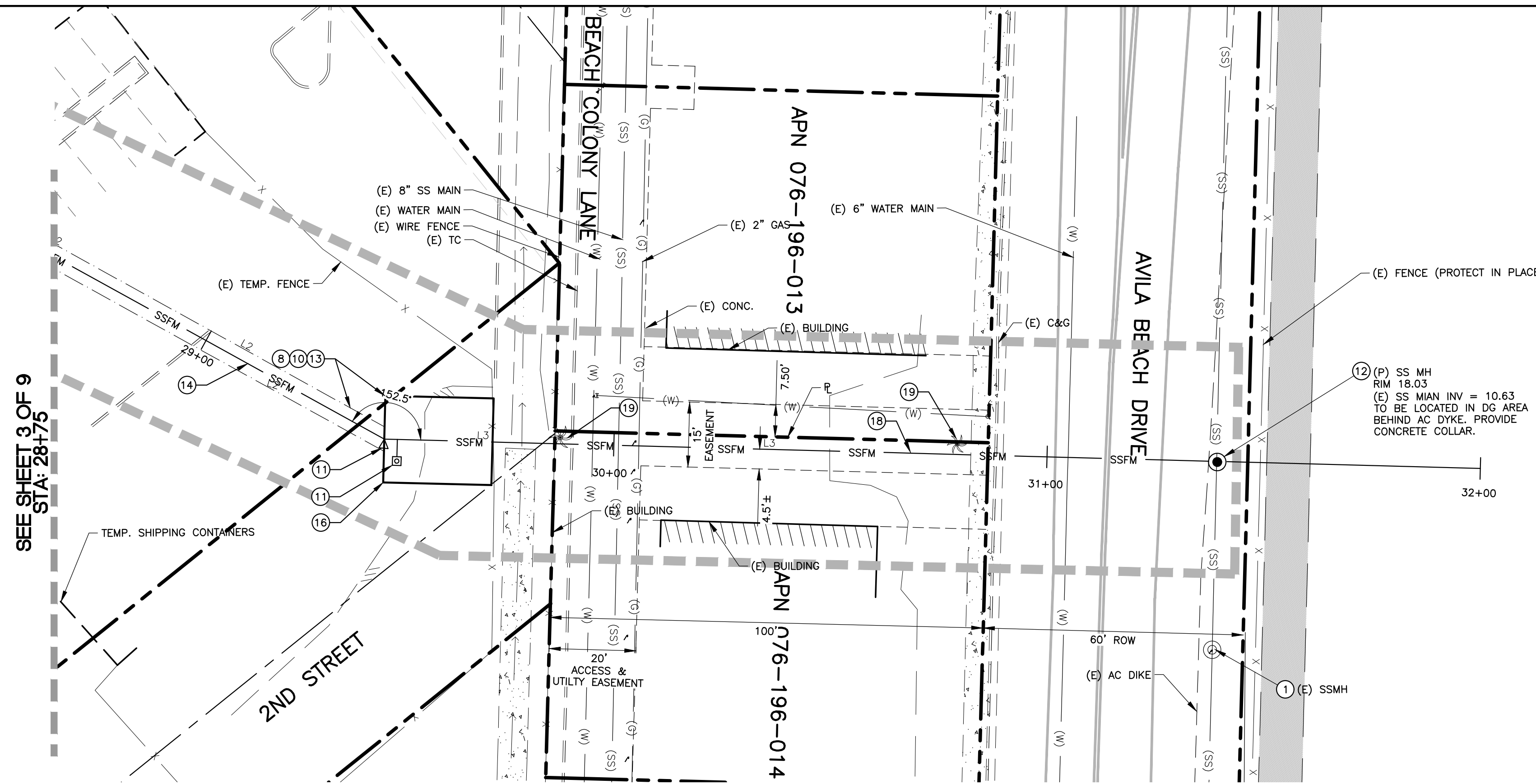
SSFM

DESIGN/DRAWN	CO. PLAN CHECKER	APPROVED FOR COUNTY REQUIREMENTS	
AJC		DEVELOPMENT SERVICES ENGINEER	DATE
JOB NO. 18-743	CO. W.O. NO.	RONALD G. REILLY, PE 78107	DATE
CALIFORNIA COORDINATES	CO. POST MILES	CO. ROAD NO.	SHEET: M 2022 4 OF 10

PLOT DATE: 1/22/2020

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LINE TABLE		
LINE	BEARING	DISTANCE
L1	N19°32'24"E	245.6'
L2	N2°39'36"W	204.9'
L3	N30°03'00"W	189.54'



IMPROVEMENT PLAN SSFM

SSFM STA 28+75 - STA 31+63.91

SCALE: 1" = 20'

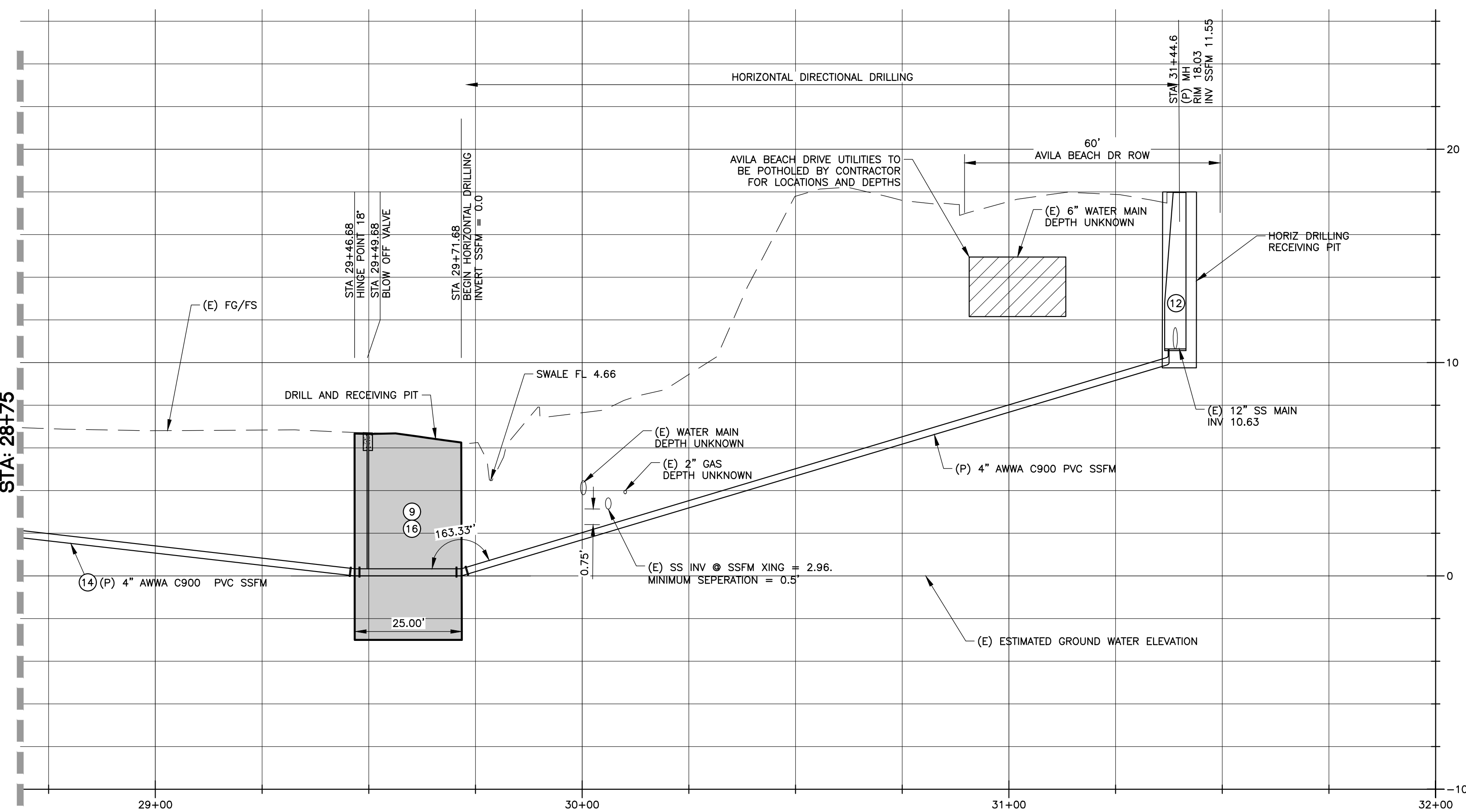
CONSTRUCTION NOTES

- ALL TRENCH REPAIR TO BE PER SLO CO STD DRAWING U-4 FOR PAVED AREAS AND U-4a FOR UNPAVED AREAS.
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- NEW SANITARY SEWER MANHOLES TO BE INSTALLED PER SLO CO STD DRAWING S-1.
- CONCRETE PAVEMENT REPAIR TO BE INSTALLED PER SLO CO STD DRAWING R-4.
- PAVEMENT REPAIR IN EXISTING TRAVEL LANES TO BE INSTALLED PER SLO CO STD DRAWING R-3.
- PAVEMENT STRUCTURAL REPAIR IN DRIVE LANES ON SAN MIGUEL STREET AND 1ST STREET TO BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE R-VALUE OF THE NATIVE MATERIAL AND A MINIMUM TRAFFIC INDEX OF 5.5. MINIMAL SECTION TO BE 3" OF AC ON 8" CL II BASE.
- ALL EXISTING UTILITIES TO BE PROTECTED IN PLACE. CONTRACTOR TO POT HOLE FOR EXACT LOCATION AND DEPTHS.
- A DEWATERING PLAN SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW 1 WEEK BEFORE THE START OF WORK.
- A SHORING PLAN SHALL BE PREPARED BY A LICENSED STRUCTURAL ENGINEER AND SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW 1 WEEK BEFORE THE START OF WORK.

REFERENCE NOTES

- (E) SS MANHOLE. PROTECT IN PLACE.
- NOT USED
- NOT USED
- NOT USED
- NOT USED
- NOT USED
- NOT USED
- SAWCUT LINE PER SLO COUNTY STD. R-2a.
- DEWATERING PLAN MAY BE REQUIRED. SEE ABOVE CONSTRUCTION NOTE 8.
- REMOVE EXISTING ASPHALT CONCRETE.
- CONSTRUCT THRUST BLOCK PER SAN LUIS OBISPO COUNTY STANDARD W-1.
- CONSTRUCT SANITARY SEWER MANHOLE PER SLO CO STD. S-1. FORCE MAIN CONNECTION PER DETAIL "A" THIS SHEET.
- CONSTRUCT TRENCH REPAIR PER SLO CO. STD. R-3.
- CONSTRUCT 4" AWWA C900 PVC SSFM PER SLO CO STANDARDS AND SPECIFICATIONS VIA OPEN TRENCH OR HORIZONTAL DIRECTIONAL DRILLING.
- INSTALL 90° JOINT. SEE DETAIL THIS SHEET
- HORIZONTAL DRILL PIT
- REPLACE DAMAGED PARKING STRIPPING IN KIND (TYP)
- CONSTRUCT 4" AWWA C900 PVC SSFM PER SLO CO STANDARDS AND SPECIFICATIONS VIA HORIZONTAL DIRECTIONAL DRILLING.
- (E) PALM TREE PROTECT IN PLACE
- (P) BLOW OFF VALVE PER SLO CO. STD. W-5

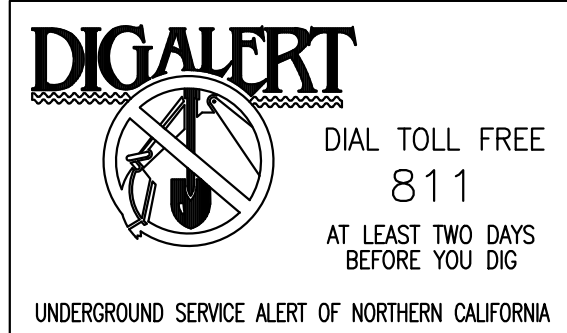
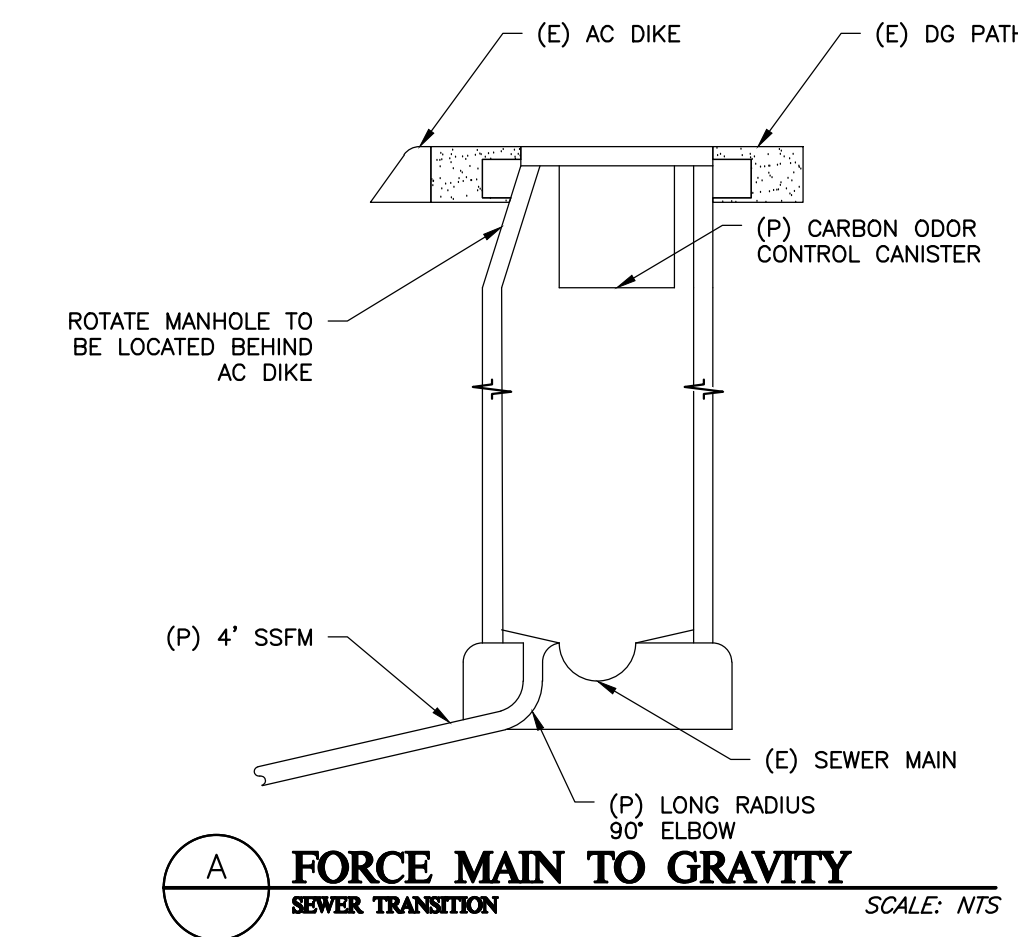
SEE SHEET 3 OF 9
STA: 28+75



VERTICAL PROFILE

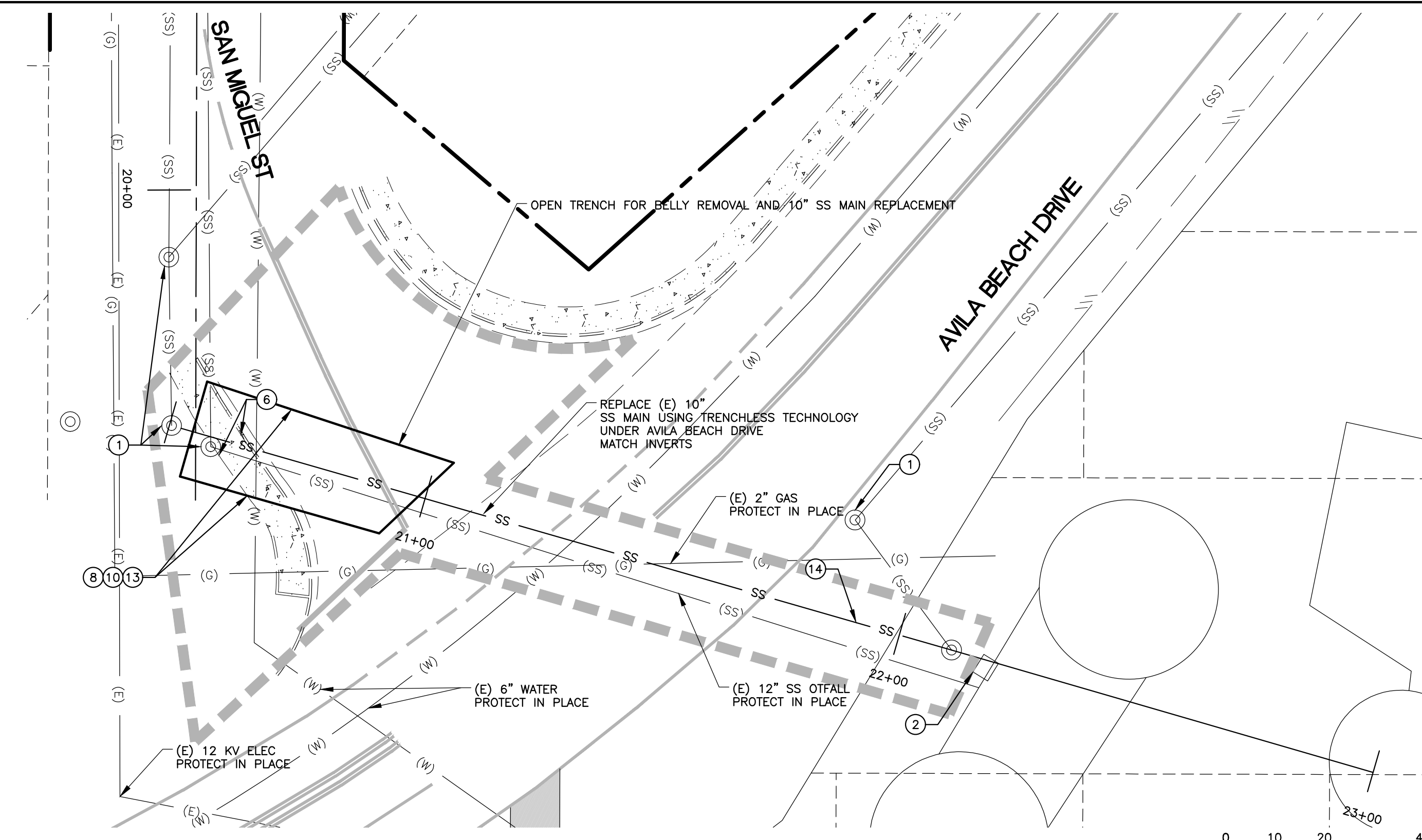
SSFM STA 28+75 - STA 31+63.91

SCALE: HORIZONTAL 1" = 20' VERTICAL 1" = 4'



GARING, TAYLOR & ASSOCIATES, INC. CIVIL ENGINEERS SURVEYORS PLANNERS 141 SOUTH ELM STREET · ARROYO GRANDE, CA 93420 · (805) 489-1321			
PUBLIC IMPROVEMENT PLANS FOR AVILA BEACH CSD			
SSFM			
DESIGN/DRAWN	CO. PLAN CHECKER	APPROVED FOR COUNTY REQUIREMENTS	
AJC		DEVELOPMENT SERVICES ENGINEER	DATE
JOB NO.	CO. W.O. NO.		
18-743		RONALD G. REILLY, PE 78107	DATE
CALIFORNIA COORDINATES	CO. POST MILES	CO. ROAD NO.	SHEET:
		M 2122	5 OF 10

PLOT DATE: 1/22/2020
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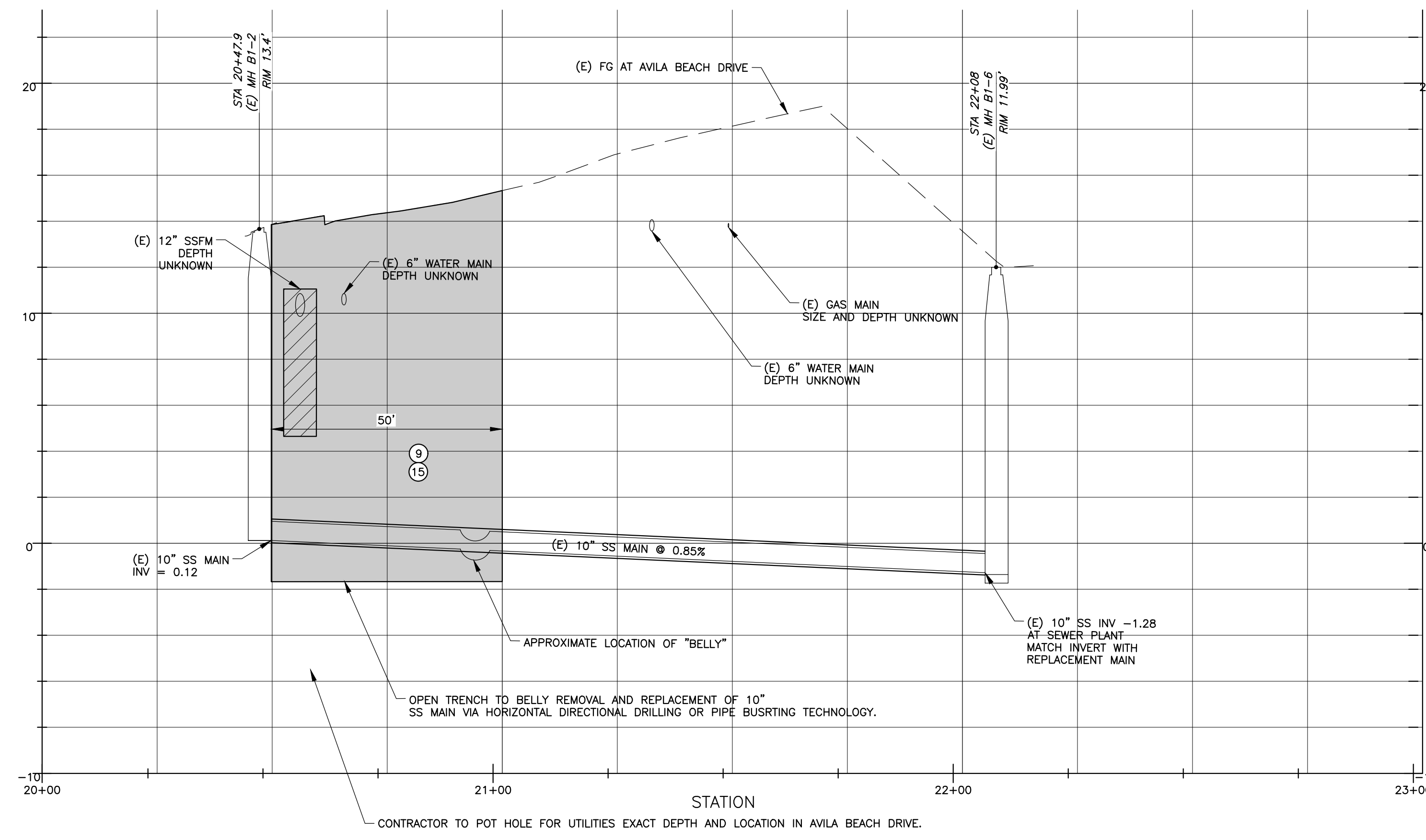
IMPROVEMENT PLAN
 GRAVITY SS AT SAN MIGUEL AND AVILA BEACH DR STA 20+47 - 22+12
 SCALE: 1" = 20'

CONSTRUCTION NOTES

1. ALL TRENCH REPAIR TO BE PER SLO CO STD DRAWING U-4 FOR PAVED AREAS AND U-4a FOR UNPAVED AREAS.
2. NEW SEWER MAINS TO FOLLOW SLO CO STD DRAWING U-3a.
3. NEW SANITARY SEWER MANHOLES TO BE INSTALLED PER SLO CO STD DRAWING S-1.
4. CONCRETE PAVEMENT REPAIR TO BE INSTALLED PER SLO CO STD DRAWING R-4.
5. PAVEMENT REPAIR IN EXISTING TRAVEL LANES TO BE INSTALLED PER SLO CO STD DRAWING R-3.
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7. ALL EXISTING UTILITIES TO BE PROTECTED IN PLACE. CONTRACTOR TO POT HOLE FOR EXACT LOCATION AND DEPTHS.
8. A DEWATERING PLAN SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW 1 WEEK BEFORE THE START OF WORK.
9. A SHORING PLAN SHALL BE PREPARED BY A LICENSED STRUCTURAL ENGINEER AND SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW 1 WEEK BEFORE THE START OF WORK.

REFERENCE NOTES

- 1 (E) SS MANHOLE. PROTECT IN PLACE.
- 2 (E) UTILITY VAULT. PROTECT IN PLACE.
- 3 NOT USED
- 4 NOT USED
- 5 NOT USED
- 6 REMOVE CURB, GUTTER AND SIDEWALK. REPLACE IN KIND.
- 7 NOT USED
- 8 SAWCUT LINE PER SLO COUNTY STD. R-2a.
- 9 DEWATERING PLAN MAY BE REQUIRED. SEE ABOVE CONSTRUCTION NOTE 8.
- 10 REMOVE EXISTING ASPHALT CONCRETE.
- 11 NOT USED
- 12 NOT USED
- 13 CONSTRUCT TRENCH REPAIR PER SLO CO. STD. R-3.
- 14 REPLACE (E) 10" SS MAIN WITH 10" SDR35 SS MAIN.
- 15 HORIZONTAL DRILL PIT.



VERTICAL PROFILE

GRAVITY SS AT SAN MIGUEL AND AVILA BEACH DR STA 20+47 - 22+12
 SCALE: HORIZ. 1" = 20' VERT. 1" = 4'

GTA GARING, TAYLOR & ASSOCIATES, INC.
 CIVIL ENGINEERS SURVEYORS PLANNERS
 141 SOUTH ELM STREET · ARROYO GRANDE, CA 93420 · (805) 489-1321

PUBLIC IMPROVEMENT PLANS FOR AVILA BEACH CSD

GRAVITY SEWER MAIN

DESIGN/DRAWN	CO. PLAN CHECKER	APPROVED FOR COUNTY REQUIREMENTS	
AJC		DEVELOPMENT SERVICES ENGINEER	DATE
JOB NO.	CO. W.O. NO.	RONALD G. REILLY, PE 78107	DATE
18-743		CO. POST MILES	CO. ROAD NO.
CALIFORNIA COORDINATES		M 2122	6 OF 10

DIGALERT
 DIAL TOLL FREE 811
 AT LEAST TWO DAYS BEFORE YOU DIG
 UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA

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PLOT DATE: 1/23/2020

GENERAL NOTES

1. EROSION CONTROL MEASURES FOR WIND, WATER, MATERIAL STOCKPILES, AND TRACKING SHALL BE IMPLEMENTED ON ALL PROJECTS AT ALL TIMES AND SHALL INCLUDE SOURCE CONTROL, INCLUDING PROTECTION OF STOCKPILES, PROTECTION OF SLOPES, PROTECTION OF ALL DISTURBED AREAS, PROTECTION OF ACCESSES, AND PERIMETER CONTAINMENT MEASURES. EROSION CONTROL SHALL BE PLACED PRIOR TO THE COMMENCEMENT OF GRADING AND SITE DISTURBANCE ACTIVITIES. THE INTENT OF EROSION CONTROL MEASURES SHALL BE TO KEEP ALL GENERATED SEDIMENTS FROM ENTERING A SWALE, DRAINAGE WAY, WATERCOURSE, ATMOSPHERE, OR MIGRATE ONTO ADJACENT PROPERTIES OR ONTO THE PUBLIC RIGHT-OF-WAY.
2. SITE INSPECTIONS AND APPROPRIATE MAINTENANCE OF ALL EROSION CONTROL MEASURES/DEVICES SHALL BE CONDUCTED AND DOCUMENTED AT ALL TIMES DURING CONSTRUCTION AND ESPECIALLY PRIOR TO, DURING, AND AFTER RAIN EVENTS.
3. WET WEATHER EROSION CONTROL MEASURES/DEVICES SHALL BE AVAILABLE, INSTALLED AND/OR APPLIED BETWEEN OCTOBER 15 AND APRIL 15 OR ANYTIME WHEN THE RAIN PROBABILITY EXCEEDS 50%.
4. THE CONTRACTOR, DEVELOPER, AND ENGINEER OF WORK SHALL BE RESPONSIBLE TO REVIEW THE PROJECT SITE PRIOR TO OCTOBER 15 (RAINY SEASON) AND TO COORDINATE AN IMPLEMENTATION PLAN FOR WET WEATHER EROSION CONTROL DEVICES. A LOCALLY BASED STANDBY CREW FOR EMERGENCY WORK SHALL BE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON (OCTOBER 15 THROUGH APRIL 15). NECESSARY MATERIALS SHALL BE AVAILABLE AND STOCK PILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OR MAINTENANCE OF TEMPORARY DEVICES WHEN RAIN IS IMMINENT.
5. IN THE EVENT OF A FAILURE, THE DEVELOPER AND/OR HIS REPRESENTATIVE SHALL BE RESPONSIBLE FOR CLEANUP AND ALL ASSOCIATED COSTS OR DAMAGE. IN THE EVENT THAT DAMAGE OCCURS WITHIN THE RIGHT-OF-WAY AND THE COUNTY IS REQUIRED TO PERFORM CLEANUP, THE OWNER SHALL BE RESPONSIBLE FOR COUNTY REIMBURSEMENT OF ALL ASSOCIATED COSTS OR DAMAGE.
6. IN THE EVENT OF FAILURE AND/OR LACK OF PERFORMANCE BY THE OWNER AND/OR CONTRACTOR TO CORRECT EROSION CONTROL RELATED PROBLEMS SAN LUIS OBISPO COUNTY MAY REVOKE ALL ACTIVE PERMITS AND RECOMMEND THAT COUNTY CODE ENFORCEMENT PROVIDE A WRITTEN NOTICE OR STOP WORK ORDER IN ACCORDANCE WITH SECTION 22.52.140 [23.10] OF THE LAND USE ORDINANCE.
7. PERMANENT EROSION CONTROL SHALL BE PLACED AND ESTABLISHED WITH 90% COVERAGE ON ALL DISTURBED SURFACES OTHER THAN PAVED OR GRAVEL SURFACES, PRIOR TO FINAL INSPECTION. PERMANENT EROSION CONTROL SHALL BE FULLY ESTABLISHED PRIOR TO FINAL ACCEPTANCE. TEMPORARY EROSION CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL PERMANENT MEASURES ARE ESTABLISHED.
8. THE COUNTY AIR POLLUTION DISTRICT (APCD) MAY HAVE ADDITIONAL PROJECT SPECIFIC EROSION CONTROL REQUIREMENTS. THE CONTRACTOR, DEVELOPER, AND ENGINEER OF WORK SHALL BE RESPONSIBLE FOR MAINTAINING SELF-REGULATION OF THESE REQUIREMENTS.
9. PERSON TO CONTACT 24 HOURS A DAY IN THE EVENT THERE IS AN EROSION CONTROL/SEDIMENTATION PROBLEM (STORM WATER COMPLIANCE OFFICER):
NAME: RON REILLY Q.S.D. No. 24524, P.E. No. 78107
PHONE: (805) 489-1321

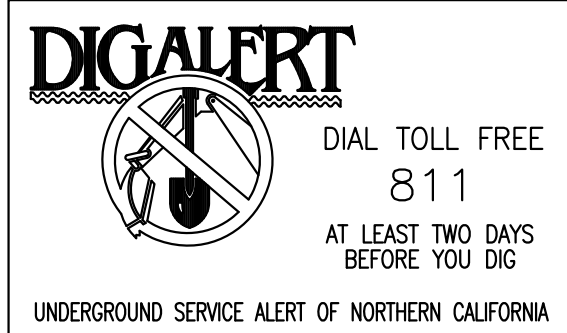
DUST CONTROL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PLACEMENT AND MAINTENANCE OF ALL EROSION CONTROL DEVICES AS SPECIFIED BY THE ENGINEER OF WORK OR THE REGULATING AGENCY UNTIL SUCH TIME THAT THE PROJECT IS ACCEPTED AS COMPLETED BY THE GOVERNING JURISDICTION. THESE DEVICES SHALL BE IN PLACE OR BE READY TO PLACE FROM OCTOBER 15, TO APRIL 15. IN THE EVENT THAT THE DEVICES ARE NOT PERMANENTLY IN PLACE, THEY SHALL BE PLACED WHEN THE FORECAST FOR RAIN EXCEEDS 30%. AN EMERGENCY CREW SHALL BE AVAILABLE 24 HOURS A DAY IN THE EVENT AN EROSION CONTROL PROBLEM SHOULD OCCUR. A RESPONSIBLE PERSON AND THEIR PHONE NUMBER IS:
NAME: RON REILLY
PHONE: (805) 489-1321
2. THE CONTRACTOR SHALL PROVIDE DUST CONTROL DURING ALL PHASES OF THE WORK.
3. THE GRADING PERMIT HOLDER AND THE OWNER SHALL COMPLY WITH DUST CONTROL MEASURES REQUIRED BY THE REGULATING AGENCY. THE STANDARD DUST CONTROL MEASURES INCLUDE BUT MAY NOT BE LIMITED TO:
 - 3.A. DUST CONTROL MEASURES CAPABLE OF PREVENTING THE MIGRATION OF DIRT AND DUST OFF-SITE IN A MANNER ACCEPTABLE TO THE REGULATING AGENCY SHALL BE IMPLEMENTED AND MAINTAINED DURING ALL CONSTRUCTION, EARTH MOVING AND GRADING PHASES OF THE PROJECT. FAILURE TO DO SO WILL RESULT IN A "STOP WORK" NOTICE WHICH WILL NOT BE RELEASED UNTIL SUCH TIME AS AN ADEQUATE PROGRAM IS IMPLEMENTED.
 - 3.B. DURING THE CLEARING, EARTH MOVING AND GRADING PHASES OF THE PROJECT WATER TRUCKS OR SPRINKLER SYSTEMS SHALL BE USED IN SUFFICIENT QUANTITIES TO PREVENT DUST FROM LEAVING THE SITE. IN ADDITION, THE ENTIRE AREA OF DISTURBED SOILS SHALL BE WET DOWN DURING THE EARLY MORNING HOURS AND AT THE END OF EACH DAY IN SUCH A MANNER AS TO CREATE A CRUST.
 - 3.C. AFTER COMPLETION OF THE CLEARING, GRADING OR EXCAVATION PHASE, THE ENTIRE AREA OF DISTURBED SOILS SHALL BE TREATED IMMEDIATELY BY WATERING TO PREVENT WIND PICK-UP OF THE SOIL. THIS MAY BE ACCOMPLISHED BY ONE OF THE FOLLOWING METHODS:
 - 3.C.1. THE SEEDING AND/OR WATERING OF THE SITE UNTIL SUCH TIME AS THE GROUND COVER HAS TAKEN ROOT.
 - 3.C.2. THE SPREADING OF SOIL BINDERS.
 - 3.C.3. THE WETTING DOWN OF THE AREA IN SUCH A MANNER AS TO CREATE A CRUST ON THE SURFACE AND THE REPEATED SOAKING OF THE AREA, AS NECESSARY, TO MAINTAIN THE CRUST AND PREVENT SOIL BLOWING.
 - 3.D. DURING THE CONSTRUCTION PHASE OF THE PROJECT, WATER TRUCKS OR SPRINKLER SYSTEMS SHALL BE USED TO KEEP ALL AREAS OF VEHICULAR MOVEMENT DAMP ENOUGH TO PREVENT DUST RAISED FROM LEAVING THE SITE. AS A MINIMUM, THIS WILL INCLUDE THE WETTING DOWN OF SUCH AREAS IN THE LATE MORNING HOURS AND AT THE CLOSE OF EACH DAYS ACTIVITIES. INCREASED WATERING WILL BE WHENEVER THE WIND SPEED EXCEEDS 15 MILES PER HOUR.
 - 3.E. THE CONTRACTOR OR BUILDER SHALL DESIGNATE A PERSON OR PERSONS TO MONITOR THE DUST CONTROL PROGRAM AND TO ORDER INCREASED WATERING AS NECESSARY TO PREVENT THE TRANSPORT OF DUST OFF-SITE. THIS PERSON'S DUTY SHALL INCLUDE HOLIDAY AND WEEKEND PERIODS WHEN WORK MAY NOT BE IN PROGRESS.
 - 3.F. ALL EARTH MOVING VEHICLES, HAULING TO AND FROM THE SITE, SHALL BE COVERED WITH A TARP.
 - 3.G. THE REQUIRED DUST CONTROL BOND WILL NOT BE RELEASED UNTIL THE SITE GRADING HAS BEEN SEEDER OR A SOIL BINDER APPLIED TO THE SATISFACTION OF THE CITY.
 - 3.H. ANY TEMPORARY STOCKPILES OF EARTH OR DEBRIS SHALL BE APPROVED BY THE CITY AND SHALL NOT OBSTRUCT DRAINAGE OR CREATE BLOWING DUST.
 - 3.I. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HYDROSEEDING ALL DISTURBED SURFACES OTHER THAN PAVED OR GRAVEL SURFACES, PRIOR TO FINAL INSPECTION.
 - 3.J. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING THE GROUND ELEVATIONS AND OVERALL TOPOGRAPHY OF THE SITE PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY GARING TAYLOR & ASSOCIATES IMMEDIATELY, AND IN WRITING, OF ANY DIFFERENCES IN TOPOGRAPHY FROM THAT SHOWN ON THIS PLAN AND OVERALL TOPOGRAPHY OF THE SITE PRIOR TO THE START OF CONSTRUCTION, WHICH MAY REQUIRE CHANGES IN DESIGN AND/OR AFFECT THE EARTHWORK QUANTITIES.
 - 3.K. EARTHWORK QUANTITIES WILL BE CALCULATED FROM EXISTING GROUND, BASED ON THE TOPOGRAPHY SHOWN, TO FINISH GRADE BY THE CONTRACTOR. THE ACTUAL AMOUNT OF EARTH MOVED WILL VARY DEPENDING ON COMPACTION, CONSOLIDATION, STRIPPING AND THE CONTRACTOR'S METHOD OF PREPARATION.
 - 3.L. THE CONTRACTOR SHALL CALCULATE THE EARTHWORK QUANTITIES TO THEIR SATISFACTION PRIOR TO THE START OF CONSTRUCTION, INCLUDING AN ALLOWANCE FOR SHRINKAGE, TRENCH SPOILS, STRIPPING, PRE-COMPACTION AND CONSOLIDATION. NO ADDITIONAL COMPENSATION WILL BE MADE FOR ANY ADDITIONAL EXPORT OR IMPORT THAT MAY BE REQUIRED.
 - 3.M. THE CONTRACTOR SHALL COMPLY WITH ALL GOVERNMENT ORDINANCES AND REGULATIONS RELATING TO THE WORK SHOWN ON THIS PLAN.

REFERENCE NOTES

1. CONSTRUCT FIBER ROLLS PER DETAIL E AND CASQA SE-5. THIS SHEET.
2. CONSTRUCT SILT FENCE PER DETAIL B AND CASQA SE-1.
3. CONSTRUCT GRAVEL BAG CHECK DAM. SHEET 6.
4. CONSTRUCT 6' PERIMETER FENCE.
5. CONSTRUCT CONCRETE WASHOUT FACILITY PER DETAIL F AND CASQA WM-8. SHEET 6.

- NS-8 VEHICLE AND EQUIPMENT CLEANING
- NS-9 VEHICLE AND EQUIPMENT FUELING
- NS-10 VEHICLE AND EQUIPMENT MAINTENANCE
- WM-1 MATERIAL DELIVERY AND STORAGE
- WM-2 STOCKPILE MANAGEMENT
- WM-3 SPILL PREVENTION AND CONTROL
- WM-4 SOLID WASTE MANAGEMENT
- WM-5 HAZARDOUS WASTE MANAGEMENT
- WM-6 CONCRETE WASTE MANAGEMENT
- WM-7 SANITARY/SEPTIC WASTE MANAGEMENT



- NS-8
- NS-9
- NS-10
- WM-1
- WM-2
- WM-3
- WM-4
- WM-5
- WM-6
- WM-7
- WM-8
- WM-9

LEGEND

- FIBER ROLLS
- SILT FENCE
- CONSTRUCTION FENCE
- CONCRETE WASHOUT
- CHECK DAM

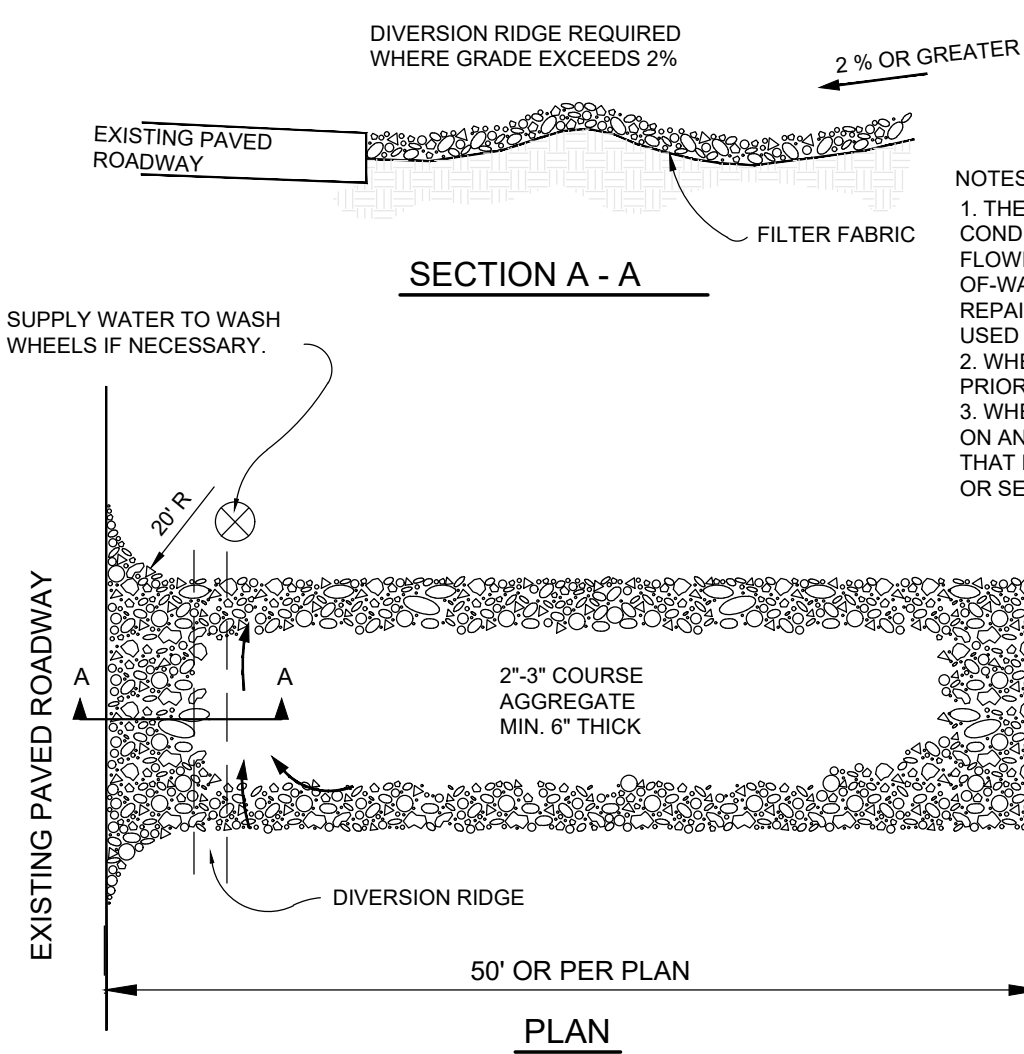
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CIVIL ENGINEERS SURVEYORS PLANNERS
141 SOUTH ELM STREET • ARROYO GRANDE, CA 93420 • (805) 489-1321

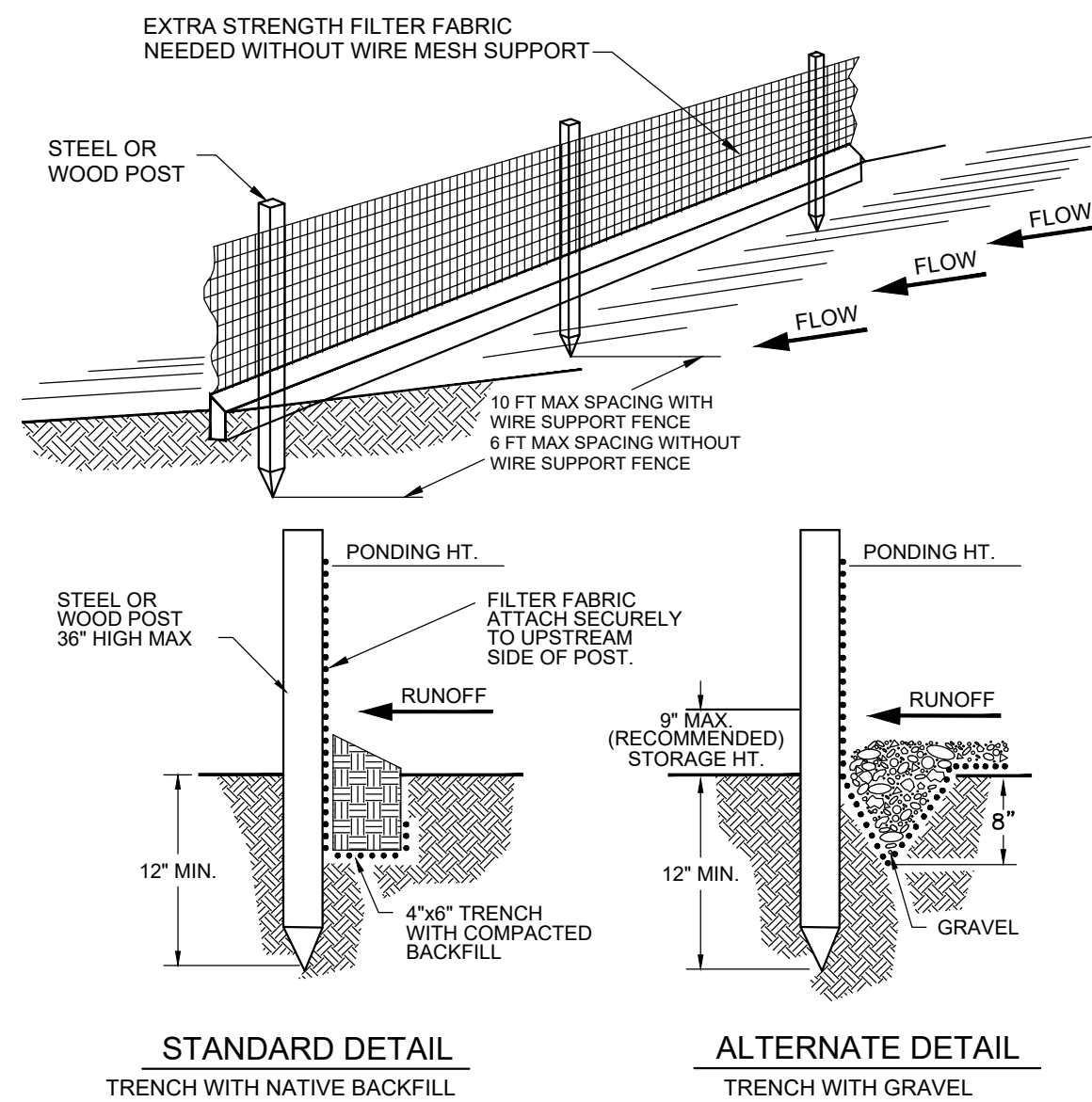
**PUBLIC IMPROVEMENT PLANS FOR
AVILA BEACH CSD
EROSION CONTROL PLAN**

DESIGN/DRAWN	CO. PLAN CHECKER	APPROVED FOR COUNTY REQUIREMENTS	
APC		DEVELOPMENT SERVICES ENGINEER	DATE
JOB NO.	CO. W.O. NO.		
18-743		RONALD G. REILLY, PE 78107	DATE
CALIFORNIA COORDINATES	CO. POST MILES	CO. ROAD NO.	SHEET:
		M 2122	7 OF 10

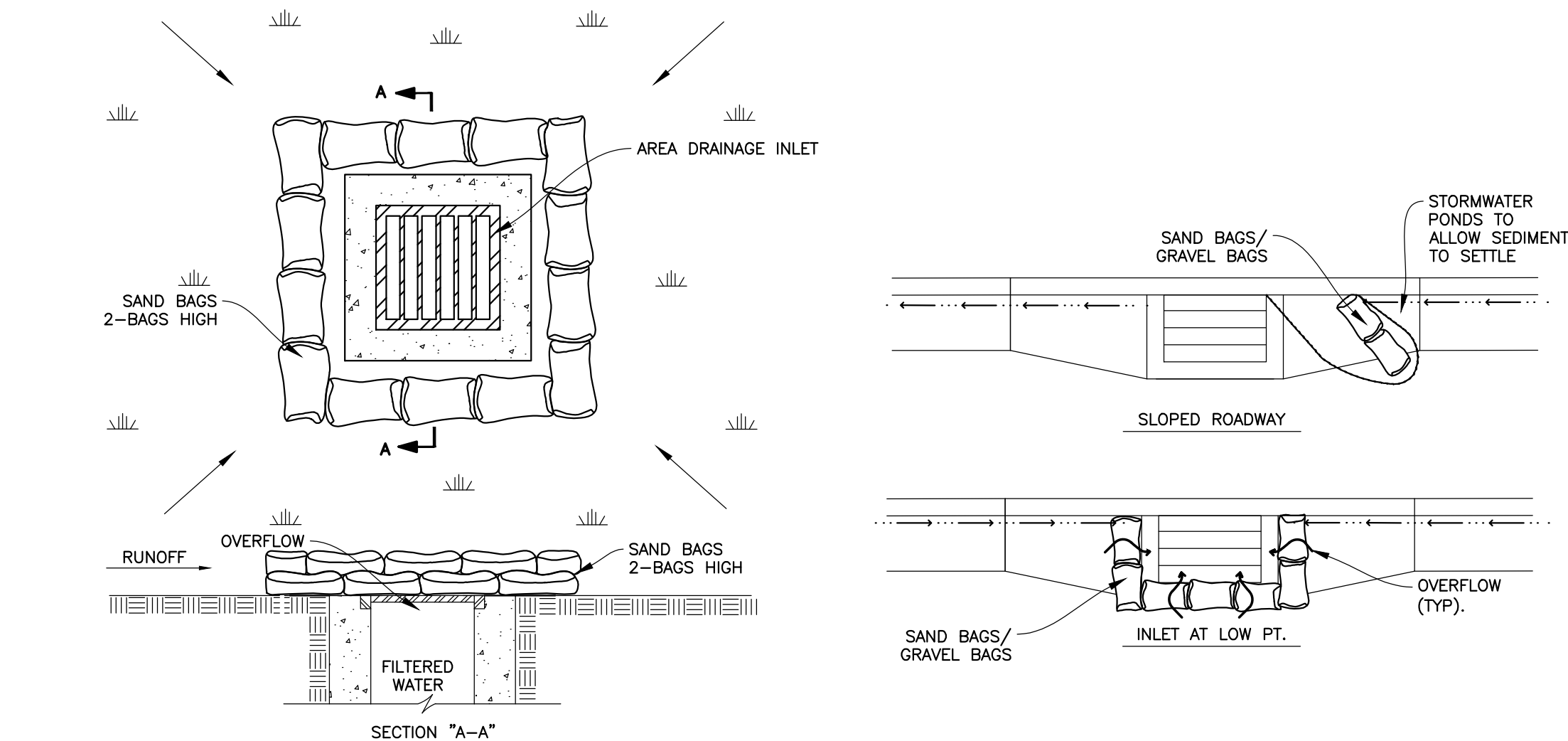
PLOT DATE: 1/22/2020 9:53:09 AM T:\18-743 - Avila Beach CSD\Drawings\Sheet\18-743 P117 - ECR.dwg 1/22/2020 9:53:09 AM



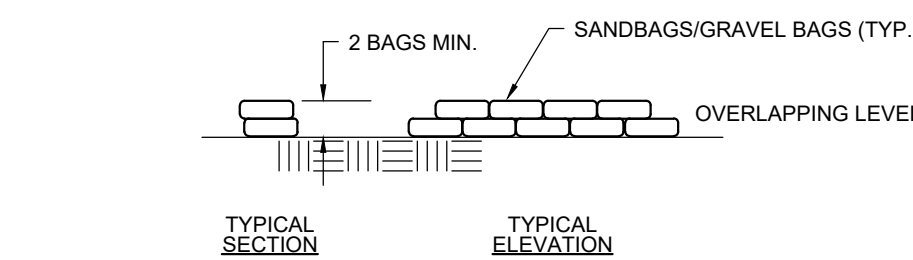
A GRAVEL CONSTRUCTION ENTRANCE & EXIT DETAIL (CASQA TC-1)
SCALE: NTS



B SILT FENCE DETAIL (CASQA SE-1)
SCALE: NTS



C STORM DRAIN INLET PROTECTION (CASQA SE-10)
SCALE: NTS



D SANDBAG/GRAVEL BAG PLACEMENT DETAIL (CASQA SE-6/8)
SCALE: NTS

REDUCE THE AMOUNT OF THE DISTURBED AREA WHERE POSSIBLE.

USE OF WATER TRUCKS OR SPRINKLER SYSTEMS IN SUFFICIENT QUANTITIES TO PREVENT AIRBORNE DUST FROM LEAVING THE SITE. INCREASED WATERING FREQUENCY WOULD BE REQUIRED WHENEVER WIND SPEEDS EXCEED 15 MPH.

RECLAIMED (NON-POTABLE) WATER SHOULD BE USED WHENEVER POSSIBLE; ALL DIRT STOCK PILE AREAS SHOULD BE SPRAYED DAILY AS NEEDED.

PERMANENT DUST CONTROL MEASURES IDENTIFIED IN THE APPROVED PROJECT REVEGETATION AND LANDSCAPE PLANS SHOULD BE IMPLEMENTED AS SOON AS POSSIBLE, FOLLOWING COMPLETION OF ANY SOIL DISTURBING ACTIVITIES.

EXPOSED GROUND AREAS THAT ARE PLANNED TO BE REWORKED AT DATES GREATER THAN ONE MONTH AFTER INITIAL GRADING SHOULD BE SOWN WITH A FAST GERMINATING, NON-INVASIVE, GRASS SEED AND WATERED UNTIL VEGETATION IS ESTABLISHED.

ALL DISTURBED SOIL AREAS NOT SUBJECT TO REVEGETATION SHOULD BE STABILIZED USING APPROVED CHEMICAL SOIL BINDERS, JUTE NETTING, OR OTHER METHODS APPROVED IN ADVANCE BY THE APCD.

ALL ROADWAYS, DRIVEWAYS, SIDEWALKS, ETC. TO BE PAVED SHOULD BE COMPLETED AS SOON AS POSSIBLE. IN ADDITION, BUILDING PADS SHOULD BE LAID AS SOON AS POSSIBLE AFTER GRADING UNLESS SEEDING OR SOIL BINDERS ARE USED.

VEHICLE SPEED FOR ALL CONSTRUCTION VEHICLES SHALL NOT EXCEED 15 MPH ON ANY UNPAVED SURFACE AT THE CONSTRUCTION SITE.

ALL TRUCKS HAULING DIRT, SAND, SOIL, OR OTHER LOOSE MATERIALS ARE TO BE COVERED OR SHOULD MAINTAIN AT LEAST TWO FEET OF FREEBOARD (MINIMUM VERTICAL DISTANCE BETWEEN TOP OF LOAD AND TOP OF TRAILER) IN ACCORDANCE WITH EVC SECTION 23114.

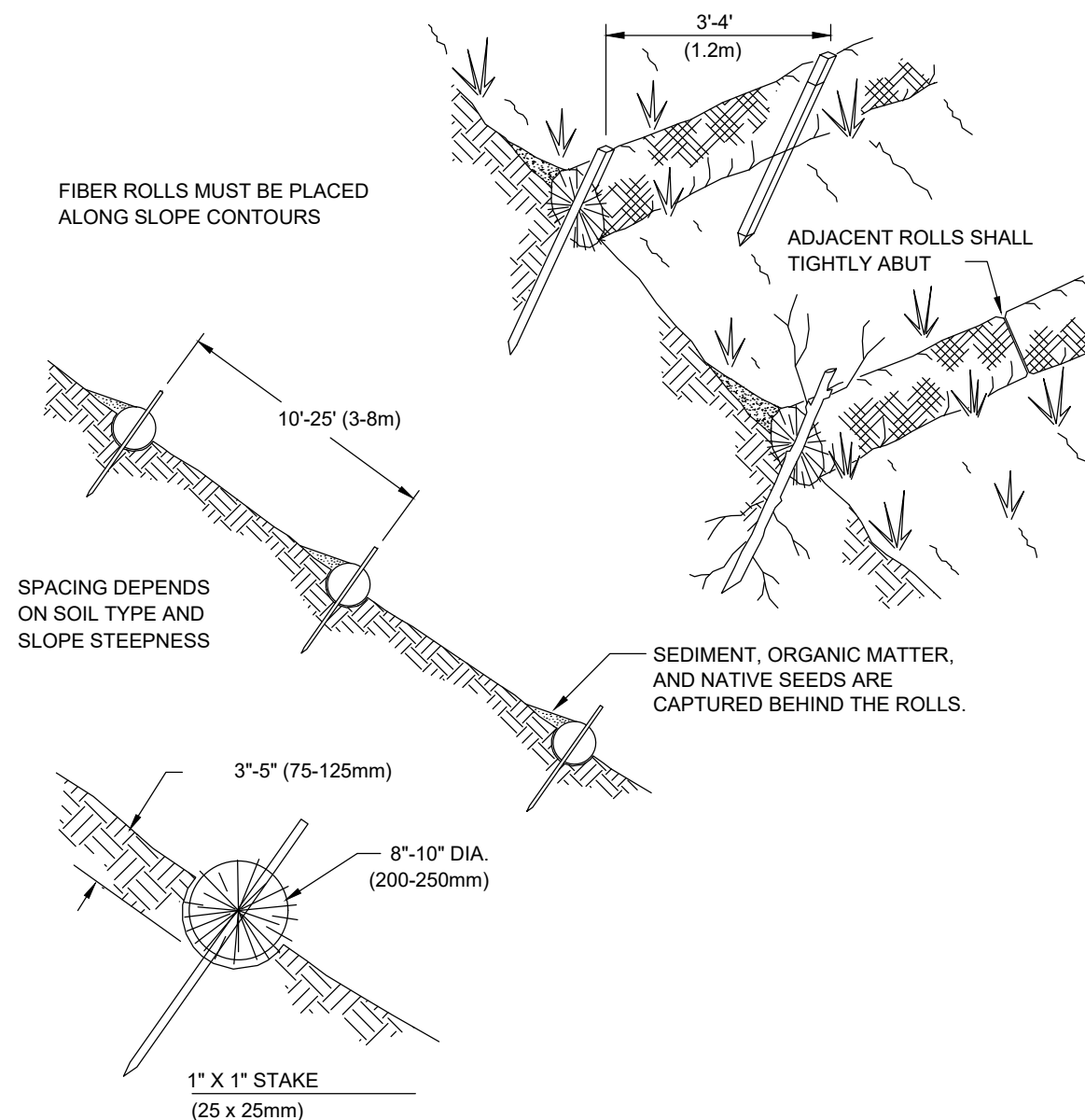
INSTALL WHEEL WASHERS WHERE VEHICLES ENTER AND EXIT UNPAVED ROADS ONTO STREETS, OR WASH OFF TRUCKS AND EQUIPMENT LEAVING THE SITE.

SWEEP STREETS AT THE END OF EACH DAY IF VISIBLE SOIL MATERIAL IS CARRIED ONTO ADJACENT PAVED ROADS; WATER SWEEPERS WITH RECLAIMED WATER SHOULD BE USED WHERE FEASIBLE.

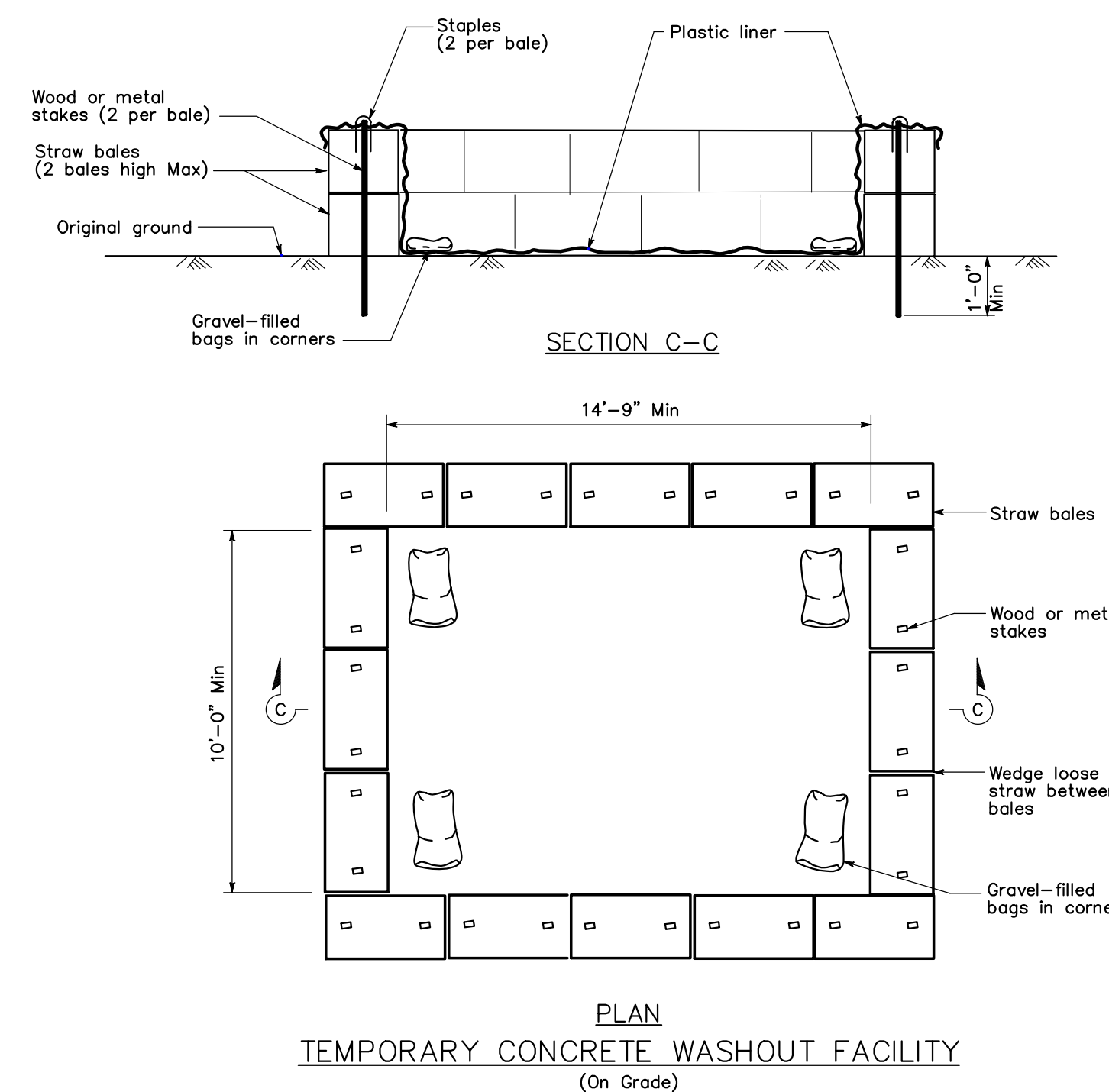
THE CONTRACTOR OR BUILDER SHALL DESIGNATE A PERSON OR PERSONS TO MONITOR THE FUGITIVE DUST EMISSIONS AND ENHANCE THE IMPLEMENTATION OF THE MEASURES AS NECESSARY TO MINIMIZE DUST COMPLAINTS, REDUCE VISIBLE EMISSIONS BELOW 20% OPACITY, AND TO PREVENT TRANSPORT OF DUST OFFSITE. THEIR DUTIES SHALL INCLUDE HOLIDAYS AND WEEKEND PERIODS WHEN WORK MAY NOT BE IN PROGRESS. THE NAME AND TELEPHONE NUMBER OF SUCH PERSONS SHALL BE PROVIDED TO THE APCD COMPLIANCE DIVISION PRIOR TO THE START OF ANY GRADING, EARTHWORK OR DEMOLITION.

AT THE TIME OF APPLICATION FOR CONSTRUCTION PERMITS, THE APPLICANT SHALL PROVIDE THE APCD WITH A LIST OF THE TYPES OF EQUIPMENT TO BE USED DURING THE CONSTRUCTION AND OPERATIONAL PHASES OF THE PROJECT. IF PERMITS ARE REQUIRED BY THE APCD, THE APPLICANT SHALL PROVIDE THE DEPARTMENT OF PLANNING AND BUILDING WITH A COPY OF THE PERMITS OR A LETTER OF EXEMPTION FROM THE APCD PRIOR TO ISSUANCE OF CONSTRUCTION PERMITS.

ADDITIONAL EROSION CONTROL NOTES



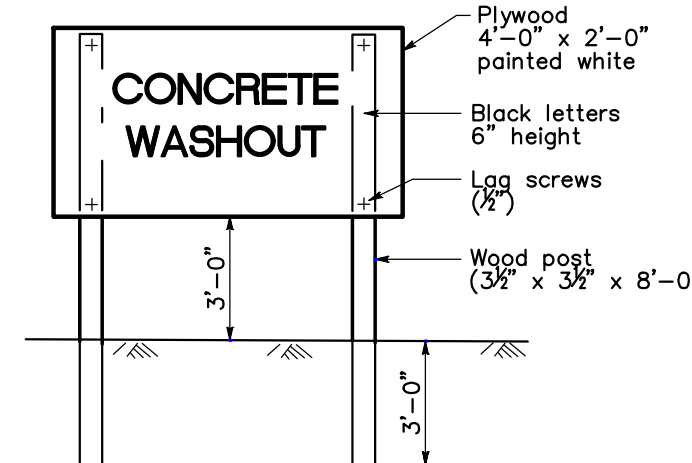
E FIBER ROLL DETAIL (CASQA SE-5)
SCALE: NTS



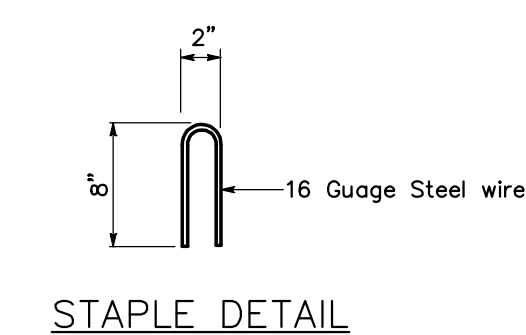
F CONCRETE WASHOUT FACILITY (CASQA WM-8)
SCALE: NTS

NOTES:

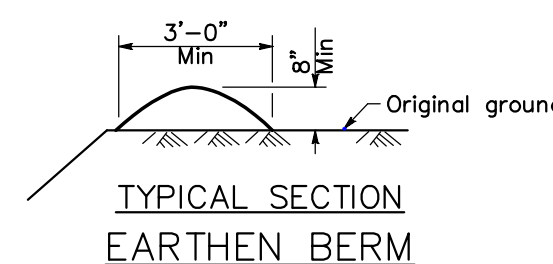
- Actual layout determined in field.
- The concrete washout sign shall be installed within 30 ft. of the temporary concrete washout facility.



CONCRETE WASHOUT SIGN DETAIL



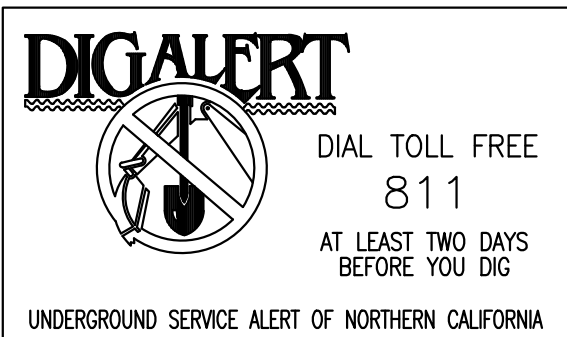
STAPLE DETAIL



TYPICAL SECTION EARTHEN BERM

NOTE: BMP'S SHALL COMPLY WITH CASQA DETAILS, BMP HANDBOOK JULY 2012.

SAVE DATE: 1/17/2020 9:58 AM PLOT DATE: 1/20/2020 8:25 AM



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PUBLIC IMPROVEMENT PLANS FOR AVILA BEACH CSD

EROSION CONTROL DETAILS

DESIGN/DRAWN	CO. PLAN CHECKER	APPROVED FOR COUNTY REQUIREMENTS	
AJC		DEVELOPMENT SERVICES ENGINEER	DATE
JOB NO.	CO. W.O. NO.	RONALD G. REILLY, PE 78107	DATE
18-743		CO. POST MILES	CO. ROAD NO.
CALIFORNIA COORDINATES		M 2122	8 OF 10

PLOT DATE: 1/20/2020 8:25 AM

GENERAL TRAFFIC CONTROL NOTES

- TEMPORARY TRAFFIC CONTROL SHALL COMPLY WITH THE CALIFORNIA MUTCD 2014 ED., PT. 6.
 - THE CONTRACTOR SHALL ASSURE THAT THE APPROPRIATE EXISTING TRAFFIC CONTROLS REMAIN IN PLACE AND FUNCTIONAL DURING ALL CONSTRUCTION PHASES. CONTRACTOR SHALL COVER ANY CONFLICTING SIGNS THAT EXIST ALONG THE ROADWAY.
 - NO WORK SHALL COMMENCE WITHOUT THE CONSTRUCTION SIGNS INSTALLED AND OTHER NECESSARY TRAFFIC CONTROL DEVICES ON SITE.
 - NO LANE CLOSURE SHALL BE PERMITTED DURING THE TIMES SHOWN ON THE DEPARTMENT OF PUBLIC WORKS "LANE CLOSURE RESTRICTION" LIST. AFFECTED STREETS WILL BE SHOWN IN THE ENCROACHMENT PERMIT.
 - AT THE CONCLUSION OF EACH WORK DAY, THERE SHALL NOT BE A DROP-OFF ALONG THE EDGE OF TRAVELED WAY GREATER THAN 0.15'. "LOW SHOULDER" SIGNS SHALL BE PLACED ALONG THE TRAVELED WAY WHERE THERE IS A DROP-OFF. DROP-OFFS GREATER THAN 0.15' WILL REQUIRE EITHER:
 - BACKFILLING THE DROP-OFF TO A MINIMUM 4:1 SLOPE;
 - PROVIDING APPROPRIATE STEEL PLATES OVER EXCAVATION;
 - PROVIDING TEMPORARY CONCRETE RAILING ALONG THE WORK ZONE IN CONFORMANCE WITH THE STATE STANDARD PLANS AND SPECIFICATIONS.
 EXCAVATIONS BEYOND EIGHT FEET FROM THE TRAVEL WAY MAY UTILIZE PORTABLE DELINEATORS AT APPROPRIATE SPACING ALONG WITH "OPEN TRENCH" SIGNS.
 - ALL PAVED TRAVELED-WAY SURFACES SHALL BE RESTORED TO AN ALL-WEATHER, TRAVERSABLE CONDITION AT THE END OF EACH WORK DAY.
 - PEDESTRIAN ACCESS SHALL BE AFFORDED THROUGH THE WORK AREA ON COUNTY ROADS, IN URBAN AREAS, EITHER BY PROVIDING NECESSARY FACILITIES FOR SAFE AND VIABLE ACCESS, OR BY PROVIDING APPROPRIATE ADVANCE WARNING TO PEDESTRIANS TO UTILIZE ALTERNATE ROUTES, BICYCLE ROUTES AND LANES, WHEN IMPACTED BY CONSTRUCTION, SHALL BE SIGNED TO AFFORD SAFE PASSAGE THROUGH THE WORK ZONE OR TO DESIGNATED ALTERNATE ROUTES. FOR BOTH PEDESTRIANS AND BICYCLES, SURFACES SHALL BE MAINTAINED FREE OF LOOSE DEBRIS OR GRAVEL.
 - NO CONSTRUCTION EQUIPMENT OR MATERIALS SHALL BE PARKED OR STORED WITHIN SIX FEET OF THE TRAVELED WAY. WHEN CONSTRUCTION EQUIPMENT OR MATERIALS ARE STORED WITHIN THE RIGHT-OF-WAY ARE FURTHER THAN SIX FEET OFF THE TRAVELED WAY, AND THE SHOULDER AREA SHALL BE SIGNED AS CLOSED AND PORTABLE DELINEATORS USED TO MARK A TAPER IN ADVANCE OF THE MATERIAL OR EQUIPMENT.
 - REMOVAL OF EXISTING PAVEMENT STRIPING MAY BE BY SANDBLASTING, HYDROBLASTING, OR GRINDING WHEN THE NEW STRIPING LOCATIONS WILL BE WITHIN TWO FEET OF THE FINAL STRIPE LOCATIONS. WHEN THE CHANGE OF POSITION WILL BE GREATER THAN TWO FEET, THE EXISTING STRIPING SHALL BE COMPLETELY OBLITERATED BY USE OF A TYPE II SLURRY SEAL OR CHIP SEAL OVER THE FULL WIDTH OF THE ROADWAY. IF DESIGN SPEED OF ROAD IS LESS THAN 45 MPH, A TYPE II SLURRY SEAL PER CAL-TRANS STANDARDS IS REQUIRED. IF DESIGN SPEED OF ROAD IS GREATER THAN 45 MPH, A CHIP SEAL IS REQUIRED, IF DETERMINED BY THE CITY DEPARTMENT OF PUBLIC WORKS THAT THE STRIPE REMOVAL EXCESSIVELY DAMAGES THE PAVEMENT, THE DEVELOPER MAY BE REQUIRED TO USE ONE OF THE ABOVE METHODS TO OBLITERATE THE EXISTING STRIPING ON THE FULL WIDTH OF THE ROADWAY.
 - PARKING RESTRICTIONS MUST BE POSTED 24 HOURS BEFORE WORK STARTS. POSTING IS AT THE EXPENSE OF THE CONTRACTOR.
 - ALL PRIVATE DRIVEWAYS AND SIDE STREETS SHALL BE KEPT OPEN AT ALL TIMES EXCEPT WHEN CONSTRUCTION TAKES PLACE DIRECTLY IN FRONT OF THE DRIVEWAY/SIDE STREET.
 - ANY WORK THAT DISTURBS NORMAL TRAFFIC SIGNAL OPERATIONS SHALL BE COORDINATED WITH THE DEPARTMENT OF PUBLIC WORKS TRAFFIC DIVISION AT LEAST 72 HOURS PRIOR TO BEGINNING THE WORK INVOLVING THE SIGNAL. THE CONTRACTOR SHALL REPLACE ALL TRAFFIC SIGNAL LOOP DETECTORS, DAMAGED DURING THE CONSTRUCTION WITHIN FIVE DAYS OF THE COMPLETION OF CONSTRUCTION INVOLVING THE SIGNAL.
 - ALL CHANNELIZERS SHALL BE EQUIPPED WITH NIGHTTIME REFLECTIVE BANDS AND BE SPACED NO GREATER THAN 25 FOOT INTERVALS ALONG TAPERS, LANE CONTROL, AND/OR ALONG EDGE OF WORK ZONE.
 - A COUNTY ENCROACHMENT PERMIT IS REQUIRED FOR ALL WORK WITHIN THE COUNTY ROAD RIGHT OF WAY. THE ENCROACHMENT PERMIT MAY ESTABLISH ADDITIONAL TRAFFIC CONTROL REQUIREMENTS.
- NOTE: CONTRACTOR SHALL NOTIFY RESIDENCES WITH SCHEDULED WORK DATES AT LEAST 48 HOURS PRIOR TO BEGINNING WORK ON ALL DRIVEWAYS AFFECTED BY CONSTRUCTION.

REFERENCE NOTES

- CONSTRUCT TEMPORARY TRAFFIC CONTROL TA-3 PER CALIFORNIA MUTCD 2014 EDITION.
- CONSTRUCT TEMPORARY TRAFFIC CONTROL TA-11 PER CALIFORNIA MUTCD 2014 EDITION.

SIGN LEGEND

- G20-2 END ROAD WORK
- M4-9a BICYCLE/PEDESTRIAN DETOUR SIGN
- M6-3 ARROW PLAQUE
- R1-2 YIELD
- R1-2aP TO ONCOMING TRAFFIC
- W1-4 REVERSE CURVE PLAQUE
- W3-2 YIELD AHEAD
- W20-1 ROAD WORK AHEAD
- W20-4 ONE LANE ROAD AHEAD
- W21-5 SHOULDER WORK
- W21-5b XXXX

- FLAGGER
- AREA OF WORK (WORK ZONE)
- DELINEATORS
- CHANNELIZING DEVICE: TRAFFIC CONES, SPACED PER PLAN.
- ARROW BOARD SUPPORT OR TRAILER
- TYPE 3 BARRICADE
- TEMPORARY PEDESTRIAN/BICYCLE ACCESS ROUTE
- DIRECTION OF TRAVEL

NOTES:

- TEMPORARY TRAFFIC CONTROL SIGNS TO BE SPACED:
- 25 MPH ZONE: 100FT MINIMUM SPACING.
 - 25-40 MPH ZONE: 250 FT MINIMUM SPACING.

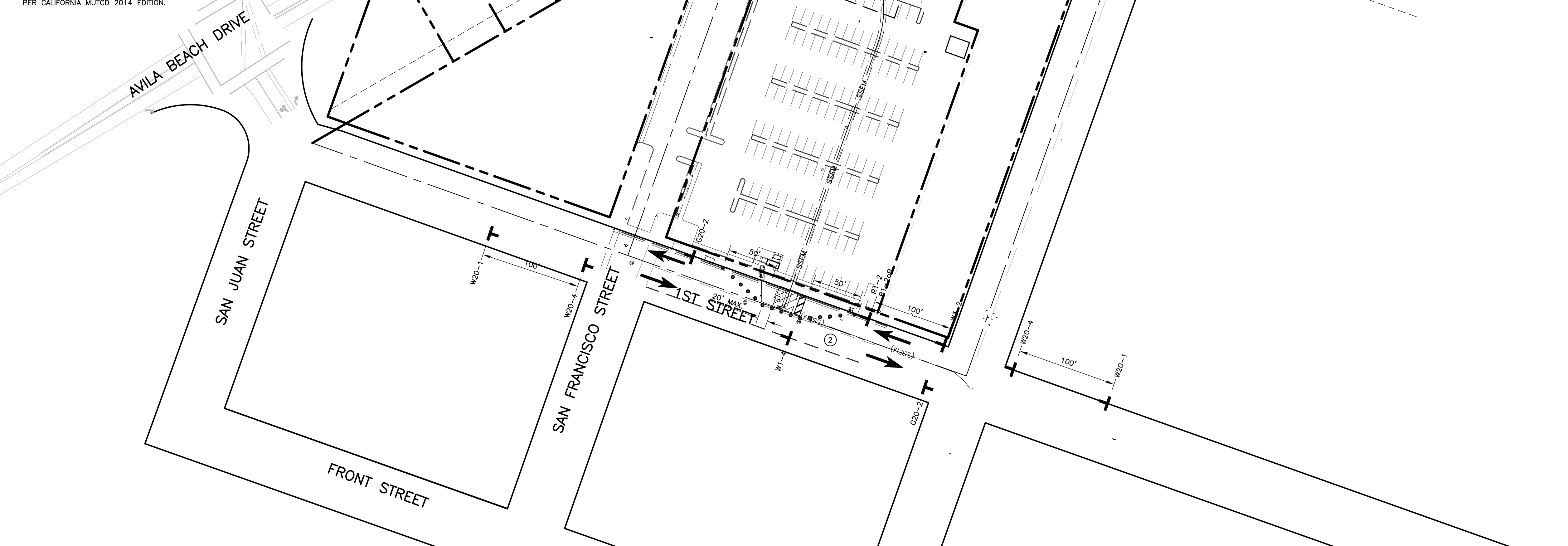
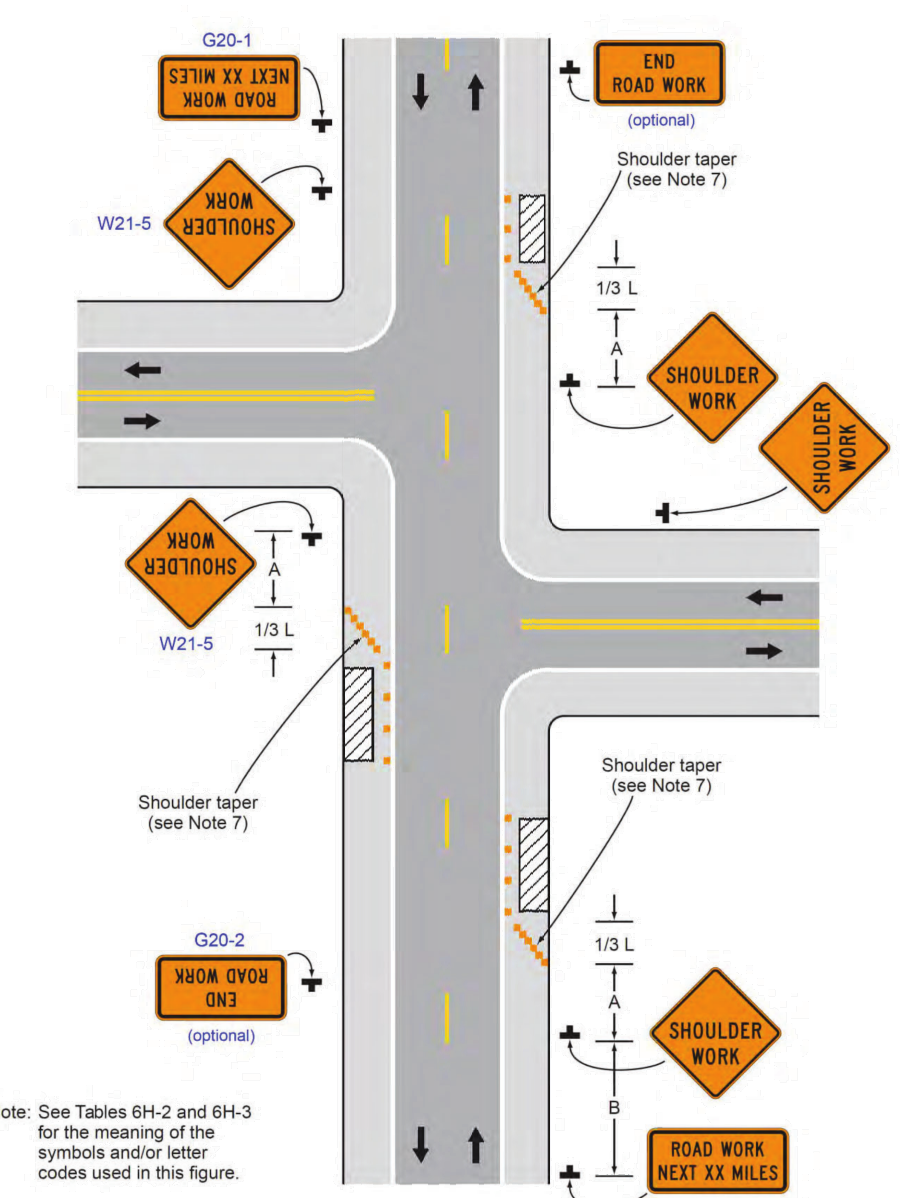


Figure 6H-3. Work on the Shoulders (TA-3)

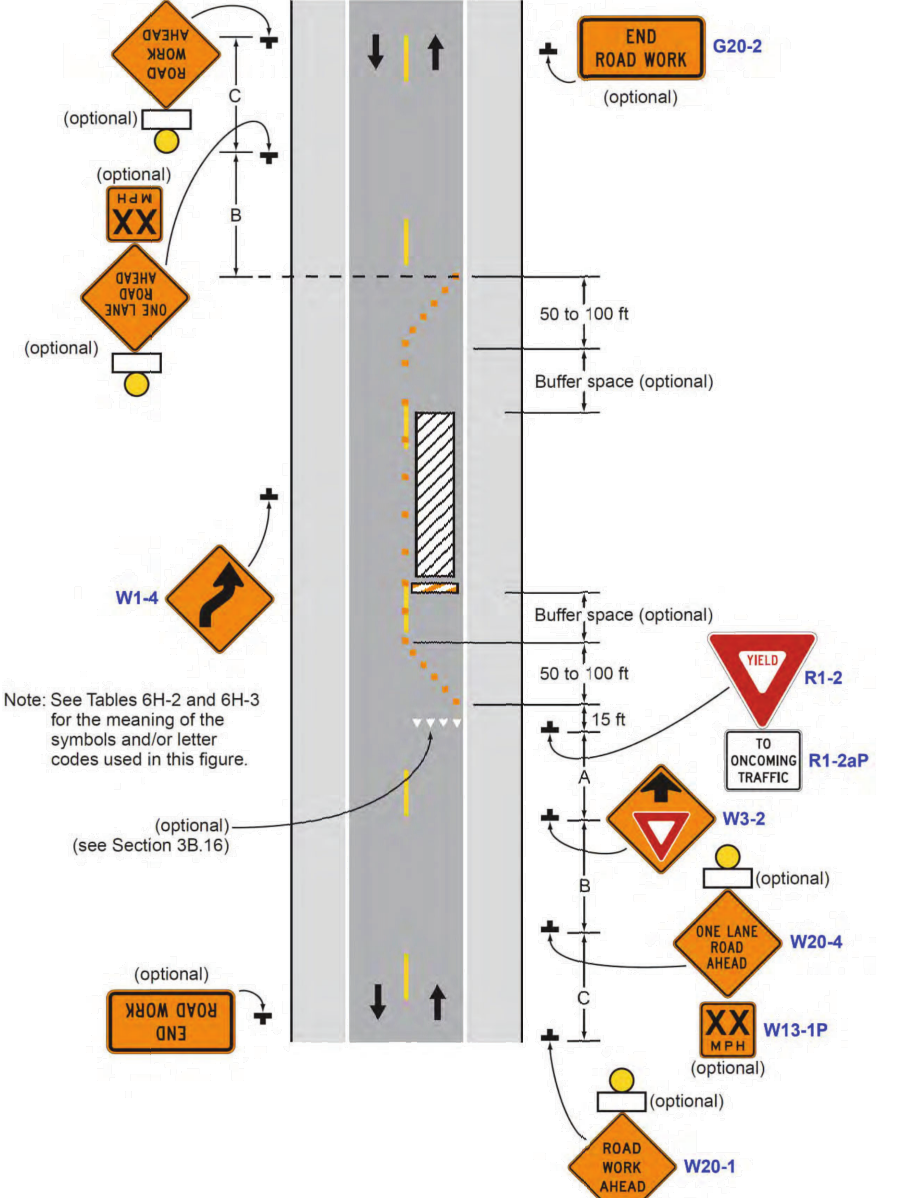


Typical Application 3

SIGN LEGEND

- A=250'
- B=250'
- L=320'

Figure 6H-11. Lane Closure on a Two-Lane Road with Low Traffic Volumes (TA-11)

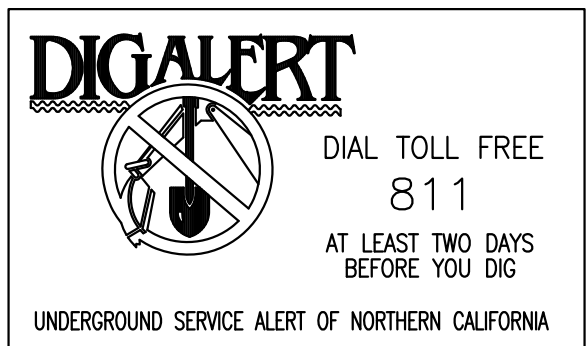


Typical Application 11

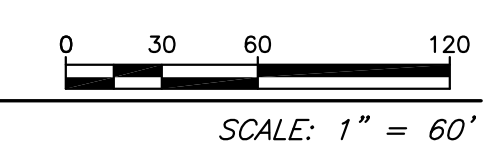
SIGN LEGEND

- A=100'
- B=100'
- C=100'

SAVE DATE: 1/17/2020 9:58 AM PLOT DATE: 1/20/2020 8:25 AM



TEMPORARY TRAFFIC CONTROL-PHASE I



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PUBLIC IMPROVEMENT PLANS FOR AVILA BEACH CSD

TRAFFIC CONTROL PHASE I

DESIGN/DRAWN	CO. PLAN CHECKER	APPROVED FOR COUNTY REQUIREMENTS
APC		
JOB NO.	CO. W.O. NO.	DEVELOPMENT SERVICES ENGINEER DATE
18-743		RONALD G. REILLY, PE 78107 DATE
CALIFORNIA COORDINATES	CO. POST MILES	CO. ROAD NO. SHEET:
	M 212	9 OF 10

PLOT DATE: 1/20/2020 8:25:28 AM T:\18-743 - Avila Beach CSD\Drawings\Sheet\18-743 P19 - TC PHASE I.dwg 1/20/2020 8:25:28 AM

GENERAL TRAFFIC CONTROL NOTES

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 - NO WORK SHALL COMMENCE WITHOUT THE CONSTRUCTION SIGNS INSTALLED AND OTHER NECESSARY TRAFFIC CONTROL DEVICES ON SITE.
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 - AT THE CONCLUSION OF EACH WORK DAY, THERE SHALL NOT BE A DROP-OFF ALONG THE EDGE OF TRAVELED WAY GREATER THAN 0.15'. "LOW SHOULDER" SIGNS SHALL BE PLACED ALONG THE TRAVELED WAY WHERE THERE IS A DROP-OFF. DROP-OFFS GREATER THAN 0.15' WILL REQUIRE EITHER:
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 - ALL PAVED TRAVELED-WAY SURFACES SHALL BE RESTORED TO AN ALL-WEATHER, TRAVERSABLE CONDITION AT THE END OF EACH WORK DAY.
 - PEDESTRIAN ACCESS SHALL BE AFFORDED THROUGH THE WORK AREA ON COUNTY ROADS, IN URBAN AREAS, EITHER BY PROVIDING NECESSARY FACILITIES FOR SAFE AND VIALBE ACCESS, OR BY PROVIDING APPROPRIATE ADVANCE WARNING TO PEDESTRIANS TO UTILIZE ALTERNATE ROUTES, BICYCLE ROUTES AND LANES, WHEN IMPACTED BY CONSTRUCTION, SHALL BE SIGNED TO AFFORD SAFE PASSAGE THROUGH THE WORK ZONE OR TO DESIGNATED ALTERNATE ROUTES. FOR BOTH PEDESTRIANS AND BICYCLES, SURFACES SHALL BE MAINTAINED FREE OF LOOSE DEBRIS OR GRAVEL.
 - NO CONSTRUCTION EQUIPMENT OR MATERIALS SHALL BE PARKED OR STORED WITHIN SIX FEET OF THE TRAVELED WAY. WHEN CONSTRUCTION EQUIPMENT OR MATERIALS ARE STORED WITHIN THE RIGHT-OF-WAY ARE FURTHER THAN SIX FEET OFF THE TRAVELED WAY, AND THE SHOULDER AREA SHALL BE SIGNED AS CLOSED AND PORTABLE DELINEATORS USED TO MARK A TAPER IN ADVANCE OF THE MATERIAL OR EQUIPMENT.
 - REMOVAL OF EXISTING PAVEMENT STRIPING MAY BE BY SANDBLASTING, HYDROBLASTING, OR GRINDING WHEN THE NEW STRIPING LOCATIONS WILL BE WITHIN TWO FEET OF THE FINAL STRIPE LOCATIONS. WHEN THE CHANGE OF POSITION WILL BE GREATER THAN TWO FEET, THE EXISTING STRIPING SHALL BE COMPLETELY OBLSCURED BY USE OF A TYPE II SLURRY SEAL OR CHIP SEAL OVER THE FULL WIDTH OF THE ROADWAY. IF DESIGN SPEED OF ROAD IS LESS THAN 45 MPH, A TYPE II SLURRY SEAL PER CAL-TRANS STANDARDS IS REQUIRED. IF DESIGN SPEED OF ROAD IS GREATER THAN 45 MPH, A CHIP SEAL IS REQUIRED, IF DETERMINED BY THE CITY DEPARTMENT OF PUBLIC WORKS THAT THE STRIPE REMOVAL EXCESSIVELY DAMAGES THE PAVEMENT, THE DEVELOPER MAY BE REQUIRED TO USE ONE OF THE ABOVE METHODS TO OBLSCURE THE EXISTING STRIPING ON THE FULL WIDTH OF THE ROADWAY.
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- NOTE:** CONTRACTOR SHALL NOTIFY RESIDENCES WITH SCHEDULED WORK DATES AT LEAST 48 HOURS PRIOR TO BEGINNING WORK ON ALL DRIVEWAYS AFFECTED BY CONSTRUCTION.

SIGN LEGEND

- C38 USE NEXT EXIT
- G20-2 END ROAD WORK
- M4-8 DETOUR
- M4-8a END DETOUR
- M4-9R DETOUR RIGHT
- M4-10L DETOUR LEFT
- R3-1 NO RIGHT TURN (IMAGE)
- R3-2 NO LEFT TURN (IMAGE)
- R3-3 NO TURNS
- R11-2 ROAD CLOSED
- R11-3a ROAD CLOSED 750'
- R11-4 ROAD CLOSED TO THROUGH TRAFFIC
- SC7 STREET CLOSED USE SAN JUAN
- SC8 SAN MIGUEL STREET CLOSED
- W9-3 CENTER LANE CLOSED AHEAD
- W20-1 ROAD WORK AHEAD
- W20-3 ROAD CLOSED AHEAD

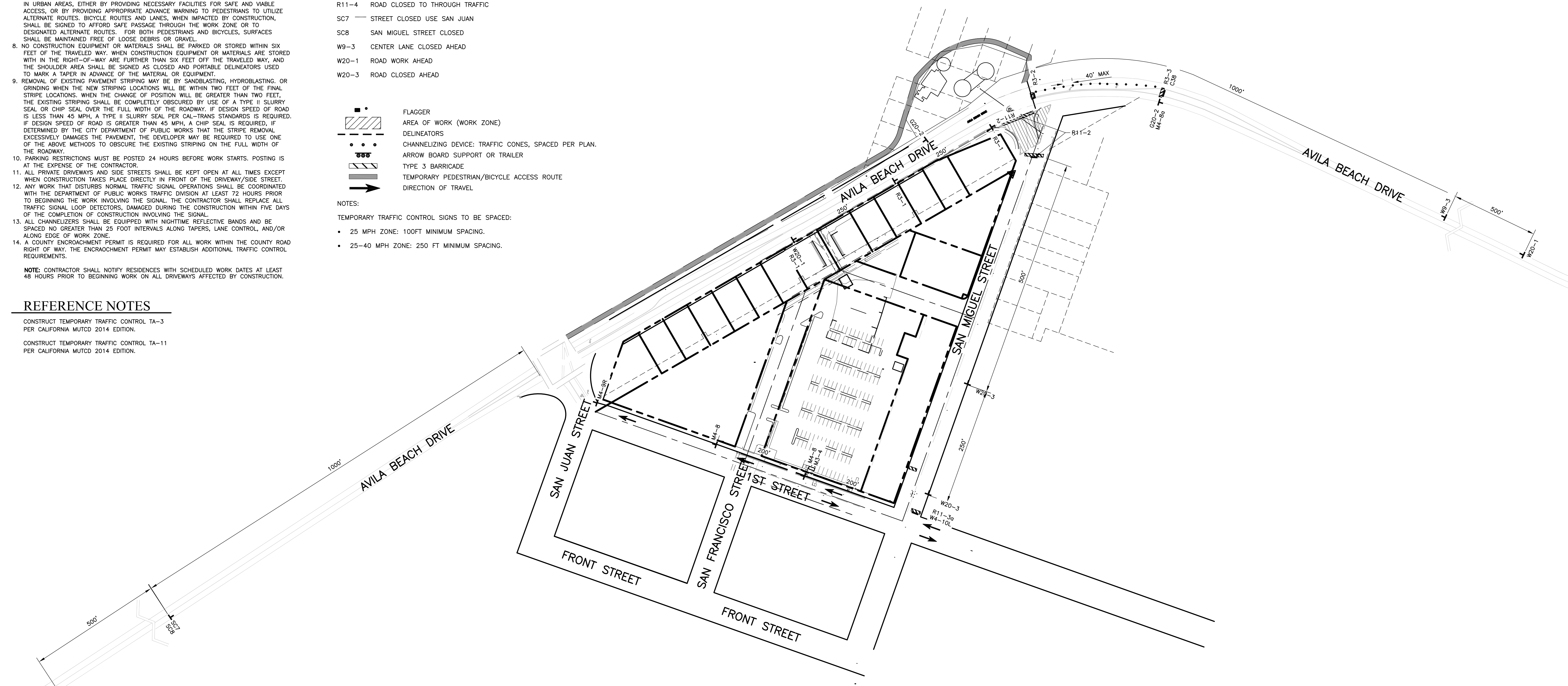
- FLAGGER
- AREA OF WORK (WORK ZONE)
- DELINEATORS
- CHANNELIZING DEVICE: TRAFFIC CONES, SPACED PER PLAN.
- ARROW BOARD SUPPORT OR TRAILER
- TYPE 3 BARRICADE
- TEMPORARY PEDESTRIAN/BICYCLE ACCESS ROUTE
- DIRECTION OF TRAVEL

- NOTES:**
- TEMPORARY TRAFFIC CONTROL SIGNS TO BE SPACED:
 - 25 MPH ZONE: 100FT MINIMUM SPACING.
 - 25-40 MPH ZONE: 250 FT MINIMUM SPACING.

REFERENCE NOTES

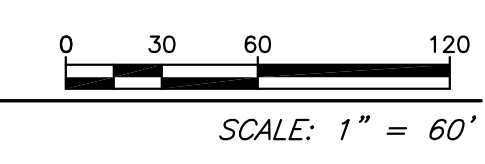
- CONSTRUCT TEMPORARY TRAFFIC CONTROL TA-3 PER CALIFORNIA MUTCD 2014 EDITION.
- CONSTRUCT TEMPORARY TRAFFIC CONTROL TA-11 PER CALIFORNIA MUTCD 2014 EDITION.

SAVE DATE: 1/17/2020 9:58 AM PLOT BY: TONY COSCIA PLOT DATE: 1/20/2020 8:26 AM



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TEMPORARY TRAFFIC CONTROL-PHASE II
 DESCRIPTION



GTA GARING, TAYLOR & ASSOCIATES, INC.
 CIVIL ENGINEERS SURVEYORS PLANNERS
 141 SOUTH ELM STREET • ARROYO GRANDE, CA 93420 • (805) 489-1321

PUBLIC IMPROVEMENT PLANS FOR AVILA BEACH CSD

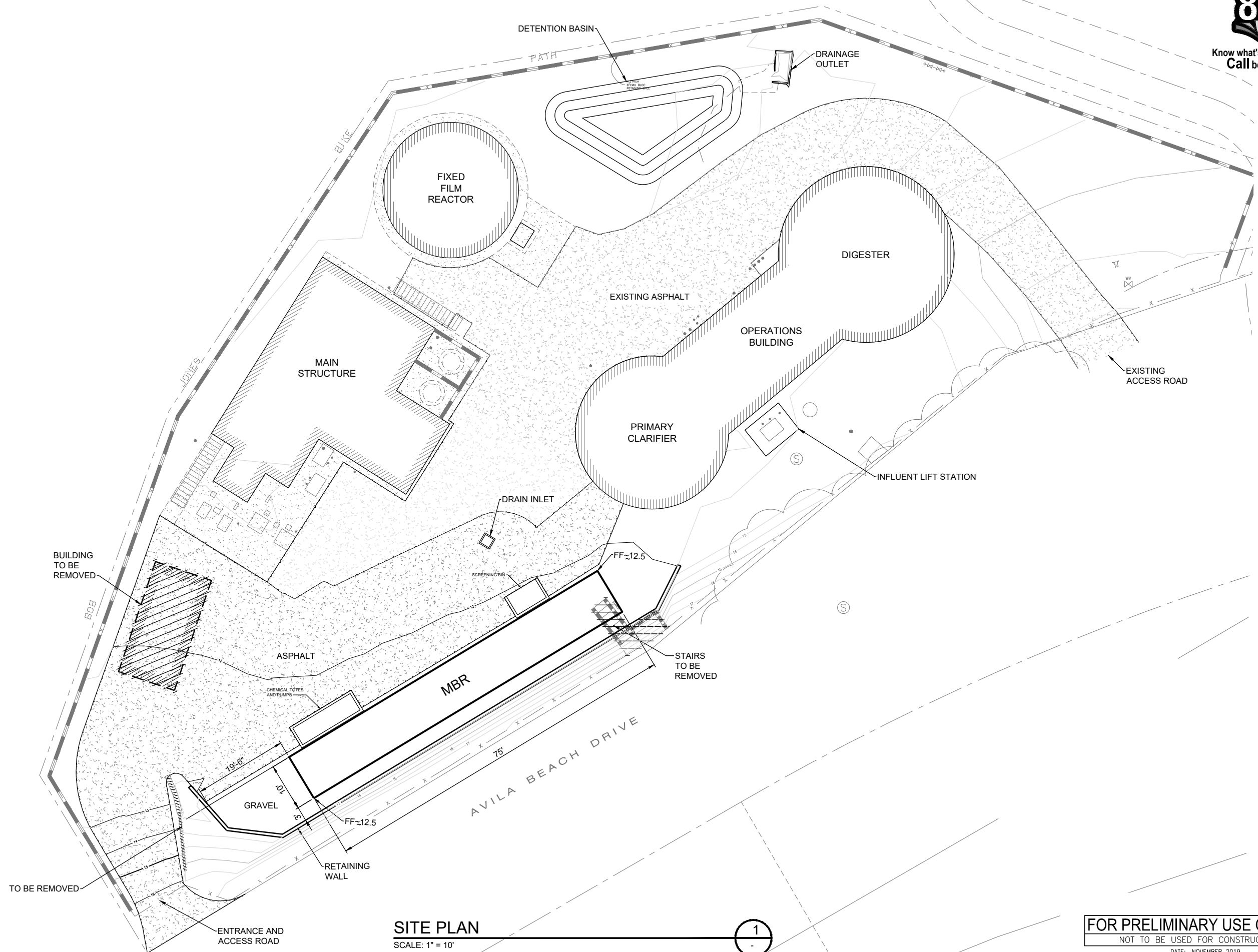
TRAFFIC CONTROL PHASE II

DESIGN/DRAWN	CO. PLAN CHECKER	APPROVED FOR COUNTY REQUIREMENTS	
APC		DEVELOPMENT SERVICES ENGINEER	DATE
JOB NO.	CO. W.O. NO.	RONALD G. REILLY, PE 78107	DATE
18-743		CO. POST MILES	SHEET:
CALIFORNIA COORDINATES		M 2022	10 OF 10

PLOT DATE: 1/20/2020 8:26:15 AM T:\18-743 - Avila Beach CSD\Drawings\Sheet\18-743 P110 - TC PHASE II.dwg, 1/20/2020 8:26:15 AM



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SITE PLAN

SCALE: 1" = 10'

1

FOR PRELIMINARY USE ONLY
NOT TO BE USED FOR CONSTRUCTION

DATE: NOVEMBER 2019
****30% PLANSET - NOT FOR CONSTRUCTION**

APPR	EXP. DATE
PROJECT ENGINEER	REG. NUMBER
EILEEN K. SHIELDS	C74757



mkn
WATER - WASTEWATER - REUSE
P.O. BOX 1604
ARROYO GRANDE, CA 93421 (805) 904-8530

AVILA BEACH COMMUNITY SERVICES DISTRICT
WWTP IMPROVEMENTS PROJECT
SITE PLAN

DESIGNED: EKS
DETAILED: JPF
CHECKED: ---
APPROVED: ---
DATE: NOVEMBER 2019

PROJECT NO. -
C-101
SHEET 2 OF X

DWG: \\mkn\projects\Avila Beach\CSDB\2019\02\WWTP Improvements Preliminary Design\300 Engineering\301 CAD\Planes\C101.dwg, Layout Name: C-101 - Plotted by: jmf Date: 11/14/2019 - 5:27 AM
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Attachment E
Geotechnical Report for ABCSD WWTP Upgrade

GEOTECHNICAL REPORT

Membrane Unit and Wastewater Treatment Plant Improvements 2859 Avila Beach Drive San Luis Obispo County, California

Yeh Project No.: 219-201
MKN Project No. AB-2019-002 AB WWTP

August 11, 2020



Prepared for:

Michael K. Nunley & Associates, Inc. (MKN)
PO Box 1604
Arroyo Grande, CA 93421
Attn: Ms. Eileen Shields, P.E.

Prepared by:

Yeh and Associates, Inc.
391 Front Street, Suite D
Grover Beach, California 93433
Phone: 805-481-9590

August 11, 2020

Project No. 219-201

Michael K. Nunley & Associates, Inc. (MKN)
PO Box 1604
Arroyo Grande, CA 93421
Attn: Ms. Eileen Shields, P.E.

Subject: Geotechnical Report for Membrane Unit and Wastewater Treatment Plant Improvements, 2859 Avila Beach Drive, San Luis Obispo County, California

Dear Ms. Shields:

Yeh and Associates, Inc. is pleased to submit this geotechnical report for the design of the Avila Beach Community Services District's wastewater treatment plant at 2859 Avila Beach Drive. This report was prepared in accordance with our professional services agreement with MKN executed on June 24, 2019. This report provides an evaluation of the site for impacts from geologic hazards, seismic data for use with the current building code or AWWA standards, and recommendations for the design of structure foundations, pipeline trenches, and retaining walls. Field data collected from both previous studies and the current study are presented in appendices to this report.

The scope of services was originally to prepare a preliminary geotechnical report for the project. The District requested that Yeh proceed with preparation of this design-level geotechnical report based on subsurface conditions encountered and a summary of our findings discussed at a meeting with the District and MKN on September 5, 2019.

A summary of key geotechnical information and considerations for the project are as follows:

- The project generally consists of the design of a new membrane bioreactor (MBR) system and associated site grading, piping, a retaining wall, and other site improvements. Yeh reviewed previous geotechnical studies the District had available for the site and performed four cone penetration test (CPT) soundings to depths ranging from 75 to 100 feet below the site.
- The site is in a low-lying coastal area along San Luis Obispo Creek and a 1/2-mile inland from the beach. The site was graded and covered with a variable thickness of fill material during its original construction in 1969. Approximately 40 feet of relatively soft alluvium was encountered in the CPT soundings below the fill. Interbedded layers of medium dense sand and gravel and medium to very stiff clay were encountered below 40 feet to maximum depths explored. Groundwater was encountered about 10 feet below the ground surface and near

Colorado

California

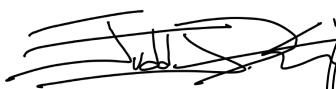
the elevation of San Luis Obispo Creek. An interpreted profile summarizing the subsurface conditions encountered is presented on Plate 1.

- The site is in a coastal environment and seismically active area of California. The design earthquake for the site is a M6.7 event that is estimated to result in a peak ground acceleration of 0.52g, likely occurring on a nearby fault. The site is also within a tsunami hazard zone that the California Geologic Survey reports has a runup elevation of about 60 feet near the site. The San Luis Obispo County Office of Emergency Services manages a tsunami hazard warning system for Avila Beach and other coastal communities.
- The soft alluvium is relatively compressible and contains layers of potentially liquefiable sand. The average bearing pressure from the MBR bearing pressure is relatively low (less than 300 pounds per square foot) and will not result in significant static settlement. The estimated seismic settlement for the design earthquake is approximately 1 to 2 inches in the vicinity of the MBR based on an analysis of the CPT data. The design of the MBR will consider differential movement of the structure in response to liquefaction and will include soft fixes (like flexible couplings) to help tolerate additional settlement that could occur during an earthquake.

We appreciate the opportunity to be of service. Please contact Judd King at 805-801-6416 or jking@yeh-eng.com if you have questions or require additional information.

Sincerely,

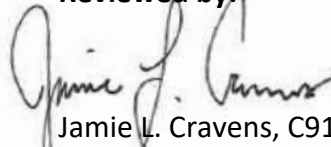
YEH AND ASSOCIATES, INC.



Judd King, GE2903
Senior Project Manager



Reviewed by:



Jamie L. Cravens, C91504
Project Engineer



Copies: Mike Nunley, MKN

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1. PURPOSE AND SCOPE OF STUDY

MKN retained Yeh and Associates to provide geotechnical recommendations for the design of the improvements to the Avila Beach Community Services District's wastewater treatment plant at 2859 Avila Beach Drive in San Luis Obispo County, California. The location of the site is shown on Figure 1.

The geotechnical evaluation consisted of a program of project coordination; review of existing historical photographs, previous geotechnical studies, and plans; field exploration; and engineering analyses as a basis for providing the recommendations in this report. This report provides an evaluation of the site for impacts from geologic hazards, seismic data for use with the current building code or AWWA standards, and recommendations for the design of structure foundations, pipeline trenches, and retaining walls.

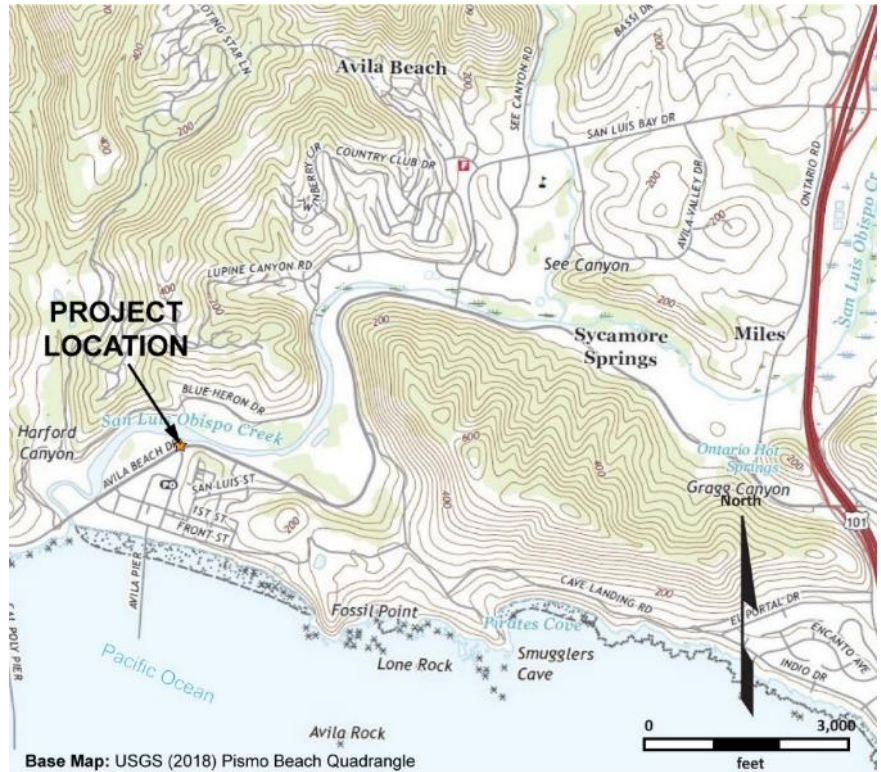


Figure 1: Vicinity Map

2. PROJECT DESCRIPTION

2.1 EXISTING FACILITY

The District's existing wastewater treatment facility is in the coastal community of Avila Beach, California. The wastewater treatment plant is located on an approximately 0.6-acre site between Avila Beach Drive and San Luis Obispo Creek in Avila Beach, and services an average daily flow of about 0.06 million gallons per day (MGD). The layout of the site as shown in the MKN (2019b) *Technical Memorandum 2* is shown in Figure 2. The original plant was constructed in 1969. As-built plans (Pomeroy, Johnston & Bailey (PJB 1969)) show that the existing clarifier and digester are supported on driven timber piles that appear to extend to about 80 feet below the structures, and that the

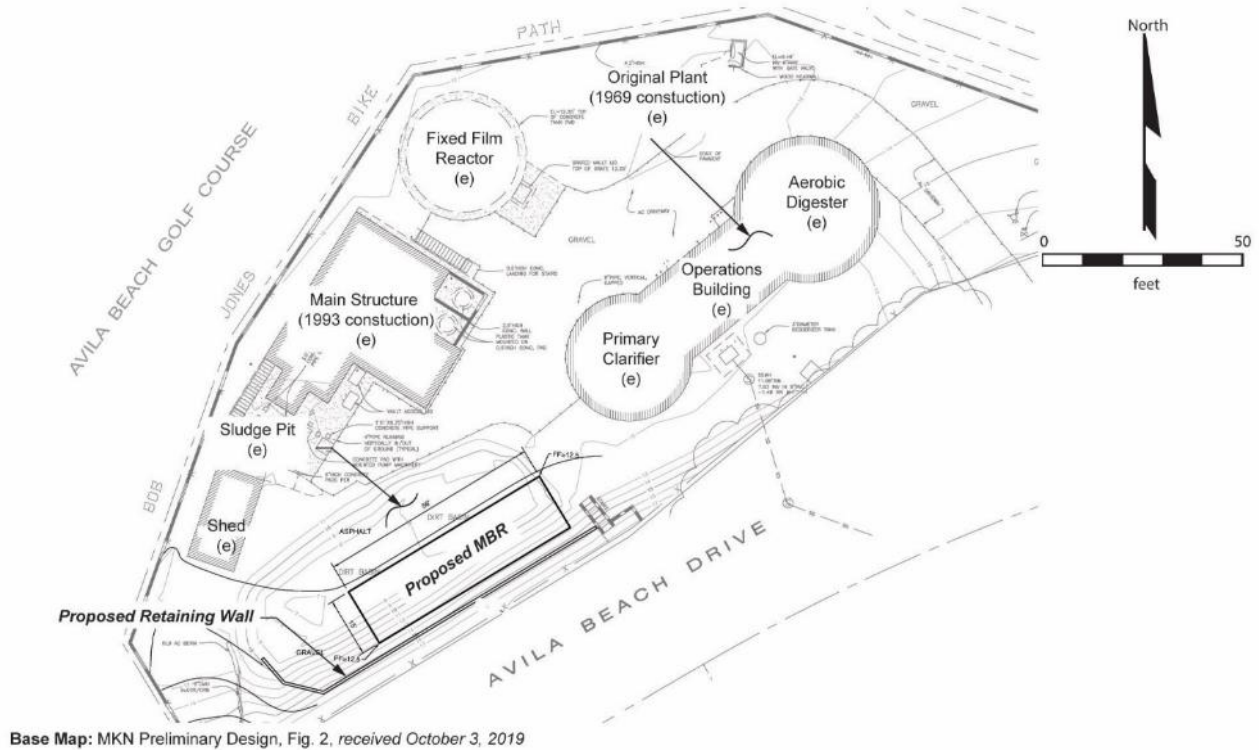


Figure 2: Site Plan

operations building is supported on spread footings bearing in compacted fill. The plant was expanded in 1993. The as-built plans (Kennedy Jenks 1993) show that the main structure and fixed film reactor are supported on driven precast concrete piles that appear to have been driven to about 60 feet below the structures (ESC 1992).

2.2 SITE DESCRIPTION

The site is on the north side of Avila Beach Drive, and approximately a ½ mile inland from the coastline and beach. The plant is bordered to the north by the Avila Beach Golf Course and the Bob Jones bike trail. The edge of San Luis Obispo Creek is approximately 50 feet northeast of the perimeter of the existing plant. Grading for the existing plant (PJB 1969, KJ 1993) included placing approximately 3 to 4 feet of fill to raise the grade of the site to approximately elevation 10 feet above sea level. An approximately 5- to 8-foot tall embankment along the westbound shoulder of Avila Beach Drive borders the southerly end of the existing plant.

2.3 PROPOSED PROJECT

The project generally includes the design of a new membrane bioreactor (MBR) unit and associated grading, piping, and a new retaining wall. A summary of the proposed improvements follows:

- The MBR units will be a prefabricated system mounted to a concrete slab with a minimum thickness of 2 feet. According to MKN, the MBR unit will be procured prior to the completion of

slab design. This will provide the opportunity for the slab to be designed for the selected MBR unit's weight and configuration. The concrete slab type foundation will extend approximately 2.5 to 3 feet beyond the footprint of the unit. The unit will be in the area of the existing sludge pit in the southwest corner of the site. Approximately 3 feet of fill will be placed to fill the pit and match adjacent site grade.

- A retaining wall will be provided along the southern side of the pad for the new MBR unit to support a cut along the Avila Beach Drive embankment. The pad will likely be excavated several feet into the existing embankment adjacent to the sludge pit. The District expects that the wall will consist of a cast-in-place masonry block wall on a foundation. Yeh assumes that the wall will be up to 4 feet high and extend for up to 100 feet along the base of the existing slope.
- Various piping will be provided to convey wastewater to the new MBR unit and to discharge the filtered effluent and sludge. The pipes will be buried with a typical 3 or 4 feet of cover. Pipe diameters are expected to be less than 12 inches.

3. GEOTECHNICAL INVESTIGATION



Figure 3: Field Exploration Plan

A geotechnical investigation for this project included reviewing previous geotechnical data and as-built plans provided by the District, advancing four cone penetration test soundings at the site, hand

excavating a hole in the bottom of the sludge pit, and reviewing historical aerial photographs. The locations of various the explorations from the current and previous studies are shown on Figure 3.

3.1 CONE PENETRATION TEST (CPT) SOUNDINGS

The CPT subcontractor for this project was Gregg Drilling and Testing, Inc. of Signal Hill, California. Gregg advanced four soundings using a hydraulic ram mounted inside a 30-ton truck on July 24, 2019. CPT were performed in general accordance with ASTM D-5778 using an electric piezocone penetrometer. The piezocone had a diameter of approximately 1.7 inches, a tip area of 15 square centimeters (cm^2), and a sleeve area of 225 cm^2 . Cone tip resistance (q_c), sleeve friction (f_s), and penetration pore water pressures measured from a transducer placed 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 bentonite chips.

The soundings were advanced to depths ranging from approximately 75 to 100 feet below the ground surface. A report from Gregg and logs of the CPT soundings are presented in Appendix A.

3.2 HAND EXCAVATION

A hand excavation was made in the bottom of the sludge put using a post-hole digger and a ½-inch diameter t-probe. A log of the excavation is presented in Appendix B.

3.3 PREVIOUS STUDIES

Previous geotechnical data and as-built plans were provided by the District. The following provides a summary of the data that we reviewed.

- Pomeroy, Johnston, and Bailey (PJB 1969) prepared plans for the design of the original plant that included site grading, the existing digester and clarifier, the operation building between digester and clarifier, the outfall, and supporting geotechnical data. The plans show that the existing clarifier and digester were supported on driven timber piles. Sheet 16 of those plans (included in Appendix C) presented the results of three soil borings and one test pile. Two of the borings (B-1 and B-2 shown on Figure 3) were reportedly drilled near the digester to depths of 34 and 85 feet below the previous ground surface. Those borings were reportedly drilled by Central Coast Laboratories in 1967, however, details regarding the drilling and sampling were not included in the plan set. A third boring was drilled offsite along the outfall pipeline. The data for an 80-foot deep driven test pile is also presented on Sheet 16 of the PJB plans, which is the basis for the assumption that the piles for the clarifier and digester are about 80 feet deep.

The subsequent Earth Systems Consultants (ESC1992) report referenced a test pit, but those records were not included in the data reviewed.

- Kennedy Jenks (KJ 1993) prepared plans and Earth Systems Consultants (ESC 1992) prepared a Geotechnical Report for the design of the existing package plant and fixed film reactor. The plans show that these improvements were supported on 16-inch square precast concrete piles. The Earth Systems report recommended the piles be driven to depth of 60 feet (or elevation - 51 feet). The results of one hollow stem auger boring and supporting laboratory data were provided in the Earth Systems report. A copy of those data is included in Appendix C.

3.4 HISTORIC AERIAL PHOTOGRAPHS

Historic aerial photos obtained from Environmental Data Resources (EDR 2019) and the University of California Santa Barbara (UCSB 2019) Map and Imagery Library were reviewed for the site. EDR provide photos for the years of 2016, 2012, 2009, 2006, 1994, 1981, 1976, 1963, 1960, 1956, and 1949. An additional photo from 1940 was obtained from UCSB. A copy of the photos and EDR report are included in Appendix D. A summary of the site conditions observed in the photos follows:

- The site was occupied by a single small building in 1940 photo. The railroad ran past the site near the existing alignment of Avila Beach Drive. The edge of an estuary that underlies the northern end of present-day community of Avila Beach was about 100 feet south of the treatment plant site. Avila Beach was developed along Front Street and generally east of San Miguel Drive. The south bank of San Luis Obispo Creek appears to be located near its current location, approximately 100 feet north of the plant site.
- The 1949 photo shows that the small building on the site was removed, and there were several new buildings located along the south bank of San Luis Obispo Creek just north of the site. Further development had occurred along front street and one block to the north. The estuary is partially filled from the south between the railroad and Avila Beach. The railroad bridge across San Luis Obispo Creek appeared to be removed, however, the bridge piers were evident.
- The 1956 photo shows that the estuary east of the railroad was filled in. Several new buildings are present along the north end of present-day San Miguel Street.
- The site vicinity looks similar until 1976 when the original plant (constructed in 1969) is evident. The estuary southwest of the site was channelized in the 1960 and 1963 photos and was filled by the 1976 photo. Avila Beach Drive appears to have been constructed on its current day alignment. The creek was bridged (by a pipeline likely) north of the plant. The structures along San Luis Obispo Creek north of the site had all been removed. The site vicinity looked similar through the 1994 photo (the KJ plant improvements were not observed in the 1994 photo).
- The 1981 photo showed that Avila Beach has built out west of San Miguel Street. The areas around the plant between Avila Beach Drive and San Luis Obispo Creek are undeveloped.
- The 2006 and subsequent photos showed the existing plant and surrounding golf course similar to the site conditions that are present today.

4. GEOLOGIC SETTING

The regional geology in the site vicinity as mapped by Wieggers (2011) is shown on Figure 4. The project is located within the Coast Ranges geologic and geomorphic province, which extends from the Transverse Ranges in southern California to the Klamath Mountains in northern California and into Oregon. The province is characterized by north-northwest trending mountain ranges composed of sedimentary, volcanic, and metamorphic formations. The formations are comprised of predominantly Jurassic and Cretaceous age rocks with Tertiary to Quaternary age rocks and soil commonly overlying the older formations along the flanks and foothills of those ranges.

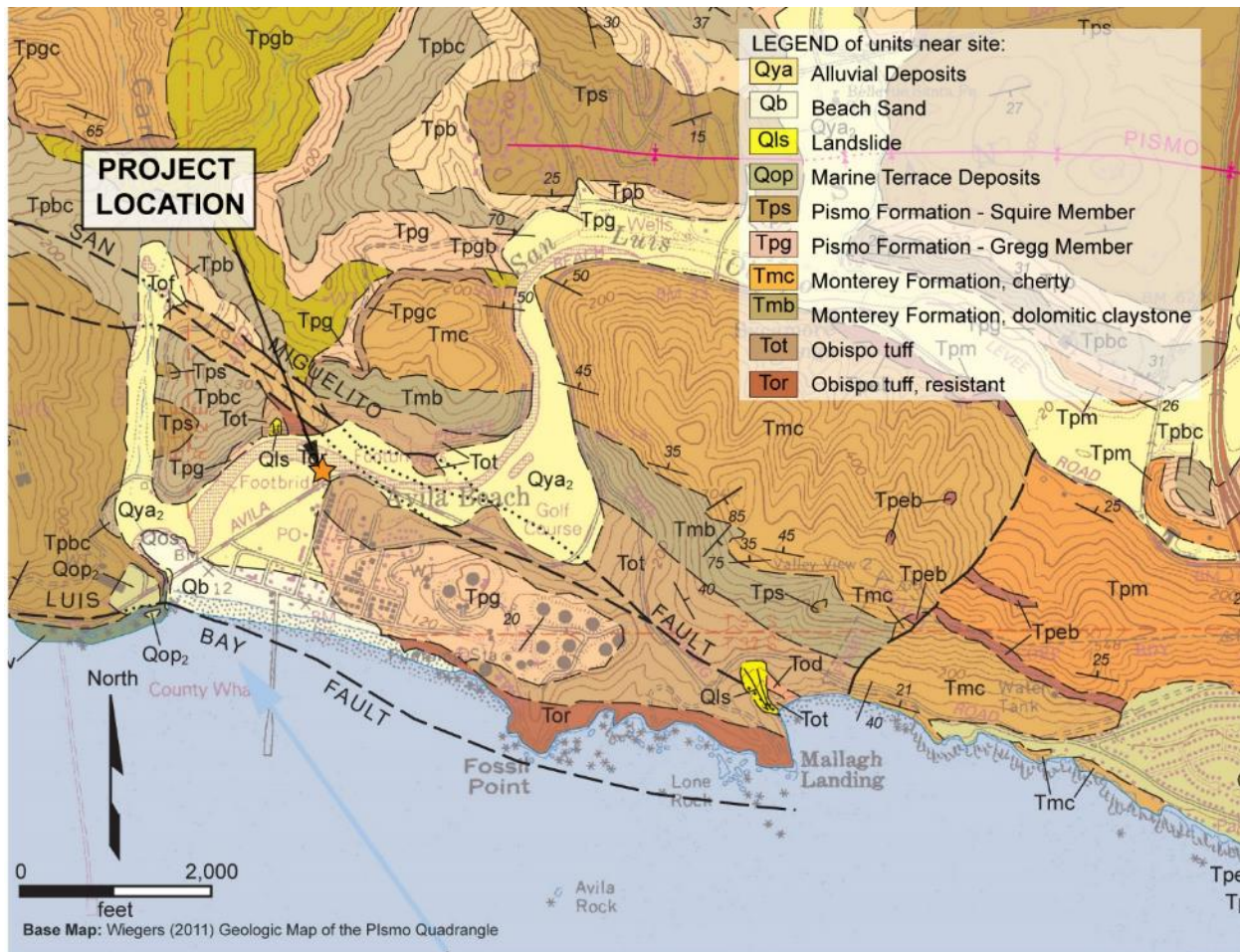


Figure 4: Geologic Map

Geologic structure mapped in the site vicinity are west to northwest trending faults and folds. The predominant structure includes the San Miguelito fault mapped just upstream of the site (see Figure 4) at a bend in San Luis Obispo Creek, and the San Luis Bay fault mapped along the shoreline south of the site. These faults are included as a seismic source within the overall San Luis Range fault system.

Avila Beach is located on an alluvial plane near the mouth of San Luis Obispo Creek. The surface geology at the site is mapped as younger alluvium (Qya). The alluvium is comprised of sediments that are likely a combination of material deposited by San Luis Obispo Creek in the estuary areas along the creek. The creek cuts through hillsides immediately upstream of the site. The hills are predominantly mapped as bedrock units composed of Tertiary-age Pismo (Tp), volcanic tuff and mudstone of the Obispo Formation (To), and Monterey (Tm) formations. These rocks are exposed on hillsides above the north side of San Luis Obispo Creek opposite of the treatment plant and are exposed in outcrops along Avila Beach Drive only about 150 feet northeast of the existing treatment plant. The CPT soundings did not encounter bedrock to 100 feet below the site. Previous borings by Central Coast Labs (PJB 1969) reported encountering shale bedrock at approximately 70 feet below the site at the existing digester location.

5. SUBSURFACE CONDITIONS

5.1 GEOLOGIC UNITS

The subsurface conditions encountered in the CPT soundings and previous borings consist of three predominant units: existing artificial fill (Af), young alluvium (Qya), and Obispo Formation (Tot) shale bedrock. An interpreted profile summarizing the subsurface conditions encountered is shown on Plate 1. The units shown on Plate 1 were differentiated based on geology, engineering properties relating to strength and compressibility, and classification. Descriptions of the units encountered and shown on the profile are summarized below. Detailed logs of the CPT soundings and borings are provided in Appendices A, B, and C.

Artificial Fill (Af). As-built plans show that 3 to 4 feet of compacted fill was to be placed above the previous ground surface to construct the plant in 1969. Artificial fill also includes existing pavement, utility trench backfill, and structure backfill that were specifically encountered in the explorations. The artificial fill generally consisted of relatively dense silty to clayey sand and very stiff sandy clay with varying amounts of gravel. The artificial fill was underlain by alluvium.

Alluvium (Qya). Alluvium was encountered below the artificial fill at depths of about 3 to 5 feet below the existing ground surface. The alluvium is composed of three general units: Qya1, Qya2, and Qya3 (as shown on Plate 1). A description of those units follows:

Qya₁. This unit was encountered below the artificial fill to depths of approximately 10 feet below the existing ground surface. The unit is predominantly stiff clay and sandy clay that is above groundwater or within the level of fluctuating groundwater. The clay is relatively stiff and overconsolidated.



Qya₂. This unit was encountered immediately below Qya₁ to depths of approximately 40 feet below the existing ground surface. This unit is a bay mud type deposit interbedded within alluvial sediment that was developed in the back-bay areas of Avila Beach and deposited by San Luis Obispo Creek. The unit is predominantly composed of soft to medium stiff clay and silt clay and interbedded layers of sand. The clay is relatively soft, normally to lightly overconsolidated, and compressible.

A layer of loose to medium dense sand running through the upper third of the Qya₂ unit was encountered in each of the CPT soundings at depths of approximately 15 feet. The sand ranged in thickness from approximately 2 feet in C-1 and C-2 advanced near the proposed MBR to approximately 8 feet in C-3 and C-4 performed on the north side of the original plant. The sand unit is shown on Plate 1 and was interpreted to extend to the bed of San Luis Obispo Creek north of the site for the slope stability and liquefaction analyses presented in this report.

Qya₃. This unit was encountered below Qya₂ to the maximum depths of our CPT soundings, up to 100 feet below the existing ground surface. The unit consists of relatively thick interbedded layers of medium dense to dense silty sand and stiff to very stiff clay. The layers encountered were both continuous and discontinuous between explorations, ranged in thickness from less than 1 foot to up to 8 feet, and varied in classification and consistency. Thinner lenses of sand and gravel were also encountered in some explorations. The unit was underlain by bedrock at a depth of 70 feet below the existing digester in a single boring (B-1 on Plate 1) drilled by Central Coast Laboratories in 1968 (PJB 1969).

Obispo Formation (Tot). Bedrock was encountered below the alluvium in a previous boring drilled by Central Coast Laboratories in 1967. Rock was encountered from a depth of 70 feet to the maximum depth of the boring, 85 feet below the ground surface. The rock was described as “dense gray SHALE” on the boring log. The rock is most likely associated with the Obispo Formation, based on an outcrop located about 150 feet northeast of the boring location and the geologic map (Figure 4). The outcrop exposed by a road cut on Avila Beach Drive is composed of relatively massive, moderately fractured tuff with blasting scars. Obispo Formation is known to locally contain mudstone (Wiegers 2011).

5.2 GROUNDWATER

The site is between San Luis Obispo Creek and the tidal estuary shown in 1940 aerial photos of the site. The area is known for shallow groundwater and to be prone to flooding. Groundwater was encountered in CPT soundings at depths of approximately 12 to 15 feet below the existing ground surface based on pore pressure response and dissipation tests. The groundwater level is near the water elevation in San Luis Obispo Creek. Groundwater was reportedly encountered at about 1.5 to 4 feet



below previous site grades in 1967 borings drilled by Central Coast Laboratories (PJB 1969). Earth Systems Consultants (ESC 1992) encountered groundwater at a depth of approximately 10 feet below the ground surface near the main plant in a boring drilled in April 1992. Groundwater and soil moisture conditions at the site are likely influenced by local and coastal flooding, stormwater runoff, and flows in San Luis Obispo Creek.

6. GEOTECHNICAL EVALUATION

6.1 SEISMICITY

Seismic data was estimated for the site as input the liquefaction analysis and for design of the MBR. The recommended seismic data for use with the California Building Code or AWWA design standards are presented in Section 7.2 of this report. The seismic data were estimated for a soft soil, Type E, site. The peak ground acceleration was estimated at 0.52g from ASCE 7-10 using a tool developed by SEAOC (USGS 2019a). The corresponding earthquake magnitude was estimated using the USGS online Unified Hazard Tool (USGS 2019b) to estimate the mean magnitude for a design earthquake having a 2 percent chance of being exceeded in 50 years. The design earthquake had an estimated mean magnitude (M) 6.7. The earthquake is mostly controlled by contributions from the Los Osos, Hosgri, and San Luis Range fault systems.

6.2 TSUNAMI HAZARD ZONE

The site and the town of Avila Beach are within the Tsunami Hazard Zone identified by the building code via the ASCE Tsunami Design Geodatabase Version 2016-1.0 (ASCE 2010). The County of San Luis Obispo Office of Emergency Services manages the tsunami warning and evacuation system for the area. Hazard recognition and participating in the emergency planning system should be considered by the District (if not previously considered).

6.3 LIQUEFACTION

The results of the CPT were used to evaluate the liquefaction potential of the soil encountered using the computer program CLiq by GeoLogismiki (Version 2.2.0.28). Liquefaction is the loss of soil strength due to an increase in soil porewater pressure resulting from seismic ground shaking. Liquefaction typically occurs in loose to medium dense granular soil that is below the groundwater table. The extent and severity of liquefaction is dependent upon the intensity and duration of the strong ground motion. Liquefaction can be manifested as sand boils, loss in soil strength and bearing capacity, seismically induced settlement, or slope instability and lateral spreading.

The liquefaction potential of the foundation support soil was evaluated for the design earthquake using CPT data and NCEER screening criteria (Youd et al. 2001) processed within the CLiq program (GeoLogismiki 2006). Layers of sand encountered within units Qya2 and Qya3 and shown on Plate 1 are



considered potentially liquefiable. Zones of subsurface material susceptible to liquefaction are presented on Plate 2.

Design Earthquake. Liquefaction is likely to be manifested as seismic settlement in response to the design earthquake. The settlement is estimated to range from approximately 1 to 2 inches at C-1 and 2 performed near the sludge pit, where the MBR unit will be located. The thickness and frequency of potentially liquefiable sand layers was more common in C-3 and C-4 as shown on Plate 2. The seismic settlement is estimated to range from approximately 3 to 6 inches at C-3 and C-4 in the northern half of the existing facility. Recommendations to consider total and differential settlement in the design of the MBR unit are provided in Section 7.3 of this report.

2003 San Simeon Earthquake. Plate 2 summarizes a comparison the results of the liquefaction analyses for the design earthquake compared to the 2003 M6.5 San Simeon Earthquake. The District has not reported that there was evidence of liquefaction or lateral spreading at the plant following the earthquake in 2003. Although the San Simeon Earthquake was a similar magnitude to the design earthquake, it occurred approximately 40 miles north of the site (Holzer et al 2004) and resulted in an estimated 0.15g peak ground acceleration at the site. The estimated ground acceleration for the San Simeon Earthquake was 3 to 4 times less than the peak ground acceleration estimated for the design earthquake. The analysis showed liquefaction potentially occurred in selected layers of the interpreted subsurface profile; however, the intensity of the shaking was likely not enough to result to the more widespread liquefaction estimated for the design earthquake.

6.4 SLOPE STABILITY AND LATERAL SPREADING

Slope stability analyses were performed to evaluate the effects of post-liquefaction lateral spreading at the site and to check the feasibility of excavating a temporary slope between the edge of the new MBR and Avila Beach Drive. Liquefaction could result in slope instability or lateral spreading of the banks of San Luis Obispo Creek that could then impact the existing plant.. The slopes were analyzed using the computer program SLIDE 2018 (Rocscience 2018).

6.4.1 INPUT AND ANALYSIS

For use with *SLIDE*, the user defines the surface and subsurface profile boundaries, groundwater conditions, the type of analysis to be performed, the layout and strength of any slope reinforcement, boundary loads, and the unit weight and strength of the soil and rock materials included in the analysis. The groundwater conditions modeled for existing slopes were based on groundwater levels encountered in the CPT soundings extrapolated to the water level in San Luis Obispo Creek. The cross-section geometry used for modeling the lateral spread condition was based on the interpreted subsurface profile shown on Plate 1. The cross-section geometry used for modeling the temporary



slope was based on the MBR and retaining wall layout shown in Figure 2, and a section estimated from the topography and grading recommended in this report.

Lateral Spreading Criteria. Slope stability criteria used in the analysis were generally consistent with those defined by the California Geologic Survey Special Publication 117A (CGS 2008). The criteria consider that there is a potential for yielding and slope instability (lateral spreading) to occur when the estimated factor of safety for the slope being modeled is less than 1.0 considering the residual strength of the liquefied soil and the load for the design earthquake. The earthquake load is considered as an equivalent horizontal static force estimated using a pseudostatic coefficient (k_h) for the design earthquake. A value of $k_h=0.17$ was estimated from charts in SP117a for the design earthquake and considering a lateral displacement of 6 inches. The factor of safety of the slope was estimated using SLIDE and residual shear strength parameters estimated from CLiq. The analysis is considered complete if the estimated factor of safety from the pseudostatic analysis is 1.0 or greater. An estimate of the slope displacement was performed because the initial screening analysis produced an estimated factor of safety less than 1.0.

The estimate of slope displacement was made for the design seismic event using the Bray and Travararou (2007) and Youd et al. (2002) procedures when the factor of safety estimated from the screening analysis was less than 1.0. The procedure uses a simplified Newmark-type model and semiempirical predictive relationship to estimate the permanent slope displacement due to earthquake-induced shear. A yield coefficient (k_y) of 0.18 was estimated for the slope from SLIDE and represents the equivalent horizontal static force beyond which slope movement may occur. The yield coefficient is defined as the pseudostatic coefficient corresponding to an estimated factor of safety of 1.0 for the slope condition modeled for the design earthquake. The coefficient is an input parameter for the calculation of estimated horizontal ground displacements.

Temporary Slope Criteria. The analysis was performed to check whether a temporary slope excavated below the property line along Avila Beach Drive would be feasible or would be vulnerable to slope instability associated with soft clay foundation soil encountered in the CPTs. The analysis used undrained shear strength parameters estimated from CPT data for soon-after-construction conditions and to consider the potential for the soft clay foundation to impact the stability of the temporary slope.

6.4.2 RESULTS

The results of the slope stability analyses for lateral spreading during the design seismic event and the temporary slope during construction are summarized below.



Lateral Spreading. Seismic displacement that could be associated with lateral spreading along the banks of San Luis Obispo Creek was estimated using a yield coefficient (k_y) of 0.18. The analysis from SLIDE showed that instability occurring from potential liquefaction of loose sand layers within the profile could extend into or near the plant and is generally constrained by thinning of the upper sand layer encountered in unit Q_{ya2} (see Plate 1) away from the streambank. The estimated horizontal ground displacement for the design earthquake is approximately 4 to 12 inches. The extent of the spreading is dependent on the intensity and duration of the ground motion but was estimated to potentially impact the north end of the existing plant when considering the M6.7 design earthquake. The M6.5 San Simeon Earthquake had ground accelerations 3 to 4 times lower than the design earthquake and would not have been expected to cause yielding or lateral spreading that would impact the site. Potential impacts from lateral spreading could be addressed by soft fixes including emergency response plans for replacing pipes, shut off valves, and temporary bypasses for the plant.

Temporary Slope. The estimated factor of safety for the temporary slope conditions considered was approximately 1.2. The Caltrans (2011) Trenching and Shoring manual suggests a minimum factor of safety of 1.25 when considering the potential for deep-seated slope failures. Slope stability criteria for design of temporary slopes and shoring systems vary in practice and are the responsibility of the contractor per OSHA guidelines. The contractor should submit a shoring and excavation plan for the proposed excavation and or shoring of the embankment along Avila Beach Drive as part of the MBR construction.

7. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on our understanding of the project as currently planned, and for use with the latest approved edition of the California Building Code (2019) and American Water Works Association Standards (2014).

7.1 EARTHWORK – GENERAL

7.1.1 SUGGESTED MATERIAL SPECIFICATIONS

The following specifications are suggested for materials referenced in various sections of this report. “Standard Specifications” refers to the 2018 edition of the *Standard Specifications* published by the California Department of Transportation (Caltrans 2018). Alternative specifications or materials should be reviewed by Yeh before being used on this project. Recommendations for material use are provided in subsequent sections of this report.



Aggregate Base. Aggregate base should consist of imported aggregate that complies with the grading and quality requirements for ¾-inch Class 2 aggregate base per Section 26-1.02B of the Standard Specifications (minimum R-value = 78).

Compacted Fill. Compacted fill material to be placed in foundation areas should consist of on-site soil or similar imported sandy material free of organic, oversize rock (greater than 3 inches), trash, debris, corrosive, and other deleterious materials. Imported fill should have an expansive index less than 20 and at least 70 percent material passing the U.S. Standard No. 4 sieve. Imported fill placed with 3 feet of finished grade below pavement areas shall have an R-value of no less than 40.

Gravel Bedding Aggregate for gravel drains/gravel bedding for stabilization should consist of imported gravel or crushed rock that is free of clay, organics, corrosive material, trash, debris, recycled or reclaimed material, and other deleterious substances. The gravel should have a durability index of at least 40 when tested according to ASTM D3744. The gradation of the gravel should conform to ASTM C-33 Number 4 aggregate (1 ½ inch x ¾ inch). Gravel should be fully encased in geotextile fabric to provide separation.

Geocomposite Drains. Geocomposite drains for use in draining retaining walls should conform to Section 96-1.02C of the Standard Specifications.

Geotextile for Separation (Filter Fabric). Geotextiles for filtration should consist of Class C filter fabric conforming to Section 96-1.02B of the Standard Specifications.

Geotextile for Stabilization. Stabilization geotextile material should consist of woven geosynthetic fabric. Geotextile for stabilization placed below crushed rock, on a soft subgrade or below rock fill should comply with Subgrade Enhancement Geotextile in Section 96-1.02O of the Standard Specifications. Overlaps between adjacent rolls of geotextile should be at least 2-feet wide or be spliced per the manufacturer's recommendations. Geotextile should be placed such that the fabric on the upstream or upslope side of the overlap is on top. Rocks, protrusions, or sharp objects that could potentially damage the geotextile should be removed from the subgrade prior to placing the fabric. Depressions or holes left in the subgrade from the removal of obstructions should be filled with sand. Geotextile should be placed smooth without wrinkles and be secured by anchoring, pinning, placing aggregate, or anchoring in trenches as needed to maintain the integrity and location of the fabric when subsequent aggregates or fill is placed. Placement, anchorage, and construction methods should comply with the manufacturer's recommendations.



Import. Material sources should be approved by the Engineer before being brought to the site. Fill, backfill, and aggregates should comply with all specified material requirements as placed at the site.

Pipe Bedding/Pipe Zone Material. Pipe bedding and pipe zone material should consist of imported sand free of clay, organics, corrosive material, trash, debris, and other deleterious materials. The sand shall have 100 percent material passing the 3/8-inch sieve, no less than 90 percent material passing the U.S. Standard No. Sieve, and no more than 3 percent passing the No. 200 sieve.

Structure Backfill. Imported structural backfill should be non-expansive material having an Expansion Index of less than 20 when tested according to latest approved edition of ASTM D4829 and conform to Section 19-3.02C, "Structure Backfill" of the *Standard Specifications*. Material types include SC, SM, SP, SW per ASTM D2487. Fill and borrow sources should be reviewed and approved by the geotechnical professional before being imported to the site.

Slurry Cement Backfill. Slurry cement backfill can be used as Trench Backfill or as Pipe Zone Material when approved by the Engineer. Slurry cement should consist of 2-sack sand-cement slurry conforming to Section 19-3.02G of the Caltrans Standard Specifications. Aggregate should be imported sand conforming to the gradation and quality requirements of the Standard Specifications. Slurry cement backfill should be a stable flowable mix and shall be consolidated using vibration during placement. Subsequent backfill or compacted material should not be placed above slurry cement backfill until the slurry cement can support foot-traffic without more than ¼-inch indentation. The Contractor should provide ballast or stabilize the pipe as necessary to prevent movement or floating of the pipe during placement.

Trench Backfill. Trench backfill should consist of onsite soil conforming to Compacted Fill or imported sand conforming to Pipe Bedding.

7.1.2 CLEARING AND GRUBBING

Clearing and grubbing should be performed to remove existing vegetation and objectionable material from improvement areas that will be graded, receive fill, or serve as borrow sources. Grubbing should include removing stumps, roots, vines, fencing and buried vegetation within the specified limits. Care should be taken not to injure trees, plants or existing improvements outside of the clearing limits or are designated to remain. Soil containing pavement, debris, organics, unsuitable, loose, or disturbed material should be removed prior to placing fill. Demolition areas should be cleared of old foundations, existing fill, pavement, abandoned utilities, and soil disturbed during clearing and



grubbing. Depressions and excavations left from the removal or demolition of materials should be replaced with compacted fill.

7.1.3 COMPACTION AND GRADING

Table 1 provides a summary of the recommended minimum compaction for various locations where fill will be placed. Relative compaction should be assessed according to the latest approved edition of ASTM Standard Test Method D1557.

Table 1: Recommended Relative Compaction

Location of Fill Placement	Recommended Minimum Relative Compaction
General	90% U.O.N.
Pipe Bedding or Pipe Zone Material	90% U.O.N.
Trench Backfill	90% U.O.N.
Retaining wall backfill	90% U.O.N.
Fill or backfill placed within 3 feet of finished grade in pavement areas	95%
Foundation areas and within 5 feet horizontal of foundations	95%

U.O.N. = unless otherwise noted

7.1.4 FILL PLACEMENT

Jetting or ponding should not be permitted for placement or compaction of fill materials. Fill materials should be moisture conditioned and spread in lifts that are suitable for compaction with the equipment being used. Control of compaction layer thickness, moisture conditioning and selecting the proper size equipment will be necessary to achieve compaction throughout the material being placed. Fill should typically be spread in loose lifts of 8 inches or less, and within 2 percent of the optimum moisture content, to achieve the recommended compaction. The fill may need to be placed in thinner lifts to achieve the recommended compaction depending on the equipment being used.

The moisture content of the material should be such that the specified compaction can be achieved in a firm and stable condition. Each layer should be spread evenly, bladed, and mixed to provide relative uniformity of material within each layer, and be moisture conditioned by adding water or drying the material to provide a moisture content suitable for compaction. Soft or yielding materials should be removed and replaced with properly compacted fill material prior to placing the next layer of fill.

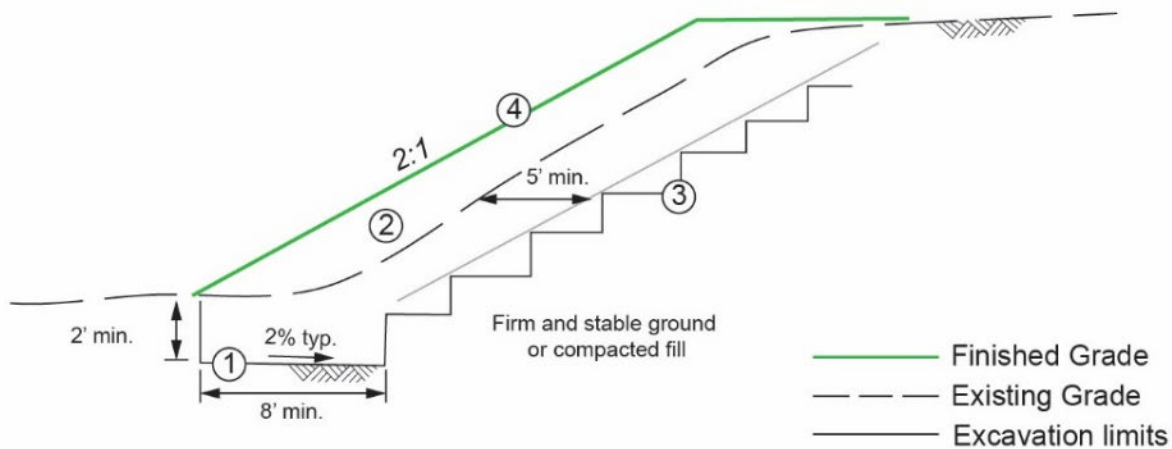
Deleterious materials, such as soft rock particles, concrete or pavement rubble, metal, glass or sharp objects should not be placed within the fill material being placed. Recycled or reused materials should only be used and placed within the fill when specifically permitted by the project specifications.



Rocks should not be nested, and voids should be filled with compacted fill material. Particles greater than half the compacted lift thickness can limit compactive effort. Rocks, cobbles, or other solid particles larger than 3 inches in the greatest dimension should be removed from the fill prior to compaction.

7.1.5 FILL PLACED ON OR AGAINST SLOPES

Fill to be placed against existing fill, natural slopes or on existing ground that is steeper than 20 percent grade should be keyed and benched into the existing slope as shown in Figure 5. The fill should be initiated from a base key that is excavated at the toe of the slope or the recommended depth of removal. The base key should be at least 8 feet wide at least 2 feet deep and sloped at 2 percent into the hillside. The new fill should be keyed into the existing slope such that at least the outer 5 feet of the existing slope is removed. The excavated material can be incorporated into the fill being placed as the keying and benching progresses up the slope.



1. Excavate base key into firm and competent material from toe of the proposed fill.
2. Place compacted fill per recommendations of the report.
3. Key and bench into existing embankment slope such that the outer 5 feet of the existing embankment is removed. Existing fill and excavated soil can be incorporated into the new fill.
4. Overbuild slope and cut back to expose compacted fill at finished grade.

Figure 5: Keying and Benching into Existing Slopes

7.1.6 DESIGN OF GRADED SLOPES

Graded cut and fill slopes should be designed to an inclination of 2h:1v (horizontal to vertical) or flatter. Fill slopes should be constructed by placing compacted fill approximately 2 feet beyond the finished grade and then cutting the slope back to exposed compacted fill at the finished grade. The slope can then be track-walked or prepared for placement of landscaping or planting.

7.1.7 EROSION AND DRAINAGE CONSIDERATIONS

Graded slopes and earthwork will be vulnerable to erosion. Drainage should be provided such that surface water does not run over slopes or pond on pavements, slabs, or adjacent to foundations. Downspouts should be provided to collect roof drainage at the reservoir and direct surface water to drainage pipes or areas away from foundation areas. Concentrated flows and runoff should not be permitted to discharge on slopes. Down drains, solid pipes, or lined ditches should be provided to carry water to the base of the slope. Energy dissipation and erosion control devices should be provided at the outlet of drainpipes and in areas of concentrated runoff to reduce the potential for erosion. Landscaping and maintenance of graded areas and slopes should be provided to assist the establishment of vegetation and repair areas where erosion may occur.

7.1.8 REUSE OF EXCAVATED ONSITE MATERIAL

The excavation for the building area, utilities or pipeline construction will likely encounter artificial fill and alluvium deposits consisting silty to clayey sand and sandy clay with varying amounts of silt (SC, CL, SM, SP-SM). Soil removed from these excavations that is free of organics or other deleterious material and properly moisture conditioned should be suitable for reuse as compacted fill placed below the MBR and as trench backfill. Select fill material needed for construction will include structure backfill, pipe bedding and pipe zone material. The excavated onsite soil should not be considered suitable for reuse as select material, such as pipe bedding, pipe zone material, structure (retaining wall) backfill, or aggregate base.

7.2 SEISMIC DATA

Structures should be designed to resist the lateral forces generated by earthquake shaking in accordance with the building code and standard design practice. Seismic data presented in Table 2 can be used for the design of structures with the building code and American Society of Civil Engineers (ASCE) 7-10. The seismic data were estimated for the site coordinates and using the United States Geological Survey (USGS) and SEAOC Seismic Design Maps (USGS 2019a) for ASCE Risk Category III. The analysis assumed a Site Class E for a site underlain with more than 10 feet of soft clay. The USGS Unified Hazard Deaggregation Tool (USGS 2019b) was then used to estimate the mean magnitude and peak ground acceleration for the design earthquake that has a 2 percent probability of occurrence in 50 years.

Table 2: Seismic Data

Seismic Parameter	Value
Latitude, Degrees	35.1821



Seismic Parameter	Value
Longitude, Degrees	-120.7332
PGA_M , Peak ground acceleration	0.52g
Design Earthquake Magnitude	6.7
S_s , Seismic Factor, Site Class B at 0.2 second	1.341g
S_1 , Seismic Factor, Site Class B at 1 second	0.485g
Site Class	S_E , Soft Soil
F_{a_r} , Site Coefficient for Site Class	0.9
F_{v_r} , Site Coefficient for Site Class	2.4
S_{MS} , Site-modified spectral acceleration for Site Class D at 0.2 seconds	1.207
S_{M1} , Site-modified spectral acceleration for Site Class D at 1 seconds	1.164
$S_{DS} = 2/3 S_{MS}$	0.804g
$S_{D1} = 2/3 S_{M1}$	0.776g
Long-Period Transition Period, T_L , seconds	8

Liquefaction, lateral spread, and tsunami hazards were discussed in Section 6 of this report. The ground motions parameters provide for Type E soil are considered suitable for the site considering the soil profile and liquefaction potential. Lateral spreading along San Luis Obispo Creek could impact the site considering the design earthquake; however, is limited by thinning of the potentially liquefiable sand layers encountered near the proposed MBR.

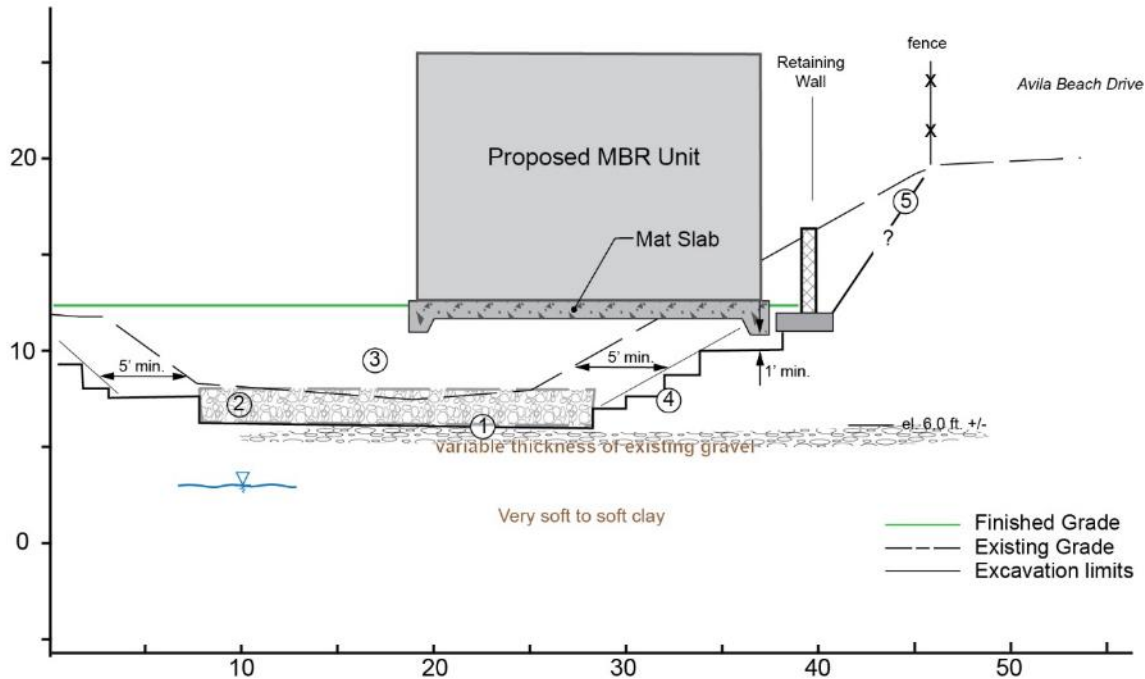
7.3 MBR FOUNDATION DESIGN

7.3.1 SITE PREPARATION AND GRADING

The new membrane bioreactor will be a containerized unit erected on a concrete foundation partially located over the existing sludge pit with the remainder extending into the existing roadway embankment slope between Avila Beach Drive and the pit. Site preparation and grading is recommended to provide a relatively uniform thickness of fill below the MBR, and to stabilize the



potentially wet subgrade soil prior to placement of compacted fill. Figures 6 and 7 summarize the recommended grading for the new MBR.



1. Remove existing soil to approximately el. 6.0 feet
2. Place a 2-foot thickness of 1.5-inch crushed rock encased in a filter fabric for stabilization over the undisturbed subgrade.
3. Place compacted fill to finished grades and key and bench into side slopes of sludge pit.
4. Extend the excavation as-needed to remove at least the outer 5 feet of the existing slopes.
5. Temporary slope by contractor.

Figure 6 : Site Grading – Cross Section

The excavation for the MBR should be performed such that construction equipment will not operate on the exposed subgrade as it will likely be soft and unstable under equipment loads. Soil should be removed to a uniform elevation of 6 feet, 2 feet below the bottom of the existing sludge pit, or to the top of the gravel layer if it is found to be uniform across the grading area, whichever is deeper. The removal should then be stepped up the sides of the pit such that the outer 5 feet of soil is removed. The horizontal extents of the excavation should extend a minimum of 5 feet beyond the MBR foundation footprint except for the side adjacent to Avila Beach Drive. The excavation along this side should horizontally encompass the foundation footprint of the MBR and extend to a depth of 1-foot below the bottom of the foundation. The geotechnical professional should review the subgrade conditions encountered at the time of construction to evaluate if stabilization of the subgrade is needed, and to recommend the depth and limits of the subexcavation and stabilization.

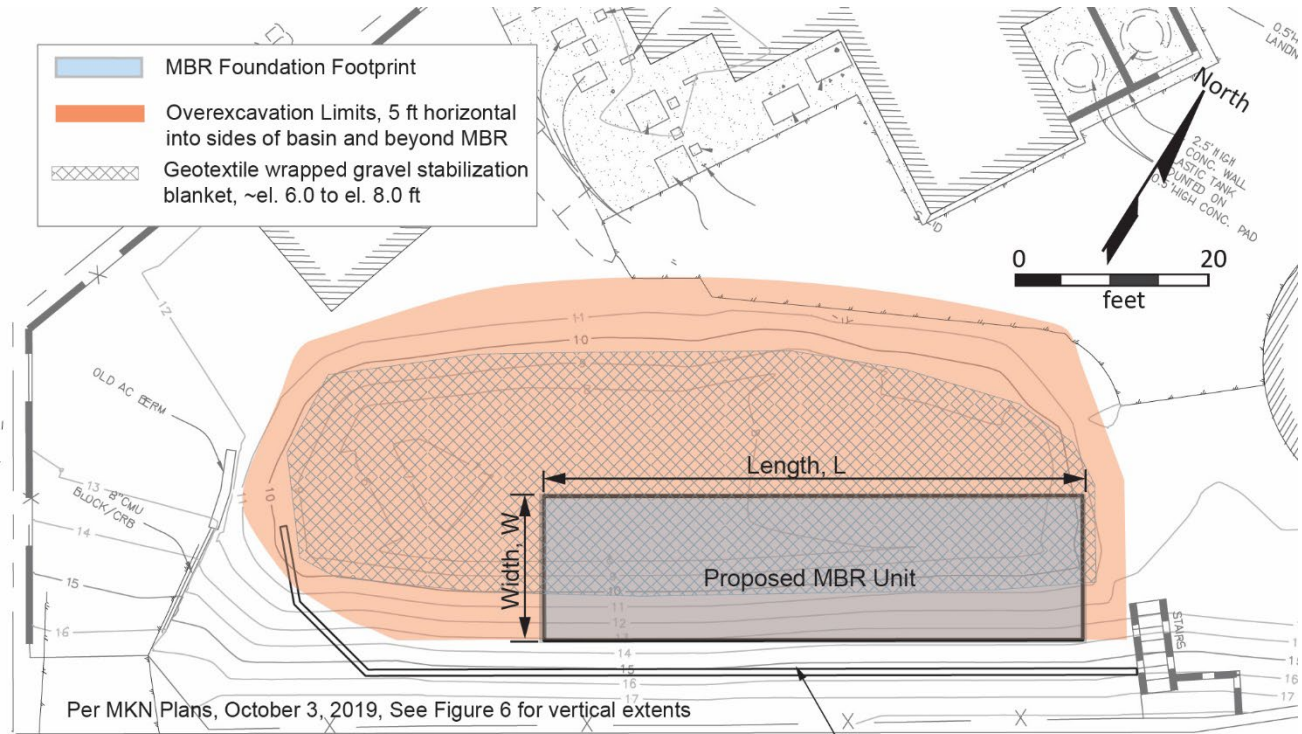


Figure 7: Site Grading – Plan View

A Geotextile for Stabilization should be placed over the subgrade in the bottom of the sludge pit following overexcavation. The geotextile should be placed without gaps or wrinkles. Gravel Bedding for stabilization should comply with the material specifications provided in Section 7.1.1 of this report. The Gravel Bedding should be fully encased in the Geotextile for Stabilization to reduce the potential for the overlying in-situ material, Compacted Fill, Pipe Zone Material, or Trench Backfill to erode into the Gravel Bedding. The bottom of the excavations beyond the stabilized area should then be scarified to a depth of at least 9 inches, moisture conditioned, and compacted in-place to at least 95 percent relative compaction. Compacted Fill should then be placed over the stabilized subgrade and beyond to finish grade according to the fill placement recommendations of this report. A 4-inch layer of aggregate base should be provided over the compacted fill and underneath the slab for the MBR to provide a working mat for construction.

The geotechnical professional should review the bottom of the excavations prior to placing fill to evaluate whether the subgrade is suitable for fill placement, or to provide additional recommendations. Additional subgrade stabilization should be provided in areas where unsuitable materials or soft subgrade conditions are encountered that will not allow for proper compaction of the subgrade materials, or where subgrades consist of organic or other deleterious materials that will not provide suitable foundation support for new pavement areas. Subgrade stabilization can consist of removing the existing soil to a depth at least 1-foot below the bottom of the excavation or bottom of

the unsuitable material, whichever is deeper. If the subgrade is wet or yielding, subexcavation should be performed using backhoe type equipment such that construction equipment will not operate on the exposed subgrade during excavation.

7.3.2 MAT FOUNDATION DESIGN

The slab for the MBR can be designed as a mat foundation. The mat foundation can be designed using a modulus of subgrade reaction of 8 pounds per cubic inch. The modulus of subgrade reaction was estimated from the settlement analysis and estimated dimensions and a range of uniform distribution loading of the MBR foundation and recommended grading. The analyses varied the foundation contact pressures below the mat to limit the estimated total static settlement to 1-inch or less. Table 3 summarizes the allowable contact pressures for the proposed MBR unit and widths of the mat foundation. The structural engineer should review the proposed configuration of the MBR support and design the foundation such that concentrated loading does not occur and that the load of the MBR is uniformly distributed atop the mat and transferred to the soil below. The contact pressure below the mat foundation should not exceed the allowable bearing pressures summarized in Table 3. The recommended modulus and bearing pressures can be increased by 1/3 when considering seismic or other transient loading conditions. Linear interpolation of foundation widths and allowable bearing pressures can be used to calculate values in between those stated in the table. The geotechnical engineer should be contacted if concentrated loading is proposed or the foundation configurations are different than those noted.

Table 3: Mat Foundation Design

Mat Foundation Width, W (ft) ¹	Maximum Allowable Bearing Pressure, psf
10	750
15	550
20	425
1. Foundation lengths assumed to vary from 50 to 85 feet	

7.3.3 SETTLEMENT

The MBR foundation should be designed to tolerate settlement and differential movement associated with static and seismic conditions. The foundation and MBR structure should be designed to tolerate up to 1 inch of total settlement and 0.5 inches of differential settlement in 30 feet along the foundation. The subsurface conditions encountered are considered vulnerable to liquefaction and seismic settlement. The estimated seismic settlement of the MBR associated with liquefaction is approximately 2 inches total. The MBR foundation design should consider that the estimated total settlement could be 2 inches, and that at least ½ of the estimated total settlement could



occur differentially along the foundation. Flexible utility connections should be incorporated into the design of the project to allow for the estimated movement.

7.3.4 LATERAL RESISTANCE

Resistance to lateral loading can be provided by sliding friction acting on the base of the spread footing or mat foundations combined with passive pressure acting on the sides of the foundations. A coefficient of friction of 0.4 should be used to estimate the sliding resistance along the bottom of foundation bearing in compacted fill. A net passive resistance of 380 pounds per cubic foot, equivalent fluid weight, should be used to estimate the lateral resistance acting on the sides of the footings. A 1/3 increase in the passive value can be used when considering short term wind or seismic loads. Passive resistance should not be used for the upper one foot of soil that is not constrained at the ground surface by slab-on-grade or pavement.

7.4 RETAINING WALL DESIGN

7.4.1 SPREAD FOOTING FOUNDATION

The retaining wall can be supported on a spread footing foundation bearing in compacted fill prepared according to the site preparation and grading recommendations for the MBR or on undisturbed existing fill material at the proposed retaining wall location. The wall footing should be at least 1.5 feet wide and be embedded to least 1.5 feet below adjacent grade in front of the wall. The retaining wall footing can be designed using a maximum allowable bearing pressure of 2,500 pounds per square foot.

The toe pressure below retaining wall footings or edge pressure below eccentrically loaded footings, can exceed the recommended bearing pressure provided the resultant force acts within the middle third of the footing and the average pressure on the footing does not exceed the maximum allowable. The recommended allowable bearing pressure can be increased by 1/3 when considering seismic or other transient loading conditions.

7.4.2 SETTLEMENT

The retaining wall footing should be designed to tolerate settlement and differential movement associated with static and seismic conditions similar to those described for the MBR; see Section 7.3.3.

7.4.3 LATERAL RESISTANCE ON FOOTINGS

Resistance to lateral loading for retaining wall footings would be similar to those for the MBR foundation; see Section 7.3.4.

7.4.4 LATERAL EARTH PRESSURES

The retaining wall should be designed to resist lateral earth pressures. The proposed retaining wall will likely be a cantilever wall that is considered free to rotate or move within allowable building code



tolerances and can be designed using active earth pressures. The existing slope behind the wall slopes at approximately 1.5h:1v above the proposed retaining wall location. Retaining wall backfill material should consist of free-draining structure backfill materials compacted to at least 90 percent relative compaction and complying to the suggested material specifications of this report. Table 4 provides equivalent fluid weights that can be used to estimate the lateral earth pressure acting on the wall for level backslope and sloping backslope conditions.

Table 4: Recommended Lateral Earth Pressures

Earth Pressure Condition	Level Backslope	1.5h:1v Backslope
Active with drained backfill	35 pcf	68 pcf

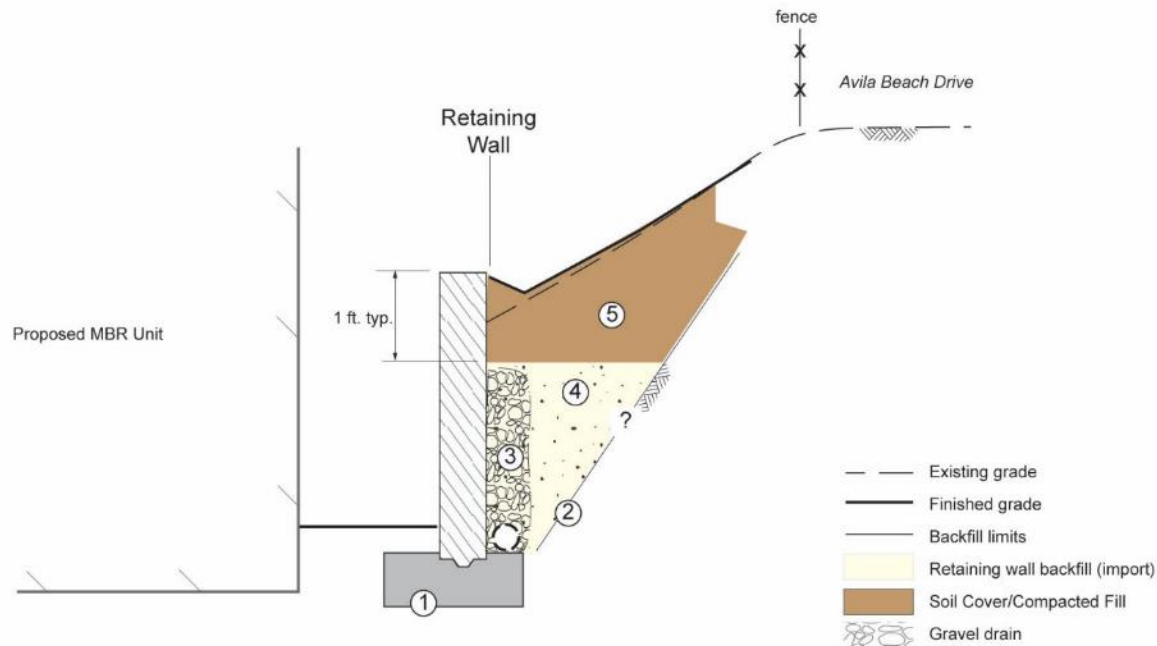
The tabulated values are based on a soil unit weight of 125 pounds per cubic foot (pcf) and an effective friction angle of 35 degrees. The traffic surcharge along Avila Beach Drive is beyond the active zone of loading influence that would be expected to act on the retaining wall (location shown in Figure 2) and therefore was not included in the lateral earth pressures stated in Table 4. The wall will be 6 feet or shorter and does not need to be designed for dynamic soil pressures per the California Building Code. Yeh should be contacted for additional recommendations if surcharges or other loading conditions need to be considered that could influence the lateral pressure on the wall.

7.4.5 WALL DRAINAGE AND BACKFILL

Figure 8 provides a typical detail showing the recommended wall drainage and backfill for the retaining wall. Drainage should be provided behind the wall to reduce the potential for water to accumulate within the backfill. The wall should be backfilled with free-draining retaining wall backfill material complying to the recommendations of this report. The back face of the wall should be covered with an appropriate sealant to reduce the potential for moisture to migrate through the wall. A at least 1-foot thick gravel drain consisting of Gravel Bedding encased in Filter Fabric should be placed immediately behind the wall and extend vertical to 1 foot below finished grade at the top of the wall. A Geocomposite Drainage Panel can be used in lieu of the gravel drain, if desired. Fill and backfill placed above the gravel drain or drainage panel can consist of compacted fill, preferably the native soil



removed from the wall excavation to reduce the potential for surface water to infiltrate behind the wall. The compacted fill should be placed to conform to adjacent grades above and beyond the wall.



1. Retaining wall footing to bear on compacted or undisturbed existing fill
2. Temporary slope by contractor
3. Place 1-foot wide gravel drain connected to collector pipe or weep holes
4. Place Retaining Wall Backfill between wall and temporary slope to 1 foot below top of wall
5. Place compacted (native) fill to finished grades per recommendations of this report

Figure 8: Typical Retaining Wall Backfill

A collector pipe should be placed near the bottom of the backfill and connected to an outlet pipe or weep holes. A typical retaining wall detail is shown in Figure 8. The drain should consist of a Geocomposite Drainage Panel or a 1 cubic foot of gravel placed around the collector pipe, and/or as continuation of the gravel drain to the base of the wall. Weep holes can consist of leaving a ½-inch wide gap in the head joint of the masonry wall. The open joint for the weep hole should be backed with a No. 4 galvanized wire mesh and approximately 1 cubic foot of gravel encased in a filter fabric or sack.

7.5 UTILITY TRENCHES AND PIPELINE DESIGN

A typical trench detail showing the cross-sectional limits of the Pipe Bedding or Gravel Bedding, Pipe Zone Material, and Trench Backfill are provided in Figure 9. The detail may be augmented per the Design Engineer. Material recommendations for Pipe Bedding or Gravel bedding, Pipe Zone Material, and Trench Backfill are described in Section 7.1.1 of this report. The site is prone to seismic settlement as a result of liquefaction. Flexible couplings and fitting should be used in the design to accommodate

up to approximately 4 inches of total movement (2 inches in opposite directions) due to settlement from the design earthquake.

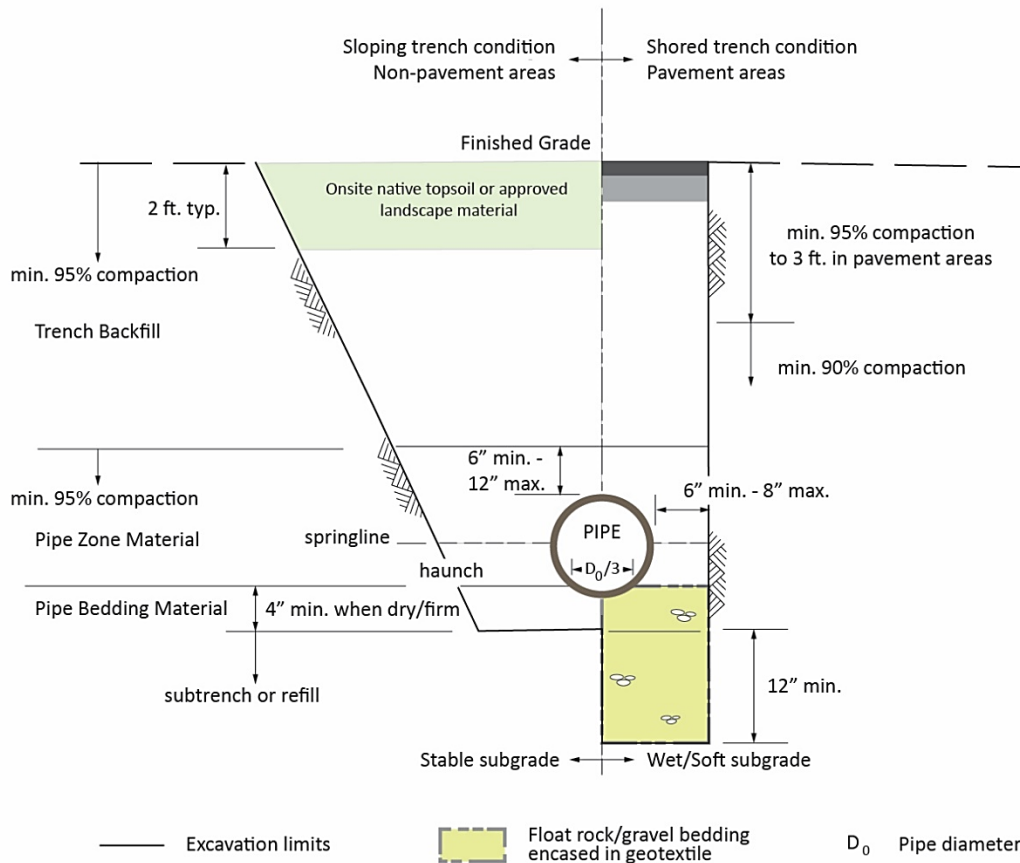


Figure 9: Typical Trench Detail

7.5.1 FOUNDATION SUPPORT

The trench design should consider that trenches deeper than about 4 feet could encounter relatively soft and wet foundation soil. Prior to placing pipe bedding material, the foundation support soil exposed at the trench subgrade should be reviewed by the geotechnical professional. Stabilization of the subgrade should be provided prior to placing the pipe if the trench subgrade is soft or yielding. Yeh recommends that the trench design assume that the pipe will be bedded in at least 12 inches of Gravel Bedding encased in a geotextile for stabilization. If the foundation support soil is firm and unyielding the gravel can be replaced with sand bedding at the discretion of the Design Engineer. Pipe Bedding should be placed directly on the undisturbed subgrade at the bottom of the trench.

7.5.2 PIPE BEDDING

Pipe Bedding is initial backfill placed between the trench subgrade and the bottom of the pipe. The bedding can consist of 4 inches of Pipe Bedding placed on an undisturbed soil at the bottom of the



trench if the foundation soil is firm and unyielding. The pipe should be placed on the bedding such that the middle third of the pipe is in contact with the bedding prior to placing initial backfill within the pipe zone ($D_o/3$ as shown on Figure 9). The bedding may be loosened along the invert of the pipe if necessary, to help form the cradle. Pipe Bedding should be compacted to at least 90 relative compaction. If the bottom of the trench is soft and yielding, pipe bedding should consist of 4 inches of Pipe Bedding sand underlain by 12 inches of Gravel Bedding encased in a filter fabric as shown in Figure 9.

7.5.3 PIPE ZONE MATERIAL

Pipe Zone Material is material placed between the top of the Pipe Bedding to at least 6 inches (or maximum of 12 inches) above the crown of the pipe. Compaction within the pipe zone should be performed such that the pipe is fully supported during compaction and that excessive deformation or damage to the pipe does not occur and the pipe is not moved off its alignment. Pipe Zone Material should be placed simultaneously on either side of the pipe to help support the pipe during placement and compaction. Pipe Zone Material should not be placed above the springline until the Pipe Zone Material below the springline has been placed and compacted to properly support the haunches. The Pipe Zone Material should be compacted to at least 90 percent relative compaction prior to placing subsequent Trench Backfill.

7.5.4 TRENCH BACKFILL

Trench Backfill is material placed in the trench from the top of the pipe zone to finished grade. Trench backfill should consist of native or imported compacted fill material conforming to the recommendations described in Section 7.1.1 of this report. Material placed in trenches outside of building areas should be compacted to at least 95 percent relative compaction unless a higher degree of compaction is otherwise recommended.

8. CONSTRUCTION CONSIDERATIONS

8.1 GROUNDWATER CONSIDERATIONS

Groundwater conditions are discussed in Section 5.2 of this report. Groundwater was encountered at depths of approximately 10 feet (near elevation 1 foot) during the August 2019 CPT program. Soft and wet soil conditions were encountered in a hand excavation in the bottom of the existing sludge pit. Groundwater has been encountered at depth of 1.5 to 4 feet below the existing ground surface in previous borings drilled at the site.

Surface water or runoff that may enter the excavation during periods of rainfall should be removed prior to placing concrete. If needed, dewatering systems should be designed by a qualified engineer or hydrogeologist registered with the State of California. Sumps, well screens, and dewatering pits should



be properly filtered such that fines and the surrounding soils are not removed or disturbed by dewatering.

8.2 TEMPORARY EXCAVATIONS

Temporary slopes should be braced or sloped according to the requirements of (Cal) OSHA. The design of temporary slopes or shoring systems needed for construction is the responsibility of the contractor. As input to design, the existing fill encountered above the bottom of the sludge pit generally consisted of stiff clay and clayey sand that which is classified as Type B soil by OSHA. The soil encountered below the sludge pit is generally soft to medium stiff clay, which is classified as Type C soil by OSHA. Slopes should be inclined at 1h:1v (horizontal to vertical) and 1.5h:1v for Type B and C soils, respectively. Slopes or shoring systems exceeding 20 feet in height are not addressed by OSHA and should be designed by a qualified professional engineer registered with the State of California.

Yeh analyzed a temporary cut slope based on several assumptions including slope angle, width of excavation, and time of year (see Section 6.4). These assumptions for the temporary slope could change depending on the contractor's approach to the project. Yeh recommends that the contractor submit an excavation and shoring plan for the project for review by the geotechnical professional prior to beginning earthwork at the site. The plan should consider the relatively complex subsurface conditions, soft soil and shallow groundwater, adjacent structures, as well as the proximity of excavations near Avila Beach Drive and utilities. The plan should include slope stability analyses, earth pressures, and monitoring plans for temporary excavation and shoring systems to support the proposed temporary excavation plan.

8.3 ADJACENT STRUCTURES

Trenching to install utilities or pipelines could intersect or be parallel to existing utilities, pipelines and associated trench backfill, or be adjacent to existing structures. Bedding, shading, and possibly trench backfill of utilities or pipelines are likely composed of sandy soil that could become unstable or collapse into an adjacent excavation for this project. This could lead to lack of support for active utilities, pipelines, or structures and possibly damage existing infrastructure. Design of the shoring systems should consider adjacent structures and utilities or pipelines as well as loading of shoring systems. The contractor should submit an excavation plan for review by the geotechnical professional prior to beginning the excavation. The excavation plan should include shoring types, implementation, and response/contingency plans for addressing adjacent utility or pipeline trenches and/or infrastructure.

8.4 SUBGRADE EVALUATION

The geotechnical professional should observe the bottom of excavations to evaluate if the exposed subgrade is suitable for fill placement. The project specifications should provide for review of the



subgrade by the geotechnical professional, and for variations in the depth of excavation, if needed, to remove additional loose soil, undocumented fill, or unsuitable material.

8.5 GRADING OBSERVATION

A geotechnical professional should observe grading operations during construction on behalf of the owner to have reasonable certainty that fill placement and compaction is being performed according to the recommendations of this report. Field density testing should be performed to help evaluate the compaction and moisture content of the materials being placed. Fill and aggregates delivered to the site and excavated onsite soil that will be reused as fill or backfill should be sampled and tested for conformance with gradation and quality requirements for the project or submittals reviewed for conformance. The frequency and locations of the tests should be at the discretion of the geotechnical professional. The project specifications should include provisions for the contractor to allow for testing and to provide any shoring, ingress-egress, or traffic control needed to safely perform the testing at the locations and depths needed.

9. LIMITATIONS

This study has been conducted in general accordance with currently accepted geotechnical practices in this area for use by the client for design purposes. The conclusions and recommendations submitted in this report are based upon the data obtained from field reconnaissance, subsurface exploration, 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.

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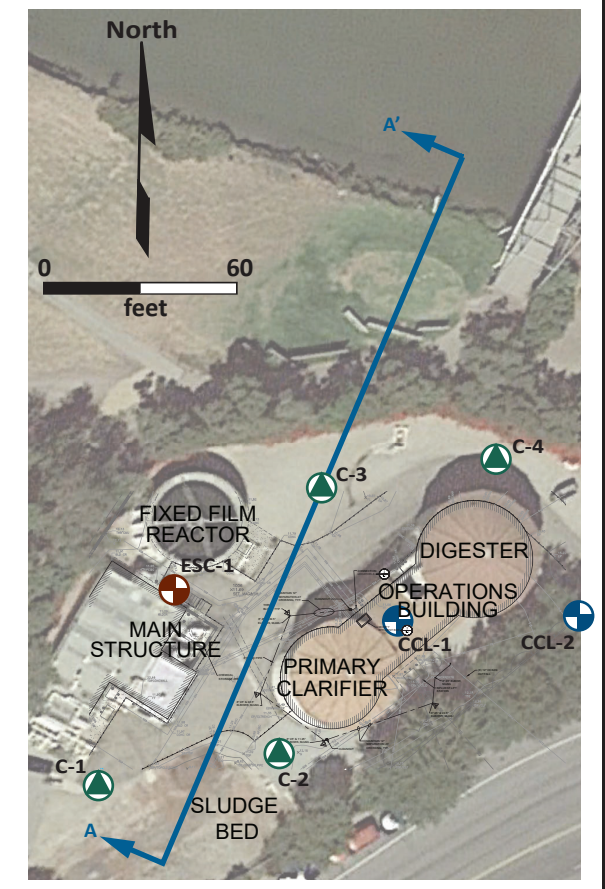
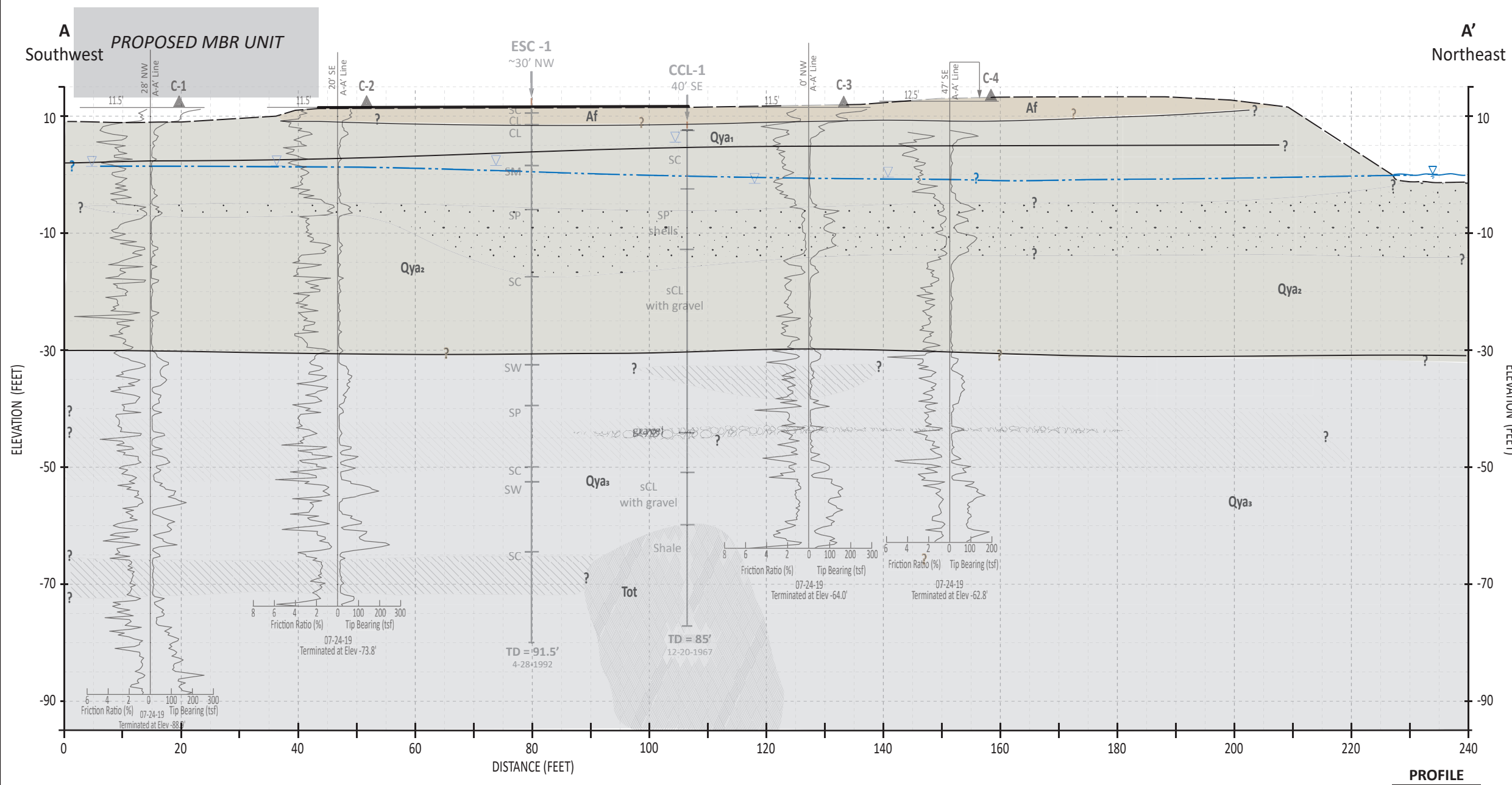
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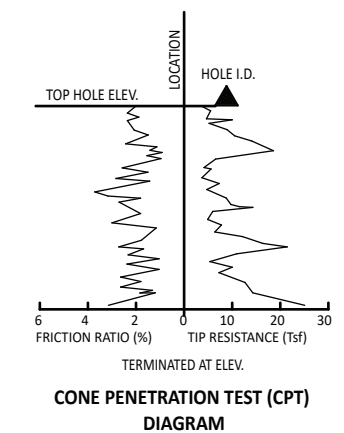
LEGEND:

- Af Artificial Fill:** SAND and silty SAND
- Qya Younger Alluvium:**
 1. Medium stiff to stiff CLAY with interbeds of sand and clayey sand
 2. Soft to medium CLAY with interbeds of sand and clayey sand
 3. Interbedded medium to stiff CLAY and medium to dense SAND with varying amounts of silt, sand, clay and gravel
- Tot Obispo Formation:** Clay SHALE

- Interbeds of GRAVEL with varying amounts of SILT
- Interbeds of SAND with varying amounts of SILT
- Interbeds of CLAY
- Shale bedrock
- Cross section location

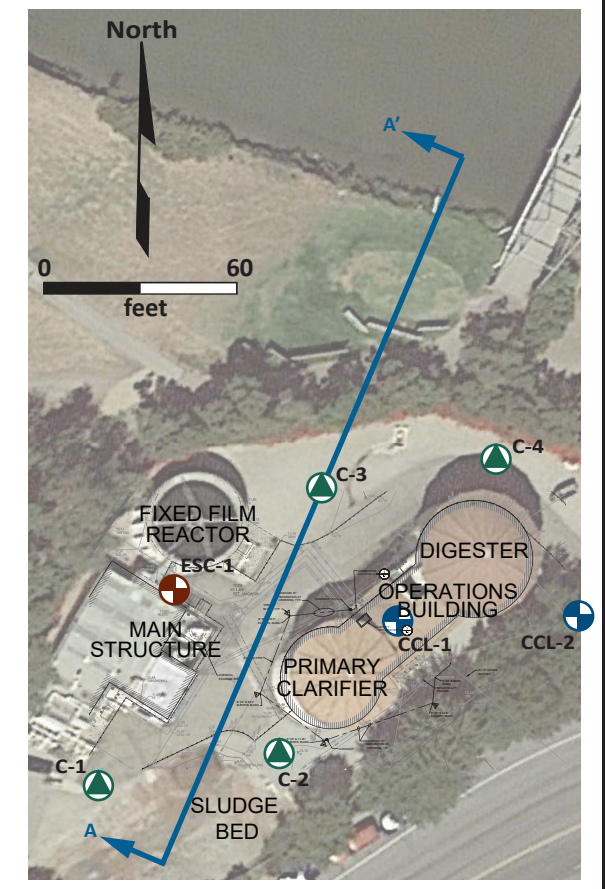
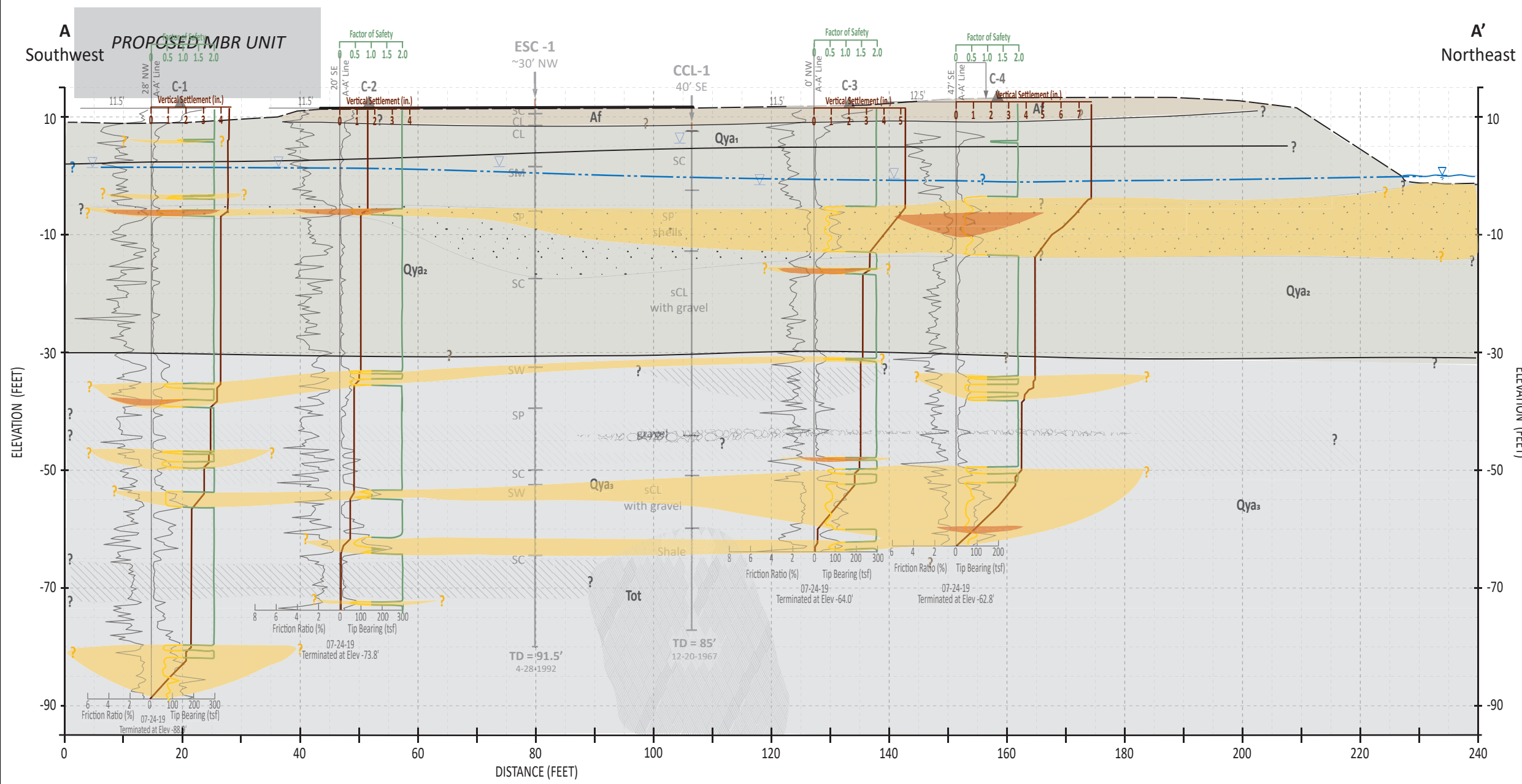
- Geologic contact, queried where uncertain
- Interpreted groundwater surface during cone penetration testing, queried where uncertain
- Groundwater level encountered during cone penetration testing
- No. Cone penetration test (CPT) location (Yeh and Associates, 2019)
- No. Hollow stem auger boring location (Earth Systems Consultants, 1992)
- No. Test hole location (Central Coast Laboratories, 1967)

PROFILE
 1 in. = 20 ft. vertical
 1 in. = 20 ft. horizontal



See text and logs of exploration for description of subsurface conditions. All boundaries and locations are approximate.

Yeh and Associates, Inc. Geotechnical • Geological • Construction Services	
INTERPRETED SUBSURFACE PROFILE	
PROJECT NAME: AVILA BEACH COMMUNITY SERVICES DISTRICT WWTP UPGRADE Avila Beach, CA	PLATE 1
PROJECT NUMBER: 219-201	REVISION DATE: 10.14.2019



- LEGEND:**
- Af Artificial Fill:** SAND and silty SAND
 - Qya Younger Alluvium:**
 1. Medium stiff to stiff CLAY with interbeds of sand and clayey sand
 2. Soft to medium CLAY with interbeds of sand and clayey sand
 3. Interbedded medium to stiff CLAY and medium to dense SAND with varying amounts of silt, sand, clay and gravel
 - Tot Obispo Formation:** Clay SHALE

- Interbeds of GRAVEL with varying amounts of SILT
- Interbeds of SAND with varying amounts of SILT
- Interbeds of CLAY
- Shale bedrock

- Potentially liquefiable soil layers due to design earthquake (M6.7, 0.51g)
- Potentially liquefiable soil layers due to 2003 San Simeon earthquake (M6.5, 0.15g)

See Plate 1 for Plan Legend

PROFILE
 1 in. = 20 ft. vertical
 1 in. = 20 ft. horizontal

See text and logs of exploration for description of subsurface conditions.
 All boundaries and locations are approximate.

Yeh and Associates, Inc. Geotechnical • Geological • Construction Services	
LIQUIFIED SUBSURFACE PROFILE	
PROJECT NAME: AVILA BEACH COMMUNITY SERVICES DISTRICT WWTP UPGRADE Avila Beach, CA	PLATE 2
PROJECT NUMBER: 219-201	REVISION DATE: 10.14.2019

APPENDIX A - CONE PENETRATION TESTS



GREGG DRILLING, LLC.
 GEOTECHNICAL AND ENVIRONMENTAL INVESTIGATION SERVICES

7/25/19

Yeh & Associates, Inc.
 Attn: Jon Blanchard

Subject: CPT Site Investigation
 Avila Beach CSD WWTF Improvements
 Avila Beach, California
 GREGG Project Number: 190588SH

Dear Mr. Blanchard:

The following report presents the results of GREGG Drilling Cone Penetration Test investigation for the above referenced site. The following testing services were performed:

1	Cone Penetration Tests	(CPTU)	<input checked="" type="checkbox"/>
2	Pore Pressure Dissipation Tests	(PPD)	<input checked="" type="checkbox"/>
3	Seismic Cone Penetration Tests	(SCPTU)	<input type="checkbox"/>
4	UVOST Laser Induced Fluorescence	(UVOST)	<input type="checkbox"/>
5	Groundwater Sampling	(GWS)	<input type="checkbox"/>
6	Soil Sampling	(SS)	<input type="checkbox"/>
7	Vapor Sampling	(VS)	<input type="checkbox"/>
8	Pressuremeter Testing	(PMT)	<input type="checkbox"/>
9	Vane Shear Testing	(VST)	<input type="checkbox"/>
10	Dilatometer Testing	(DMT)	<input type="checkbox"/>

A list of reference papers providing additional background on the specific tests conducted is provided in the bibliography following the text of the report. If you would like a copy of any of these publications or should you have any questions or comments regarding the contents of this report, please do not hesitate to contact me at 714-863-0988.

Sincerely,
 GREGG Drilling, LLC.

Frank Stolfi
 HRSC Division Manager, Gregg Drilling, LLC.



Cone Penetration Test Sounding Summary

-Table 1-

CPT Sounding Identification	Date	Termination Depth (feet)	Depth of Groundwater Samples (feet)	Depth of Soil Samples (feet)	Depth of Pore Pressure Dissipation Tests (feet)
C-1	7/24/2019	100.39	-	-	67.2
C-2	7/24/2019	85.3	-	-	75.2
C-3	7/24/2019	75.46	-	-	19.0
C-4	7/24/2019	75.3	-	-	-



Cone Penetration Test Coordinates

-Table 2-

CPT Sounding Identification	Date	Lat or Northing	Long or Easting	Elevation (Feet)
C-1	7/24/2019	35.18199	-120.73331	UNKNOWN
C-2	7/24/2019	35.18229	-120.733016	UNKNOWN
C-3	7/24/2019	35.18211	-118.73297	UNKNOWN
C-4	7/24/2019	35.18241	-120.732717	UNKNOWN



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Consolidation Parameters in Soils from Piezocone Tests", Canadian Geotechnical Journal, Vol. 29, No. 4,
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Copies of ASTM Standards are available through www.astm.org

Cone Penetration Testing Procedure (CPT)

Gregg Drilling carries out all Cone Penetration Tests (CPT) using an integrated electronic cone system, *Figure CPT*.

The cone takes measurements of tip resistance (q_c), sleeve resistance (f_s), and penetration pore water pressure (u_2). Measurements are taken at either 2.5 or 5 cm intervals during penetration to provide a nearly continuous profile. CPT data reduction and basic interpretation is performed in real time facilitating on-site decision making. The CPT parameters are stored electronically for further analysis and reference. All CPT soundings are performed in accordance with revised ASTM standards (D 5778-12).

The 5mm thick porous plastic filter element is located directly behind the cone tip in the u_2 location. A new saturated filter element is used on each sounding to measure both penetration pore pressures as well as measurements during a dissipation test (PPDT). Prior to each test, the filter element is fully saturated with oil under vacuum pressure to improve accuracy.

When the sounding is completed, the test hole is backfilled according to client specifications. If grouting is used, the procedure generally consists of pushing a hollow tremie pipe with a “knock out” plug to the termination depth of the CPT hole. Grout is then pumped under pressure as the tremie pipe is pulled from the hole. Disruption or further contamination to the site is therefore minimized.

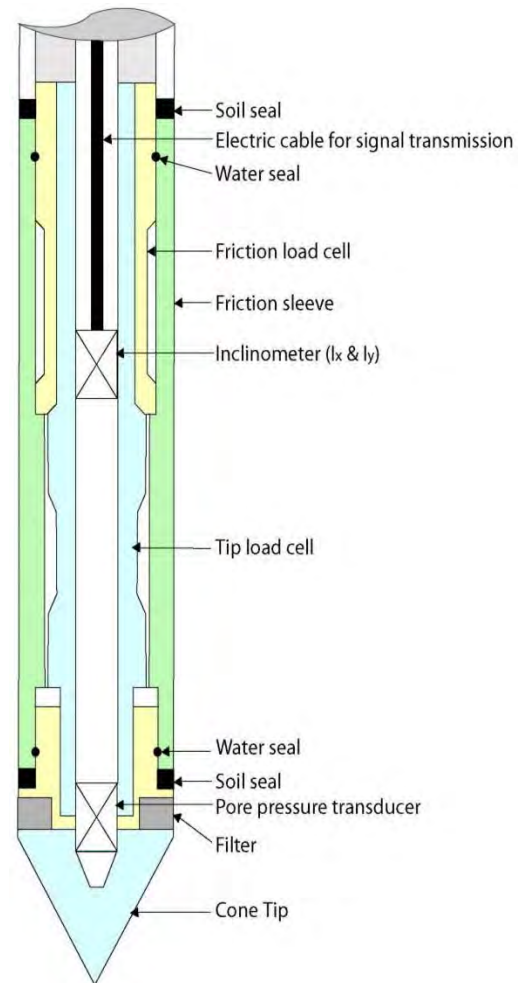


Figure CPT

Gregg 15cm² Standard Cone Specifications

Dimensions	
Cone base area	15 cm ²
Sleeve surface area	225 cm ²
Cone net area ratio	0.85
Specifications	
Cone load cell	
Full scale range	180 kN (20 tons)
Overload capacity	150%
Full scale tip stress	120 MPa (1,200 tsf)
Repeatability	120 kPa (1.2 tsf)
Sleeve load cell	
Full scale range	31 kN (3.5 tons)
Overload capacity	150%
Full scale sleeve stress	1,400 kPa (15 tsf)
Repeatability	1.4 kPa (0.015 tsf)
Pore pressure transducer	
Full scale range	7,000 kPa (1,000 psi)
Overload capacity	150%
Repeatability	7 kPa (1 psi)

Note: The repeatability on site will depend somewhat on ground conditions, abrasion, maintenance and zero load stability.

Cone Penetration Test Data & Interpretation

The Cone Penetration Test (CPT) data collected are presented in graphical and electronic form in the report. The plots include interpreted Soil Behavior Type (SBT) based on the charts described by Robertson (2009 & 2010). Typical plots display SBT based on the non-normalized charts of Robertson (2010). For CPT soundings deeper than 30m, we recommend the use of the normalized charts of Robertson (2009) which can be displayed as SBTn, upon request. The report can also include spreadsheet output of computer calculations of basic interpretation in terms of SBT and SBTn and various geotechnical parameters using current published correlations based on the comprehensive review by Lunne, Robertson and Powell (1997), as well as recent updates by Robertson and Cabal (Guide to Cone Penetration Testing, 2015). The interpretations are presented only as a guide for geotechnical use and should be carefully reviewed. Gregg Drilling does not warranty the correctness or the applicability of any of the geotechnical parameters interpreted by the software and does not assume any liability for use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used in the software. Some interpretation methods require input of the groundwater level to calculate vertical effective stress. An estimate of the in-situ groundwater level has been made based on field observations and/or CPT results, but should be verified by the user.

A summary of locations and depths is available in Table 1. Note that all penetration depths referenced in the data are with respect to the existing ground surface. Note that it is not always possible to clearly identify a soil type based solely on q_t , f_s , and u_2 . In these situations, experience, judgment, and an assessment of the pore pressure dissipation data should be used to infer the correct soil behavior type.

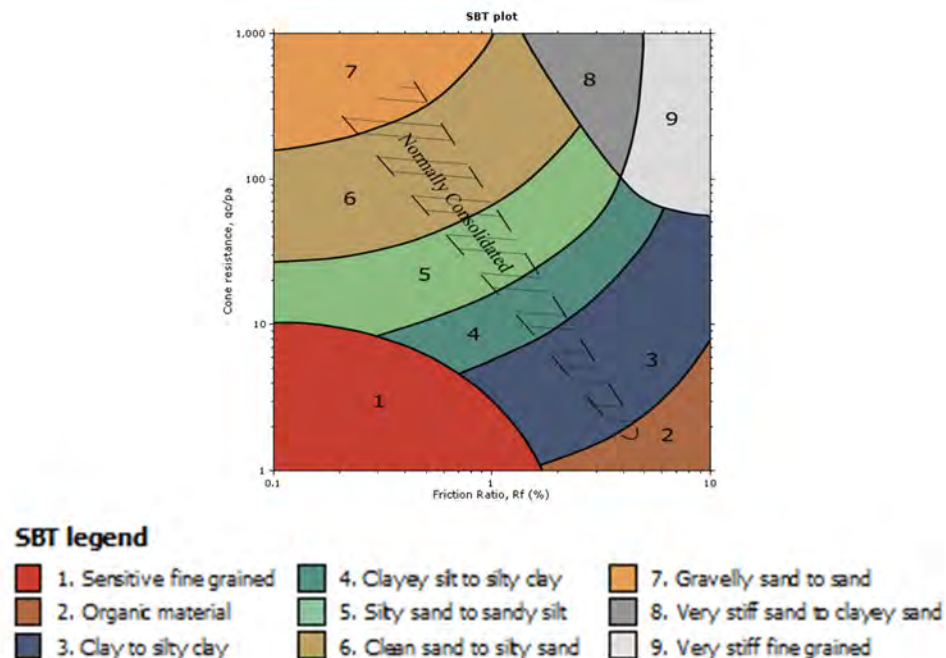


Figure SBT (After Robertson, 2010) – Note: Colors may vary slightly compared to plots

Cone Penetration Test (CPT) Interpretation

Gregg uses a commercial CPT interpretation and plotting software (CPeT-IT <https://geologismiki.gr/products/cpet-it/>). The software takes the CPT data and performs basic interpretation in terms of soil behavior type (SBT) and various geotechnical parameters using current published empirical correlations based on the comprehensive review by Lunne, Robertson and Powell (1997) and updated by Robertson and Cabal (2015). The interpretation is presented in tabular format. The interpretations are presented only as a guide for geotechnical use and should be carefully reviewed. Gregg does not warranty the correctness or the applicability of any of the geotechnical parameters interpreted by the software and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used in the software.

The following provides a summary of the methods used for the interpretation. Many of the empirical correlations to estimate geotechnical parameters have constants that have a range of values depending on soil type, geologic origin and other factors. The software uses 'default' values that have been selected to provide, in general, conservatively low estimates of the various geotechnical parameter.

Presented below is a list of formulas used for the estimation of various soil properties. The formulas are presented in SI unit system and assume that all components are expressed in the same units.

:: Unit Weight, g (kN/m³) ::

$$g = g_w \cdot \left(0.27 \cdot \log(R_r) + 0.36 \cdot \log\left(\frac{q_t}{p_a}\right) + 1.236 \right)$$

where g_w = water unit weight

:: Permeability, k (m/s) ::

$$I_c < 3.27 \text{ and } I_c > 1.00 \text{ then } k = 10^{0.952 - 3.04 I_c}$$

$$I_c \leq 4.00 \text{ and } I_c > 3.27 \text{ then } k = 10^{-4.52 - 1.37 I_c}$$

:: N_{SPT} (blows per 30 cm) ::

$$N_{60} = \left(\frac{q_c}{p_s} \right) \cdot \frac{1}{10^{1.1268 - 0.2817 I_c}}$$

$$N_{160} = Q_{tn} \cdot \frac{1}{10^{1.1268 - 0.2817 I_c}}$$

:: Young's Modulus, E_s (MPa) ::

$$(q_t - \sigma_v) \cdot 0.015 \cdot 10^{0.55 I_c + 1.68}$$

(applicable only to $I_c < I_{c, \text{cutoff}}$)

:: Relative Density, D_r (%) ::

$$100 \cdot \sqrt{\frac{Q_{tn}}{k_{OR}}} \quad \text{(applicable only to SBT}_n\text{: 5, 6, 7 and 8 or } I_c < I_{c, \text{cutoff}}\text{)}$$

:: State Parameter, ψ ::

$$\psi = 0.56 - 0.33 \cdot \log(Q_{tn, CS})$$

:: Drained Friction Angle, ϕ (°) ::

$$\phi = \phi'_{cv} + 15.94 \cdot \log(Q_{tn, CS}) - 26.88$$

(applicable only to SBT_n: 5, 6, 7 and 8 or $I_c < I_{c, \text{cutoff}}$)

:: 1-D constrained modulus, M (MPa) ::

If $I_c > 2.20$
 $a = 14$ for $Q_{tn} > 14$
 $a = Q_{tn}$ for $Q_{tn} \leq 14$
 $M_{CPT} = a \cdot (q_t - \sigma_v)$

If $I_c \geq 2.20$

$$M_{CPT} = 0.03 \cdot (q_t - \sigma_v) \cdot 10^{0.58 I_c + 1.88}$$

:: Small strain shear Modulus, G_0 (MPa) ::

$$G_0 = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 I_c + 1.68}$$

:: Shear Wave Velocity, V_s (m/s) ::

$$V_s = \left(\frac{G_0}{\rho} \right)^{0.50}$$

:: Undrained peak shear strength, S_u (kPa) ::

$$N_{kt} = 10.50 + 7 \cdot \log(F_r) \text{ or user defined}$$

$$S_u = \frac{(q_t - \sigma_v)}{N_{kt}}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c, \text{cutoff}}$)

:: Remolded undrained shear strength, $S_{u(\text{rem})}$ (kPa) ::

$$S_{u(\text{rem})} = f_s \quad \text{(applicable only to SBT}_n\text{: 1, 2, 3, 4 and 9 or } I_c > I_{c, \text{cutoff}}\text{)}$$

:: Overconsolidation Ratio, OCR ::

$$k_{OCR} = \left[\frac{Q_{tn}^{0.20}}{0.25 \cdot (10.50 + 7 \cdot \log(F_r))} \right]^{1.25} \text{ or user defined}$$

$$OCR = k_{OCR} \cdot Q_{tn}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c, \text{cutoff}}$)

:: In situ Stress Ratio, K_0 ::

$$K_0 = (1 - \sin \phi') \cdot OCR^{\sin \phi'}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c, \text{cutoff}}$)

:: Soil Sensitivity, S_t ::

$$S_t = \frac{N_s}{F_r}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c, \text{cutoff}}$)

:: Peak Friction Angle, ϕ' (°) ::

$$\phi' = 29.5^\circ \cdot B_c^{0.121} \cdot (0.256 + 0.336 \cdot B_c + \log Q_t)$$

(applicable for $0.10 < B_c < 1.00$)

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CPT LOGS

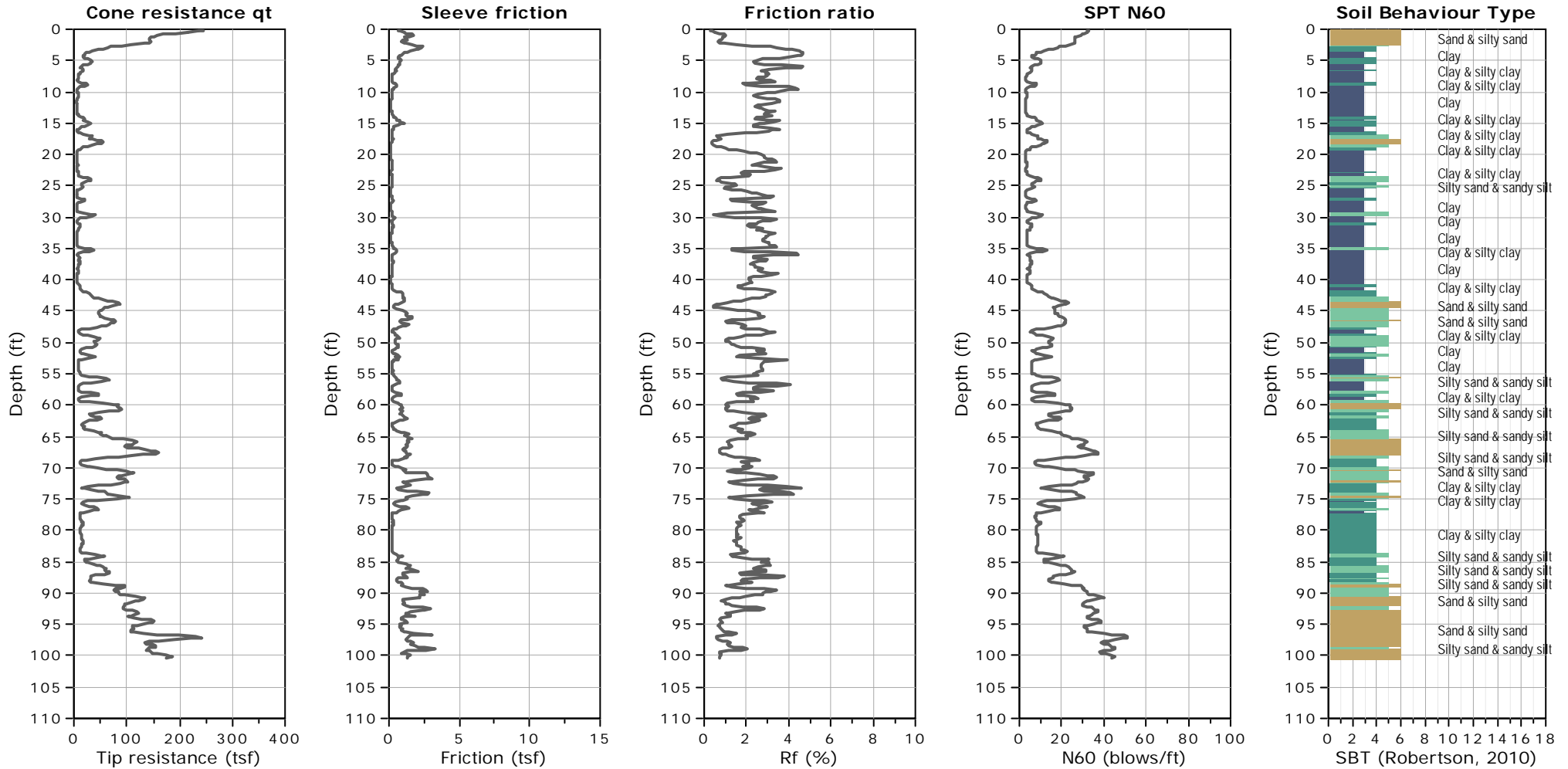


CLIENT: YEH & ASSOCIATES, INC.

FIELD REP: JAMIE C.

SITE: AVILA BEACH CSD WWTF IMPROVEMENTS - 2850 AVILA BEACH DRIVE, AVILA BEACH, CA

Total depth: 100.39 ft, Date: 7/24/2019



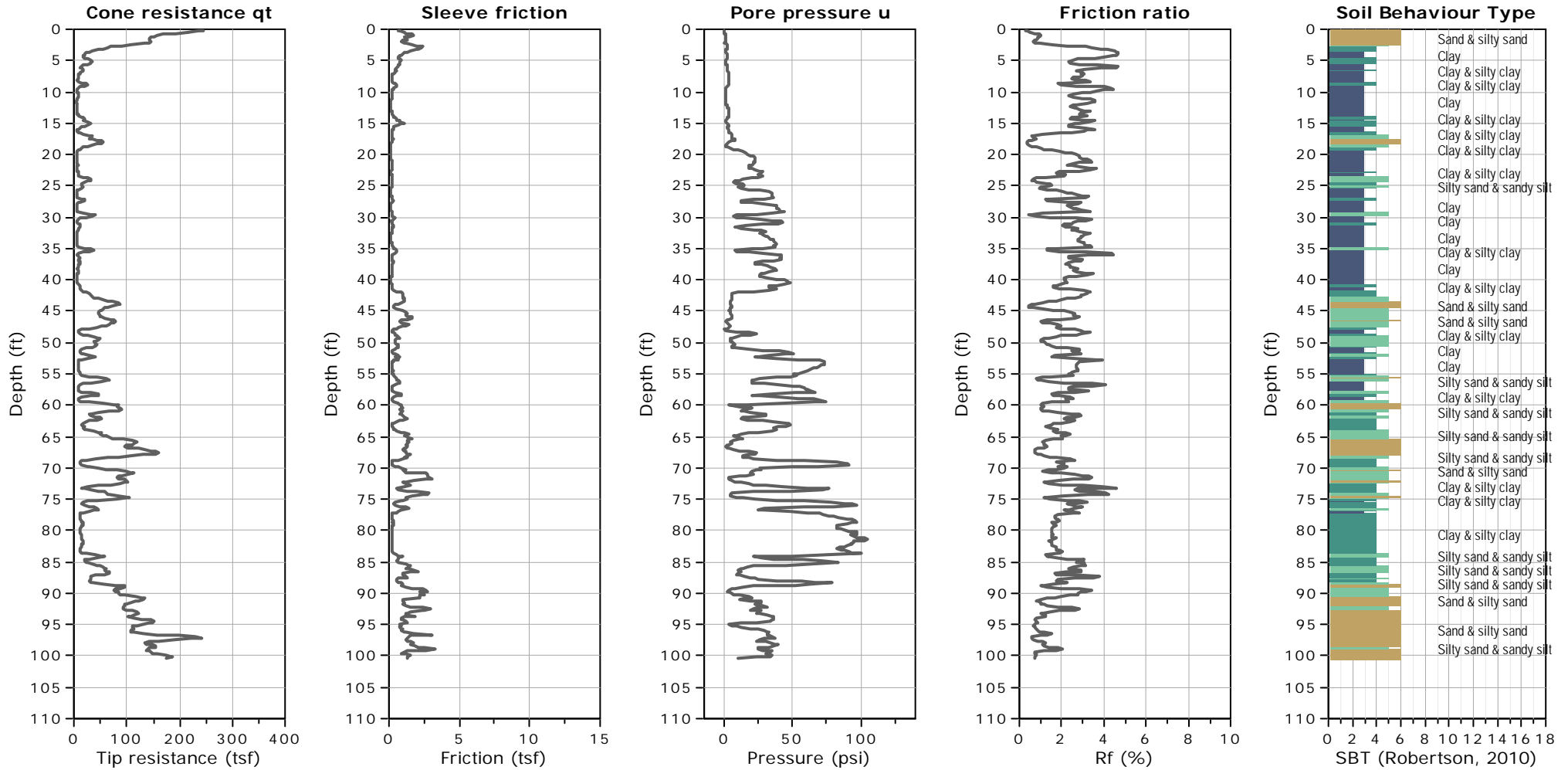


CLIENT: YEH & ASSOCIATES, INC.

Field Rep: JAMIE C.

SITE: AVILA BEACH CSD WWTF IMPROVEMENTS - 2850 AVILA BEACH DRIVE, AVILA BEACH, CA

Total depth: 100.39 ft, Date: 7/24/2019



SBTn legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |

WATER TABLE FOR ESTIMATING PURPOSES ONLY

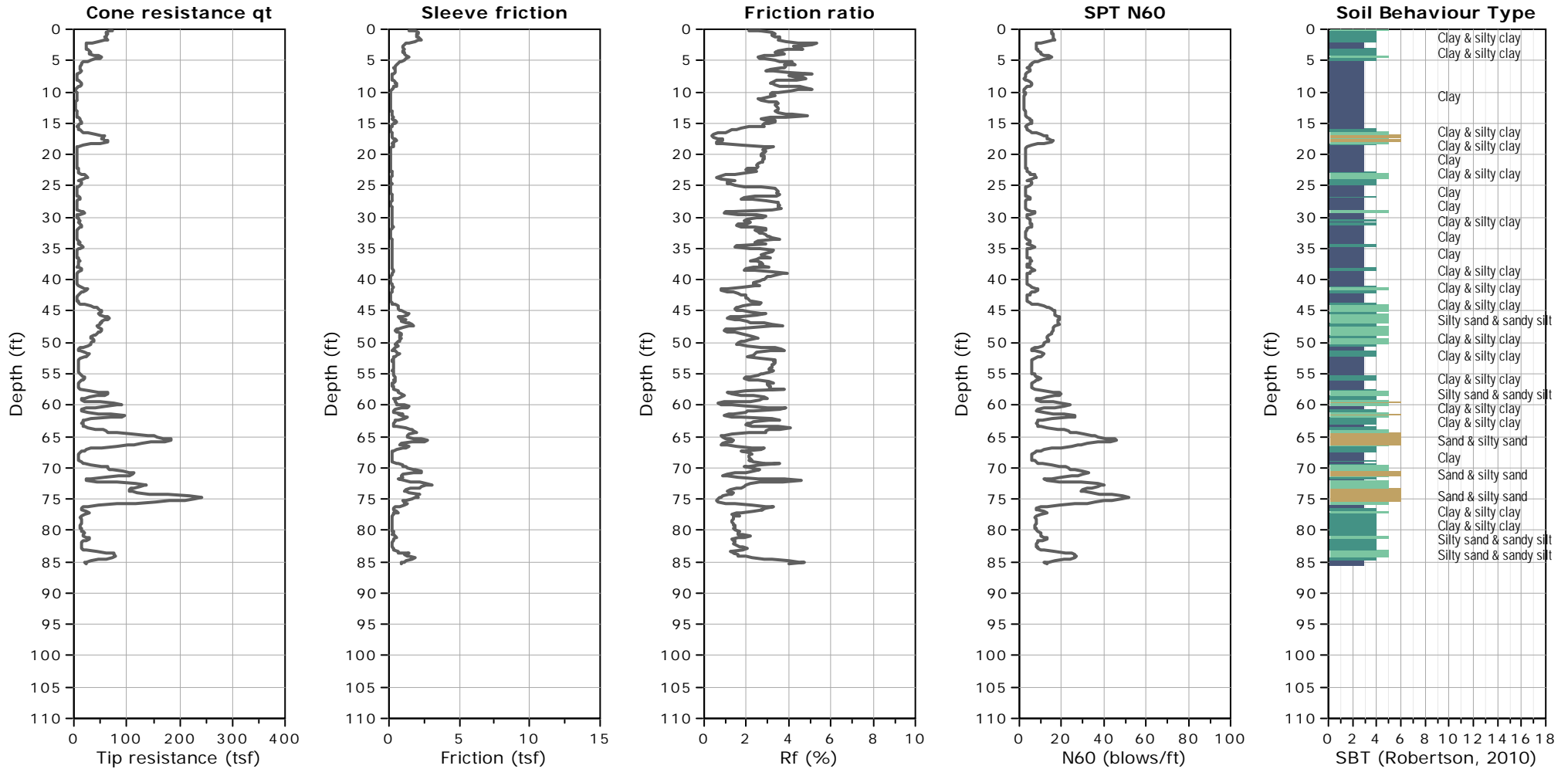


CLIENT: YEH & ASSOCIATES, INC.

FIELD REP: JAMIE C.

SITE: AVILA BEACH CSD WWTF IMPROVEMENTS - 2850 AVILA BEACH DRIVE, AVILA BEACH, CA

Total depth: 85.30 ft, Date: 7/24/2019



SBTn legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |

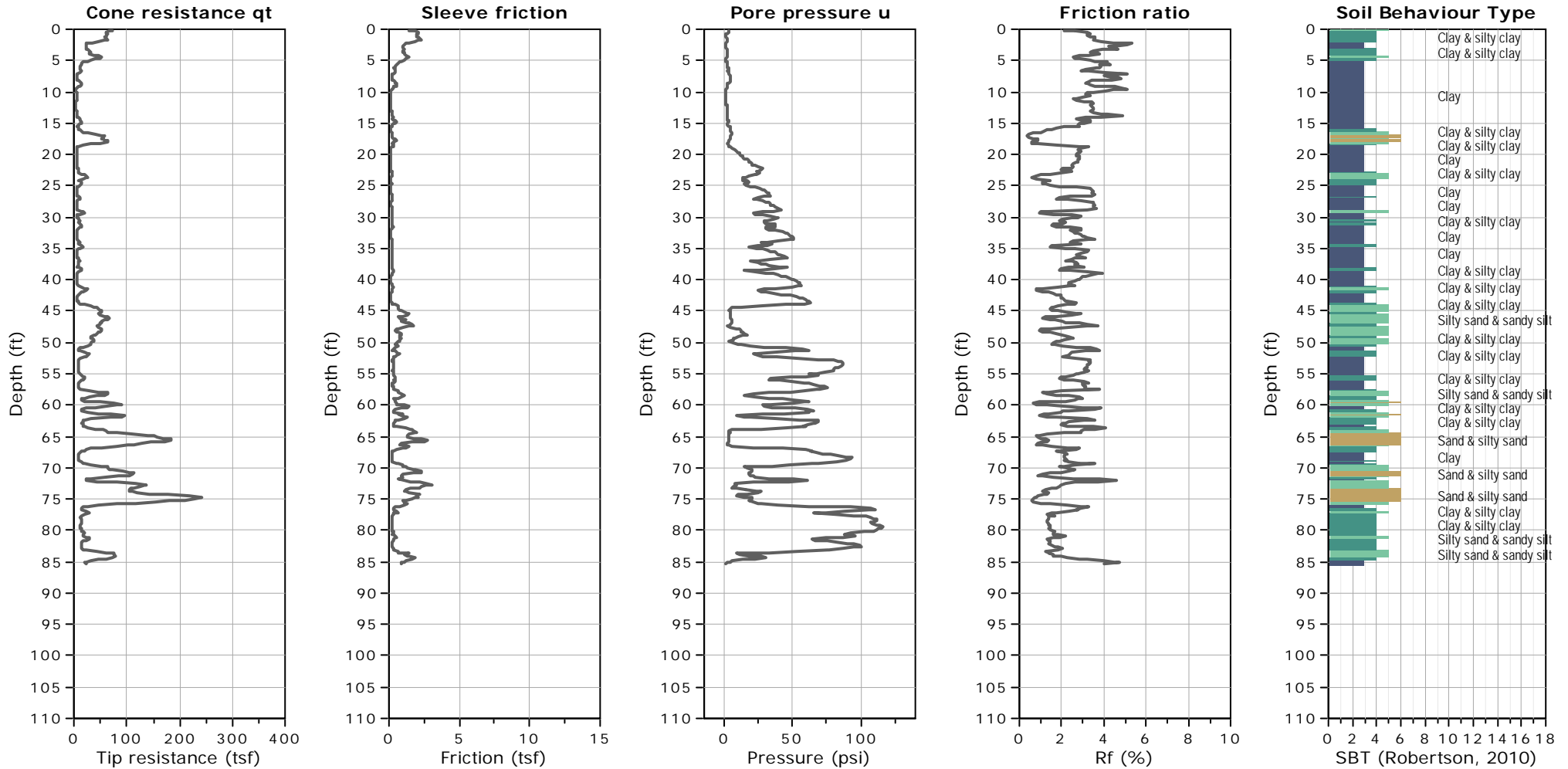


CLIENT: YEH & ASSOCIATES, INC.

Field Rep: JAMIE C.

SITE: AVILA BEACH CSD WWTF IMPROVEMENTS - 2850 AVILA BEACH DRIVE, AVILA BEACH, CA

Total depth: 85.30 ft, Date: 7/24/2019



WATER TABLE FOR ESTIMATING PURPOSES ONLY

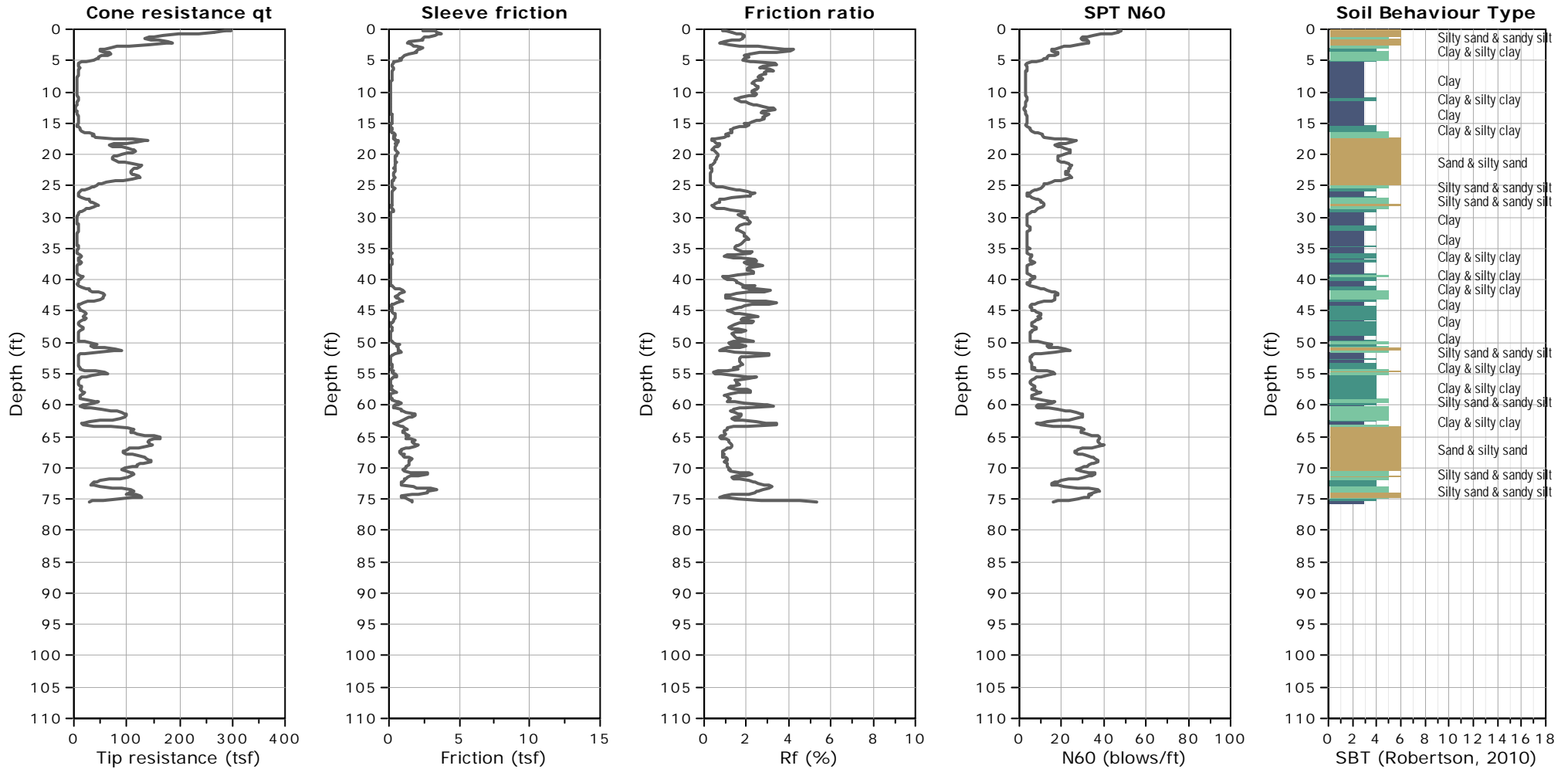


CLIENT: YEH & ASSOCIATES, INC.

FIELD REP: JAMIE C.

SITE: AVILA BEACH CSD WWTF IMPROVEMENTS - 2850 AVILA BEACH DRIVE, AVILA BEACH, CA

Total depth: 75.46 ft, Date: 7/24/2019



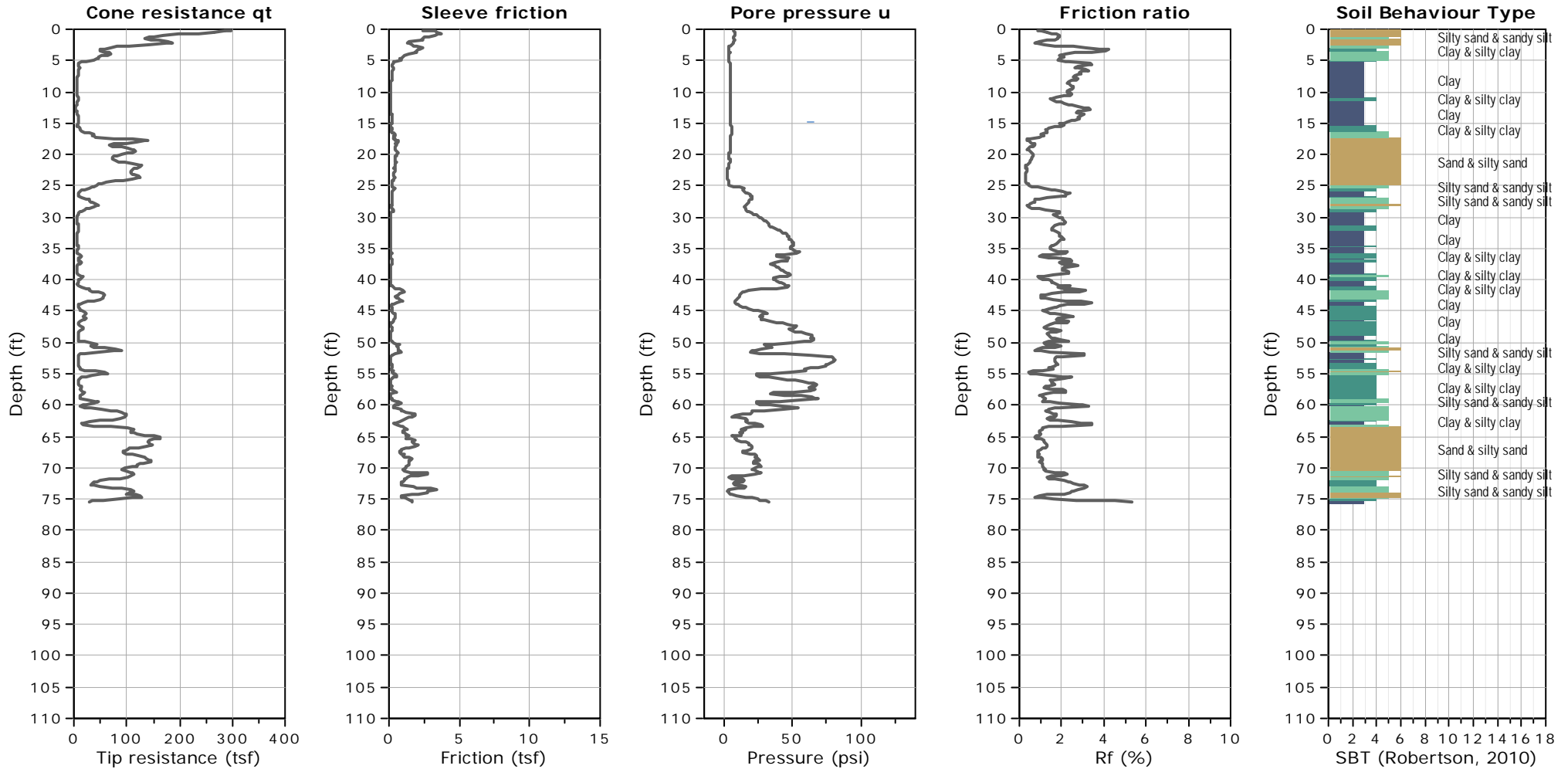


CLIENT: YEH & ASSOCIATES, INC.

Field Rep: JAMIE C.

SITE: AVILA BEACH CSD WWTF IMPROVEMENTS - 2850 AVILA BEACH DRIVE, AVILA BEACH, CA

Total depth: 75.46 ft, Date: 7/24/2019



WATER TABLE FOR ESTIMATING PURPOSES ONLY

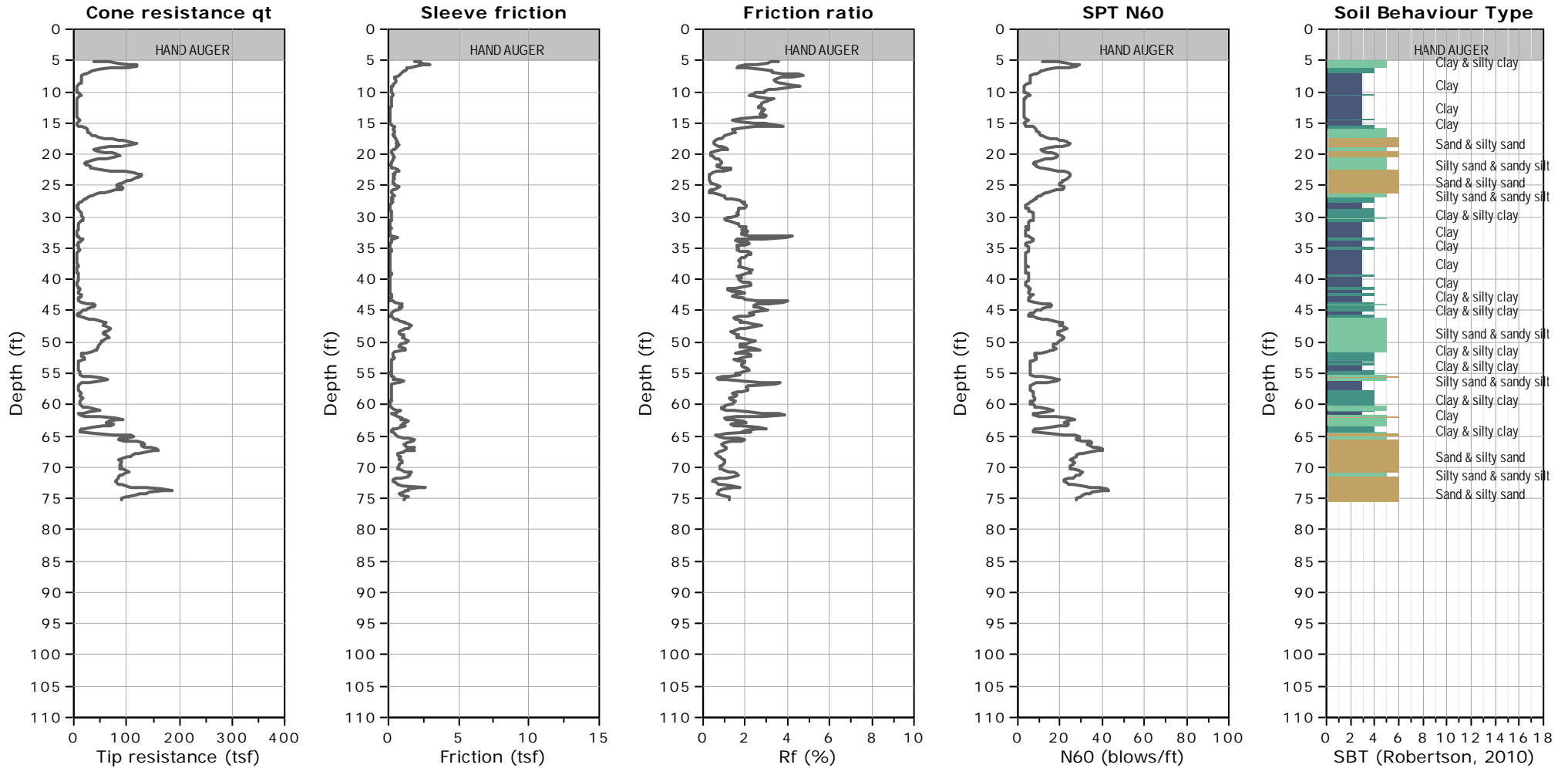


CLIENT: YEH & ASSOCIATES, INC.

FIELD REP: JAMIE C.

SITE: AVILA BEACH CSD WWTF IMPROVEMENTS - 2850 AVILA BEACH DRIVE, AVILA BEACH, CA

Total depth: 75.30 ft, Date: 7/24/2019



SBTn legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |

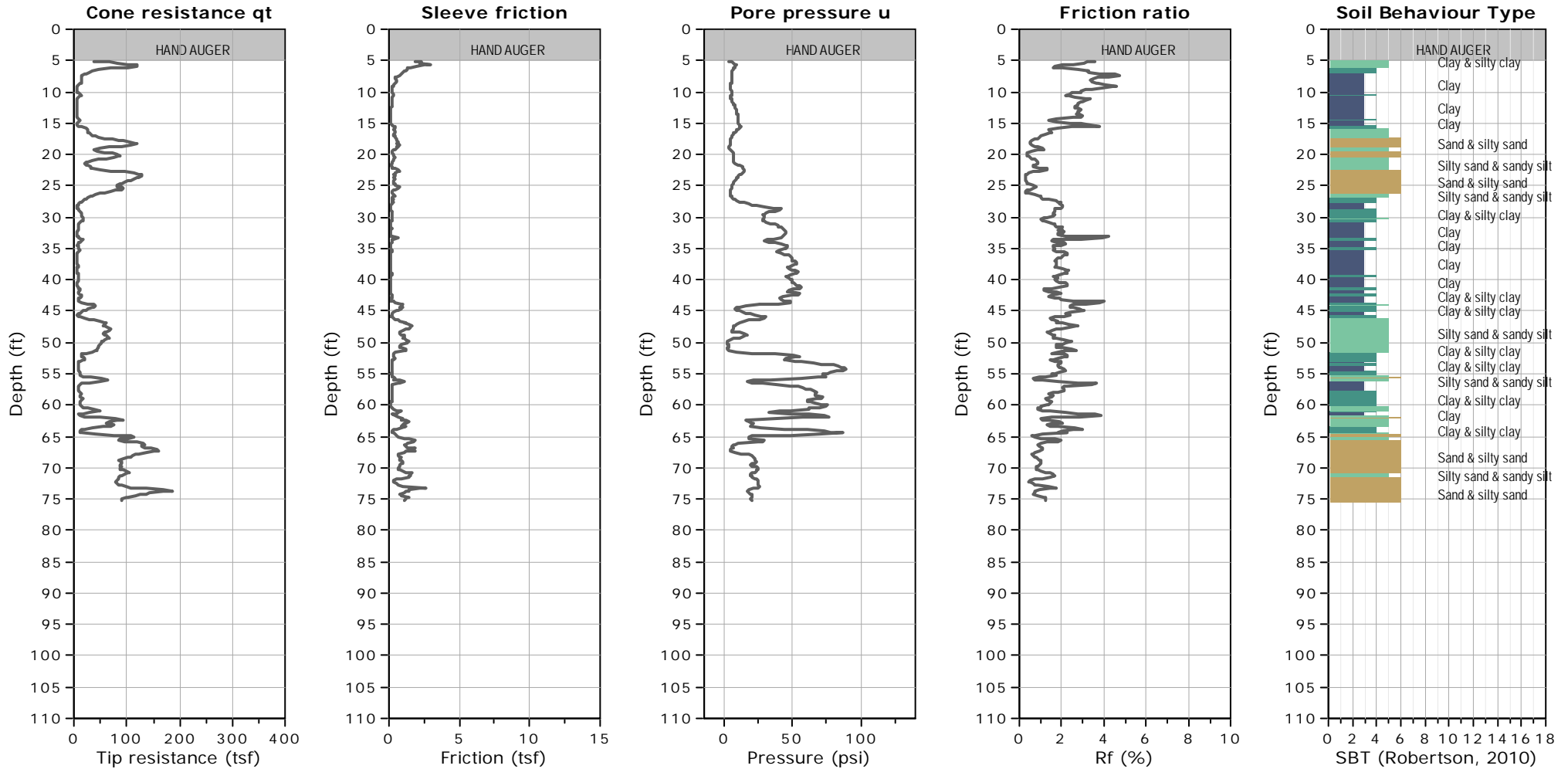


CLIENT: YEH & ASSOCIATES, INC.

Field Rep: JAMIE C.

SITE: AVILA BEACH CSD WWTF IMPROVEMENTS - 2850 AVILA BEACH DRIVE, AVILA BEACH, CA

Total depth: 75.30 ft, Date: 7/24/2019



SBTn legend

- | | | |
|---------------------------|------------------------------|-----------------------------------|
| 1. Sensitive fine grained | 4. Clayey silt to silty clay | 7. Gravely sand to sand |
| 2. Organic material | 5. Silty sand to sandy silt | 8. Very stiff sand to clayey sand |
| 3. Clay to silty clay | 6. Clean sand to silty sand | 9. Very stiff fine grained |

WATER TABLE FOR ESTIMATING PURPOSES ONLY



PORE PRESSURE DISSIPATION

Pore Pressure Dissipation Tests (PPDT)

Pore Pressure Dissipation Tests (PPDT's) conducted at various intervals can be used to measure equilibrium water pressure (at the time of the CPT). If conditions are hydrostatic, the equilibrium water pressure can be used to determine the approximate depth of the ground water table. A PPDT is conducted when penetration is halted at specific intervals determined by the field representative. The variation of the penetration pore pressure (u) with time is measured behind the tip of the cone and recorded.

Pore pressure dissipation data can be interpreted to provide estimates of:

- Equilibrium piezometric pressure
- Phreatic Surface
- In-situ horizontal coefficient of consolidation (c_h)
- In-situ horizontal coefficient of permeability (k_h)

In order to correctly interpret the equilibrium piezometric pressure and/or the phreatic surface, the pore pressure must be monitored until it reaches equilibrium, *Figure PPDT*. This time is commonly referred to as t_{100} , the point at which 100% of the excess pore pressure has dissipated.

A complete reference on pore pressure dissipation tests is presented by Robertson et al. 1992 and Lunne et al. 1997.

A summary of the pore pressure dissipation tests is summarized in Table 1.

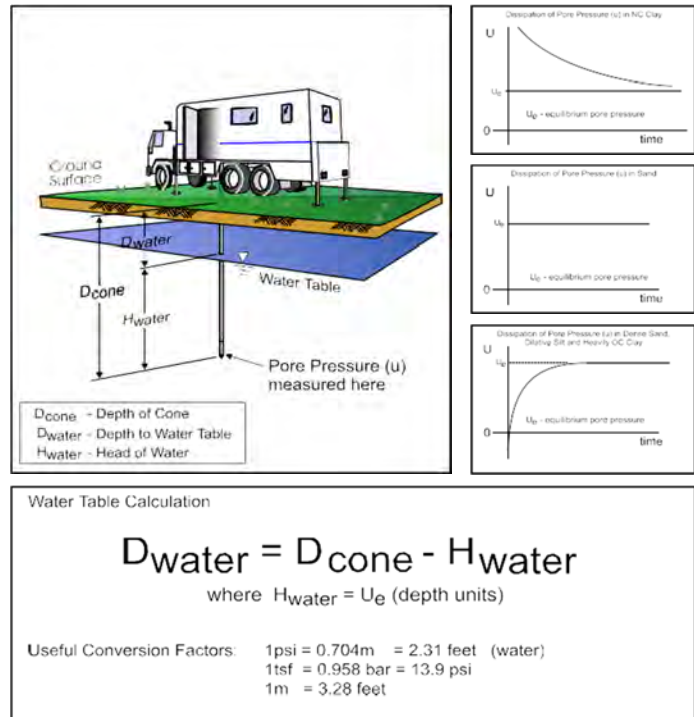


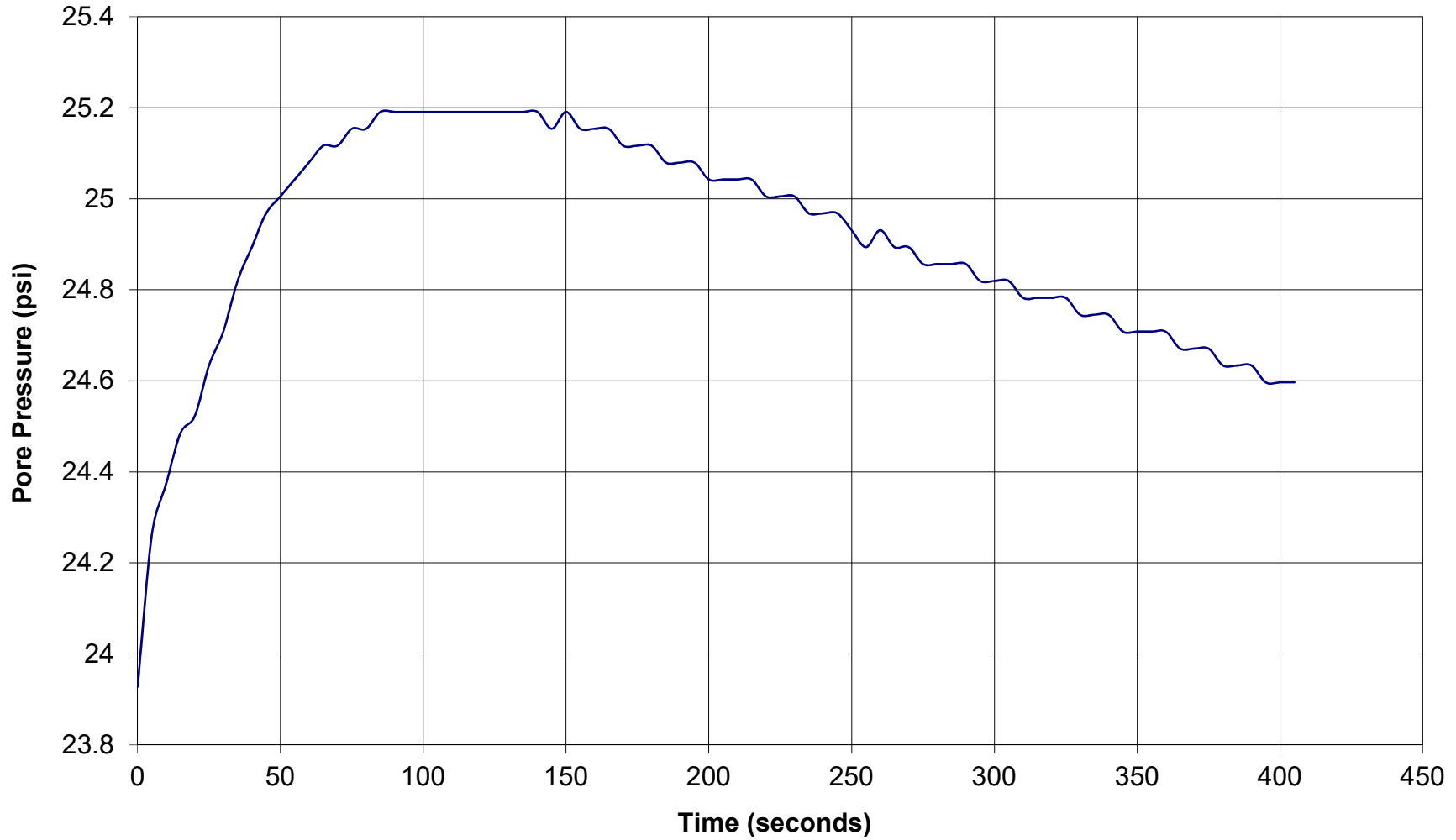
Figure PPDT



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

Sounding: C-1
Depth: 67.257015
Site: AVILA BEACH
Engineer: JAMIE C.

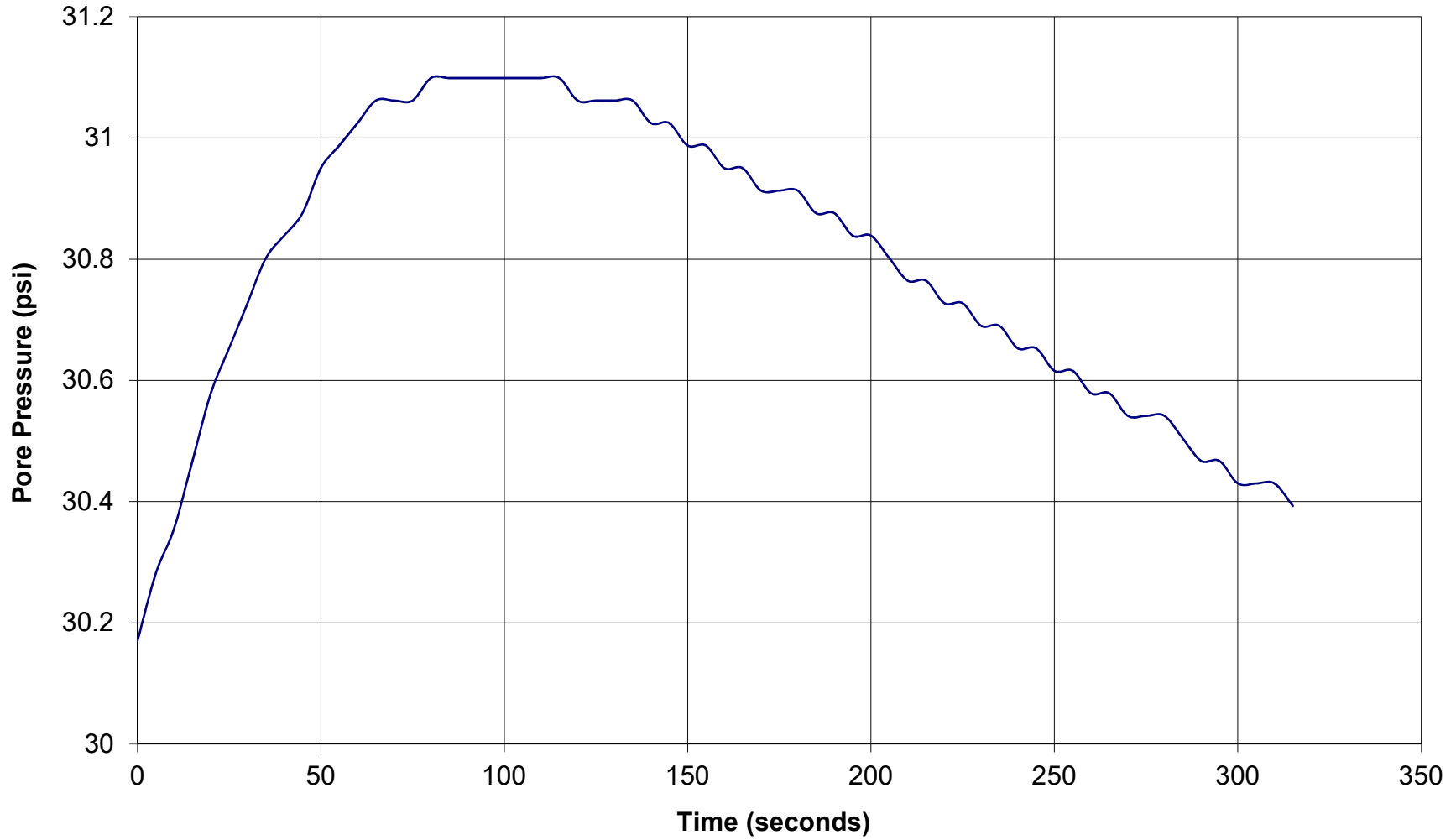




GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

Sounding: C-2
Depth: 75.2950485
Site: AVILA BEACH
Engineer: JAMIE C.

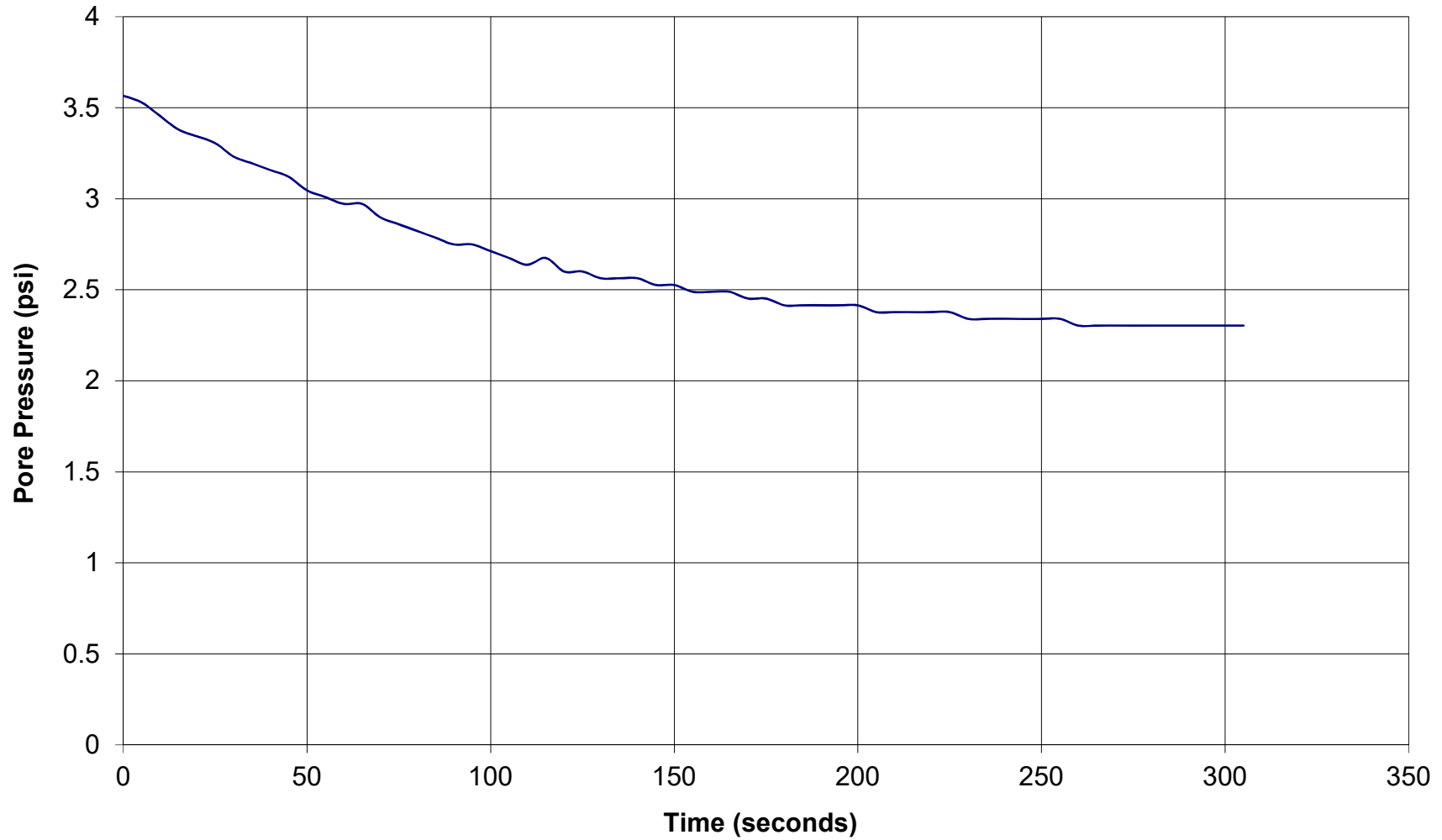




GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

Sounding: C-3
Depth: 19.028814
Site: AVILA BEACH
Engineer: JAMIE C.



APPENDIX B - HAND EXCAVATION LOG

GROUP SYMBOLS AND NAMES

Graphic / Symbol	Group Names	Graphic / Symbol	Group Names
	GW Well-graded GRAVEL Well-graded GRAVEL with SAND		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
	GP Poorly graded GRAVEL Poorly graded GRAVEL with SAND		
	GW-GM Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and 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
	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		ML SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with 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		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
	GC CLAYEY GRAVEL CLAYEY GRAVEL with SAND		
	GC-GM SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL 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
	SW Well-graded SAND Well-graded SAND with GRAVEL		
	SP Poorly graded SAND Poorly graded SAND with GRAVEL		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
	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)		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
	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)		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
	SM SILTY SAND SILTY SAND with GRAVEL		
	SC CLAYEY SAND CLAYEY SAND with GRAVEL		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
	SC-SM SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL		
	PT PEAT		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
	COBBLES COBBLES and BOULDERS BOULDERS		

FIELD AND LABORATORY TESTS

C	Consolidation (ASTM D2435)
CL	Collapse Potential (ASTM D5333)
CP	Compaction Curve (ASTM D1557)
CR	Corrosion, Sulfates, Chlorides (CTM 643; ASTM D4972, ASTM G187, ASTM D4327)
CU	Consolidated Undrained Triaxial (ASTM D4767)
DS	Direct Shear (ASTM D3080)
EI	Expansion Index (ASTM D4829)
M	Moisture Content (ASTM D2216)
OC	Organic Content (ASTM D2974)
P	Permeability (ASTM 5084)
PA	Particle Size Analysis (ASTM D422-63 [2007])
PI	Liquid Limit, Plastic Limit, Plasticity Index (ASTM D4318)
PL	Point Load Index (ASTM D5731)
PM	Pressure Meter
PP	Pocket Penetrometer
R	R-Value (CTM 301)
SE	Sand Equivalent (CTM 217)
SG	Specific Gravity (AASHTO T 100)
SL	Shrinkage Limit (ASTM D427)
SW	Swell Potential (ASTM D4546)
TV	Pocket Torvane
UC	Unconfined Compression - Soil (ASTM D2166) Unconfined Compression - Rock (ASTM D7012)
UU	Unconsolidated Undrained Triaxial (ASTM D2850)
UW	Unit Weight (ASTM D4767, ASTM D7263)
VS	Vane Shear (AASHTO T 223-96 [2004])
-200	200 Wash (ASTM D1140)

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
	Rock Core
	Grab Sample
	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)



Yeh and Associates, Inc.
Geotechnical • Geological • Construction Services

REPORT TITLE
BORING RECORD LEGEND

PROJECT NAME
Avila Beach CSD WWTF

DATE
10/14/2019

SHEET
1 of 1

LOGGED BY J. Blanchard	BEGIN DATE 7-24-19	COMPLETION DATE 7-24-19	HAMMER TYPE --	BORING NUMBER 19H-1
FINAL BY J. King	BOREHOLE LOCATION (Lat/Long or North/East and Datum) --/--			SURFACE ELEVATION --
DRILLING METHOD Hand Excavation	BOREHOLE LOCATION (Offset, Station, Line) --			WEATHER NOTES Sunny
DRILLER --	LOCATION DESCRIPTION W end of sludge bed-30 S and -45' W of corner of Package Plant, 7' N of toe of slope			BACKFILLED WITH Native
DRILL RIG Posthole & T-Probe	GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS 3.5 ft			TOTAL DEPTH OF BORING 4.0 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	0		ORGANIC SOIL (OL/OH); Snail shells and sludge.												
			Lean CLAY (CL); medium stiff; olive brown; moist.												
1	1		COBBLES, GRAVEL, and snail shells common.												
			Fat CLAY (CH); dark gray; moist to wet.												
2	2														
3	3		Few GRAVEL; trace fines.												
4	4		Wet.												
			Bottom of borehole at 4.0 ft bgs												
5	5		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.												
6	6														
7	7														
8	8														
9	9														
10	10														

5 BR - STANDARD 219-201 SLUDGE BED HAND EX LOG.GPJ CALIFORNIA YEH LIBRARY (YEH V2 APRIL 2019).7.GLB 10/14/19



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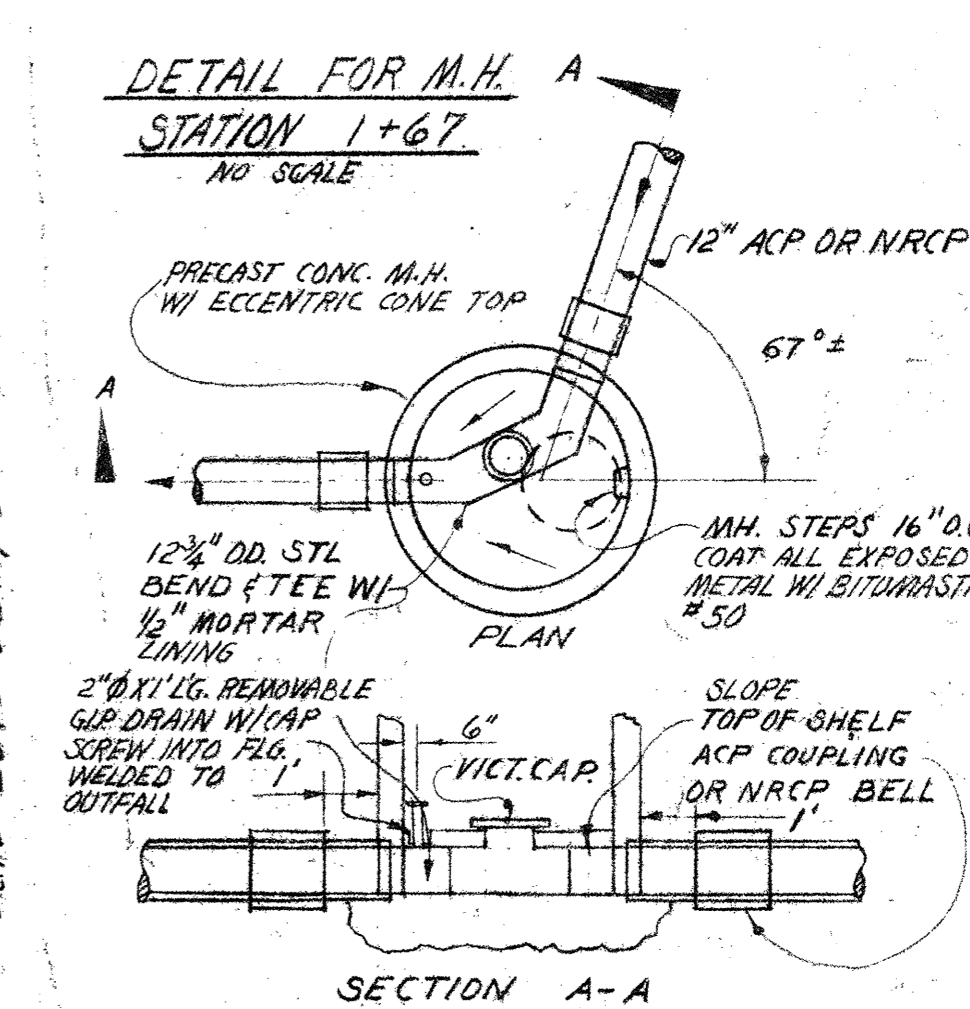
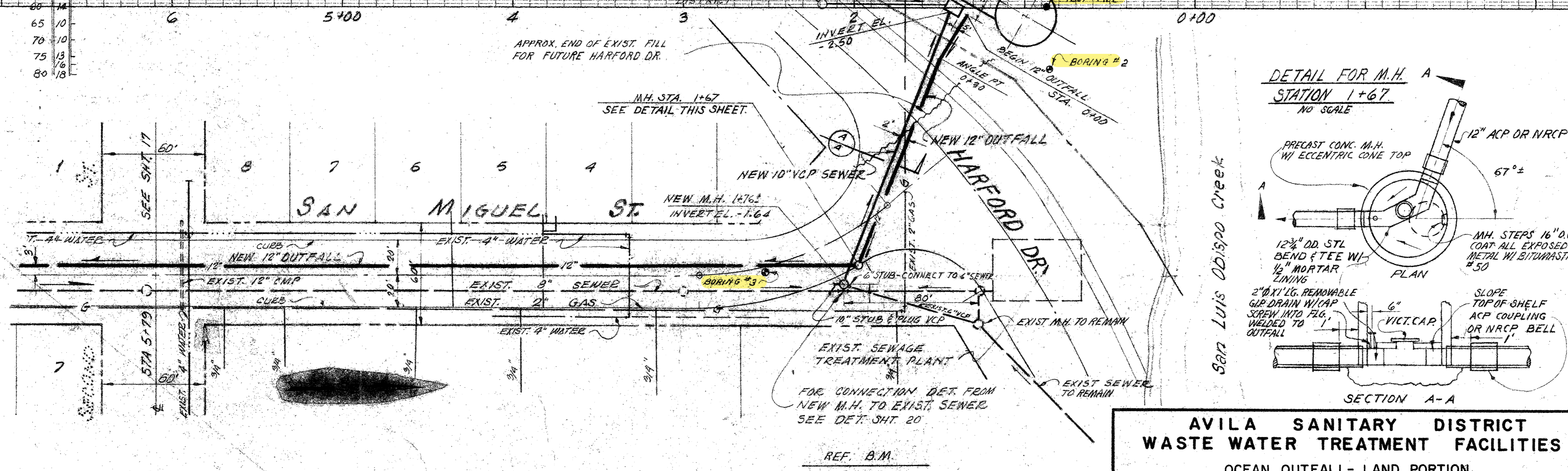
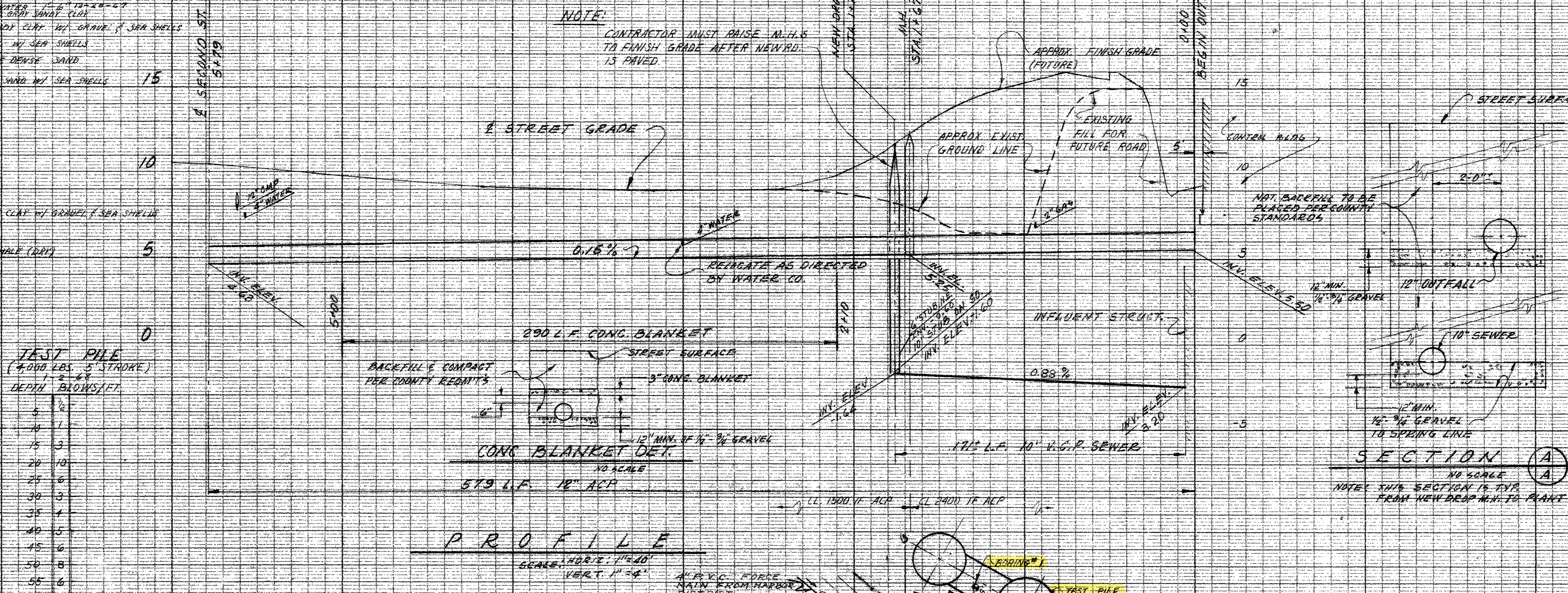
PROJECT NAME Avila Beach CSD WWTF
PROJECT NUMBER 219-201
BORING NUMBER 19H-1
REVISION DATE 10/14/2019
SHEET 1 of 1

APPENDIX C - PREVIOUS STUDIES

Note: Borings 1 through 3 per Central Coast Laboratories (1967)

BORING #1		BORING #2	
DEPTH	DESCRIPTION	DEPTH	DESCRIPTION
0	BLACK CLAYEY SAND	0	SOFT GRAY CLAY SAND W/ SEA SHELLS
2	BLACK CLAYEY SAND	5	DARK BROWN TO BLACK SILTY CLAY W/ GRAVEL & SEA SHELLS
4	BLACK CLAYEY SAND	10	DARK GRAY SAND W/ SEA SHELLS
6	BLACK CLAYEY SAND	15	DARK GRAY SAND W/ SEA SHELLS
8	BLACK CLAYEY SAND	20	MEDIUM TO FINE DENSE SAND
10	BLACK CLAYEY SAND	25	SOFT GRAY CLAY SAND W/ SEA SHELLS
12	BLACK CLAYEY SAND	30	SOFT GRAY CLAY SAND W/ SEA SHELLS
14	BLACK CLAYEY SAND	35	SOFT GRAY CLAY SAND W/ SEA SHELLS
16	BLACK CLAYEY SAND	40	SOFT GRAY CLAY SAND W/ SEA SHELLS
18	BLACK CLAYEY SAND	45	SOFT GRAY CLAY SAND W/ SEA SHELLS
20	BLACK CLAYEY SAND	50	SOFT GRAY CLAY SAND W/ SEA SHELLS
22	BLACK CLAYEY SAND	55	SOFT GRAY CLAY SAND W/ SEA SHELLS
24	BLACK CLAYEY SAND	60	SOFT GRAY CLAY SAND W/ SEA SHELLS
26	BLACK CLAYEY SAND	65	SOFT GRAY CLAY SAND W/ SEA SHELLS
28	BLACK CLAYEY SAND	70	SOFT GRAY CLAY SAND W/ SEA SHELLS
30	BLACK CLAYEY SAND	75	SOFT GRAY CLAY SAND W/ SEA SHELLS
32	BLACK CLAYEY SAND	80	SOFT GRAY CLAY SAND W/ SEA SHELLS
34	BLACK CLAYEY SAND	85	SOFT GRAY CLAY SAND W/ SEA SHELLS

BORING #3		TEST PILE	
DEPTH	DESCRIPTION	(4,000 LBS. 5" STROKE)	DEPTH BLOWS/FT.
0	MEDIUM BROWN BASE MATERIAL	1	2.5
2	EXLT BROWN BASE MATERIAL	2	3.0
4	DARK BROWN TO BLACK SILTY CLAY W/ GRAVEL	3	3.5
6	CLAY	4	4.0
8	DARK BROWN TO BLACK SILTY SAND CLAY W/ GRAVEL & SEA SHELLS	5	4.5
10		6	5.0



PLAN

SCALE: 1" = 40'

AVILA SANITARY DISTRICT
WASTE WATER TREATMENT FACILITIES
OCEAN OUTFALL- LAND PORTION

POMEROY, JOHNSTON AND BAILEY
CIVIL AND CHEMICAL ENGINEERS
660 SO. FAIR OAKS AVE. PASADENA, CALIFORNIA

DESIGN	APPROVED BY	APPROVED BY	SHT.
DRAWN	Richard D. Rowney	8-13-68	16
CHECKED		AVILA SANITARY DISTRICT	DATE
FIELD SK.	8/17/68		DATE
JOB NO.			OF
			20

EARTH SYSTEMS CONSULTANTS
Northern California, Pacific Geoscience Division

Boring No. 1

LOGGED BY: DB
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 of 4
JOB NO.: NGS08167W01
DATE: 4/28/92

DEPTH (in feet)	USCS CLASS	SYMBOL	Avila Beach Wastewater Treatment Plant San Luis Obispo County, California		SAMPLE DATA				
			SOIL DESCRIPTION		INTERVAL	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SC		Moist, dense, brown Clayey SAND with gravel (fill)						
1	CL		Moist, very stiff, dark grey Sandy Lean CLAY with gravel (fill)						
2					2.0-3.5		104.1	18.8	12/19/25
3	CL		Very moist, stiff, dark blue grey Sandy Lean CLAY, occasional gravel (native)		3.0-5.0				
4					5.0-6.5		87.8	30.0	5/6/8
5									
6									
7									
8									
9									
10	SC		Wet, loose, dark grey Clayey SAND, occasional gravel		10.0-11.5		No Return		2/3/3
11					11.5-13.0		85.9	35.7	3/4/5
12			Silty SAND with gravel (SM) per lab tests						
13					15.0-16.5		No Return		3/3/3
14			With gravel						
15			Occasional gravel		16.5-18.0		91.7	33.5	3/6/6
16	SP		Wet, loose, grey Poorly-Graded SAND, fine to medium grained						
17					20.0-21.5		93.7	28.9	11/15/15
18			Medium dense						
19					25.0-26.5				7/8/17
20									
21									
22									
23									
24									
25									

LEGEND: Ring Sample Grab Sample Shelby Tube Sample SPT

Note: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

EARTH SYSTEMS CONSULTANTS
Northern California, Pacific Geoscience Division

Boring No. 1

LOGGED BY: DB
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 2 of 4
JOB NO.: NGS08167W01
DATE: 4/28/92

DEPTH (in feet)	USCS CLASS	SYMBOL	Avila Beach Wastewater Treatment Plant San Luis Obispo County, California					
			SOIL DESCRIPTION	INTERVAL	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
25 - 26 - 27 - 28 - 29			Poorly-Graded SAND, as above					
29 - 30 - 31 - 32 - 33 - 34 - 35 - 36 - 37 - 38 - 39 - 40 - 41 - 42 - 43 - 44	SC		Wet, loose, grey Clayey SAND, abundant shell fragments	30.0-31.5	●			2/2/2
36 - 37 - 38 - 39 - 40 - 41 - 42 - 43 - 44			Dark grey brown	35.0-36.5	●			2/3/3
40 - 41 - 42 - 43 - 44			Grey, with gravel	40.0-41.5	●			5/10/11
44 - 45 - 46 - 47 - 48 - 49 - 50	SW		Wet, medium dense, grey Well-Graded SAND, occasional gravel	50.0-51.5	■	91.4	31.3	12/9/14

LEGEND: ■ Ring Sample ● Grab Sample □ Shelby Tube Sample ● SPT

Note: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

EARTH SYSTEMS CONSULTANTS

Northern California, Pacific Geoscience Division

Boring No. 1

LOGGED BY: DB

PAGE 3 of 4

DRILL RIG: Mobile B-53

JOB NO.: NGS08167W01

AUGER TYPE: 6" Hollow Stem

DATE: 4/28/92

DEPTH (in feet)	USCS CLASS	SYMBOL	SAMPLE DATA					
			INTERVAL	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	
Avila Beach Wastewater Treatment Plant San Luis Obispo County, California								
SOIL DESCRIPTION								
50								
51								
52	SP							
53								
54								
55								
56								
57								
58								
59								
60								
61			60.0-61.5	●			9/11/8	
62	SC							
63								
64								
65	SW							
66								
67								
68								
69								
70								
71			70.0-71.5	●			11/20/30	
72								
73								
74								
75								

LEGEND: ■ Ring Sample ○ Grab Sample □ Shelby Tube Sample ● SPT

Note: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

EARTH SYSTEMS CONSULTANTS

Northern California, Pacific Geoscience Division

LOGGED BY: DB

DRILL RIG: Mobile B-53

AUGER TYPE: 6" Hollow Stem

Boring No. 1

PAGE 4 of 4

JOB NO.: NGS08167W01

DATE: 4/28/92

DEPTH (in feet)	USCS CLASS	SYMBOL	SAMPLE DATA					
			INTERVAL	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	
Avila Beach Wastewater Treatment Plant San Luis Obispo County, California								
SOIL DESCRIPTION								
75								
76	SC	Well-Graded SAND, as above						
77		Wet, medium dense, grey Clayey SAND						
78								
79								
80								
81			Thin interbedded sand lenses	80.0-81.5	●			6/8/15
82								
83								
84								
85								
86								
87								
88								
89								
90								
91		Dense, with gravel	90.0-91.5	●			20/35/35	
92		END OF BORING @ 91.5'. Subsurface water encountered @ 10'.						
93								
94								
95								
96								
97								
98								
99								
100								

LEGEND: ■ Ring Sample ○ Grab Sample □ Shelby Tube Sample ● SPT

Note: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

PROJECT: AVILA BEACH WASTEWATER TREATMENT PLANT EXPANSION
JOB NO.: NGS08167W01
DATE: June 4, 1992

BULK DENSITY TEST RESULTS

BORING NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
1	3.0-3.5	18.8	123.6	104.1
1	6.0-6.5	30.0	114.1	87.8
1	12.5-13.0	35.7	116.6	85.9
1	17.5-18.0	33.5	122.5	91.7
1	21.0-21.5	28.9	120.8	93.7
1	51.0-51.5	31.3	120.0	91.4

EXPANSION INDEX TEST RESULTS

BORING NO.	DEPTH feet	EXPANSION INDEX
1	3-5	31

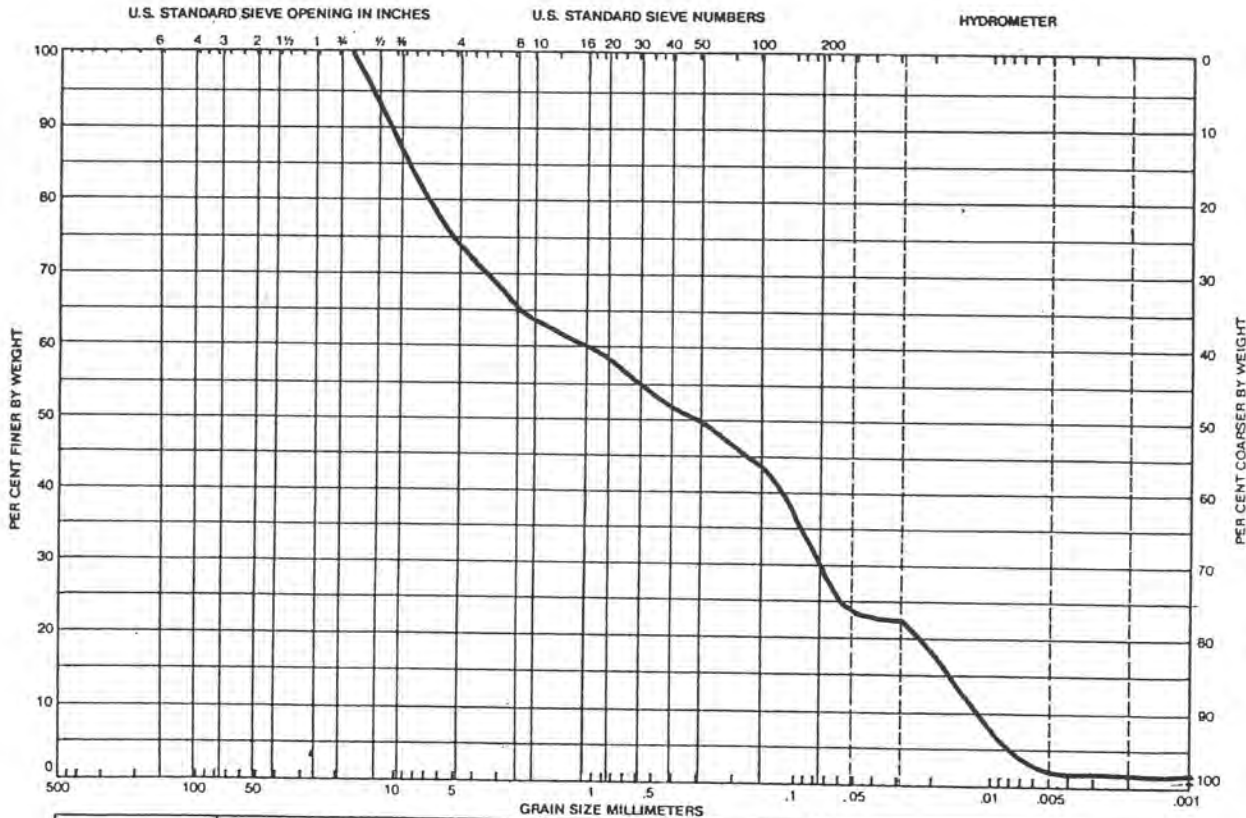
PLASTICITY INDEX TEST RESULTS

BORING NO.	DEPTH feet	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
1	6.0-6.5	37	20	17
1	12.5-13.0	45	31	14

PROJECT: AVILA BEACH WASTEWATER TREATMENT PLANT EXPANSION
 JOB NUMBER: NGS08167W01
 SAMPLE I.D.: Boring #1 @ 12.5-13'
 DATE: 3-Jun-92

PARTICLE SIZE ANALYSIS

Sieve size	% Retained (Cumulative)	% Passing (Cumulative)
3/4"	0	100
1/2"	6	94
3/8"	13	87
#4	26	74
#8	35	65
#16	40	60
#30	45	55
#50	50	50
#100	56	44
#200	70	30
53 microns		24
28 microns		23
5 microns		1
2.5 microns		1
Colloids		1

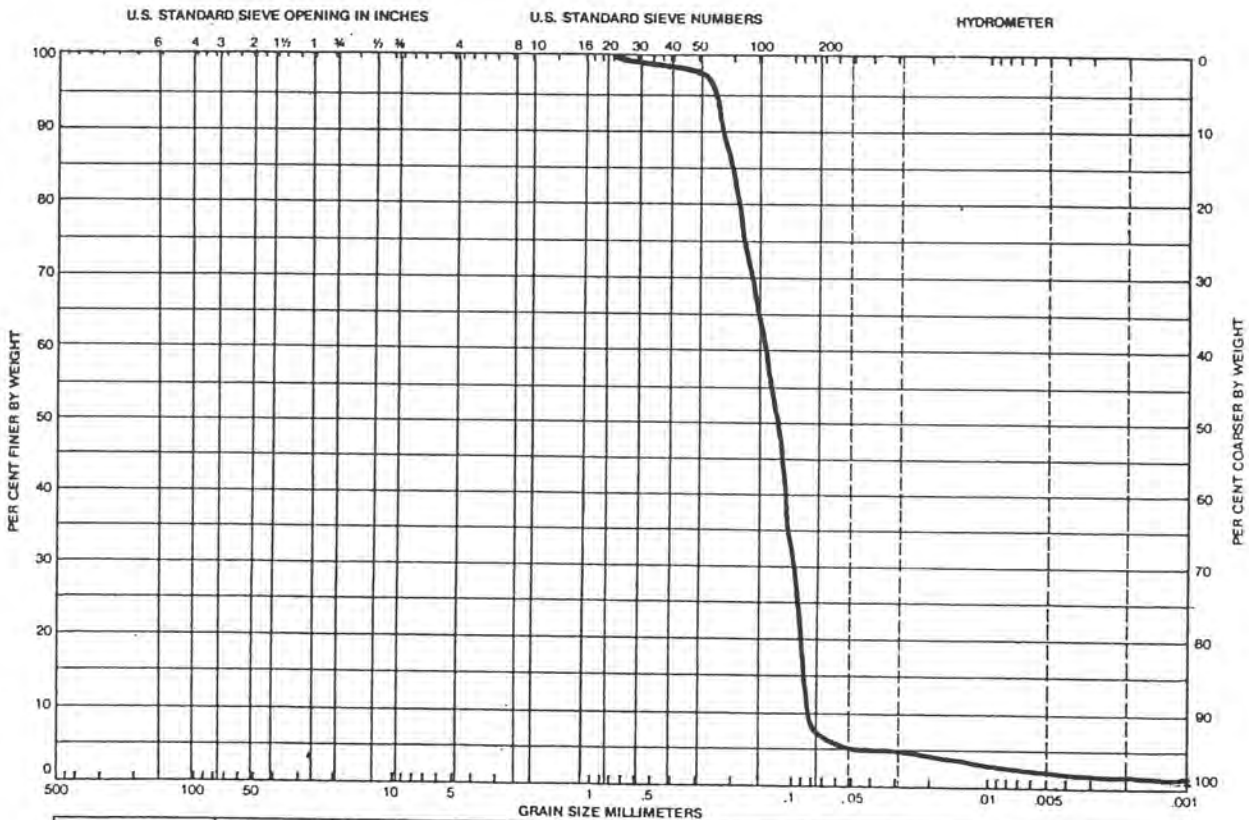


COBBLES	GRAVEL		SAND			SILT OR CLAY			
	COARSE	FINE	COARSE	MEDIUM	FINE				
CLASSIFICATION						SYMBOL	LI.	PL	PI
SILTY SAND WITH GRAVEL						SM	45	31	14

PROJECT: AVILA BEACH WASTEWATER TREATMENT PLANT EXPANSION
 JOB NUMBER: NGS08167W01
 SAMPLE I.D.: Boring #1 @ 21-21.5'
 DATE: 3-Jun-92

PARTICLE SIZE ANALYSIS

Sieve size	% Retained (Cumulative)	% Passing (Cumulative)
#16	0	100
#30	1	99
#50	2	98
#100	35	65
#200	93	7
53 microns		5
28 microns		5
5 microns		2
2.5 microns		1
Colloids		1

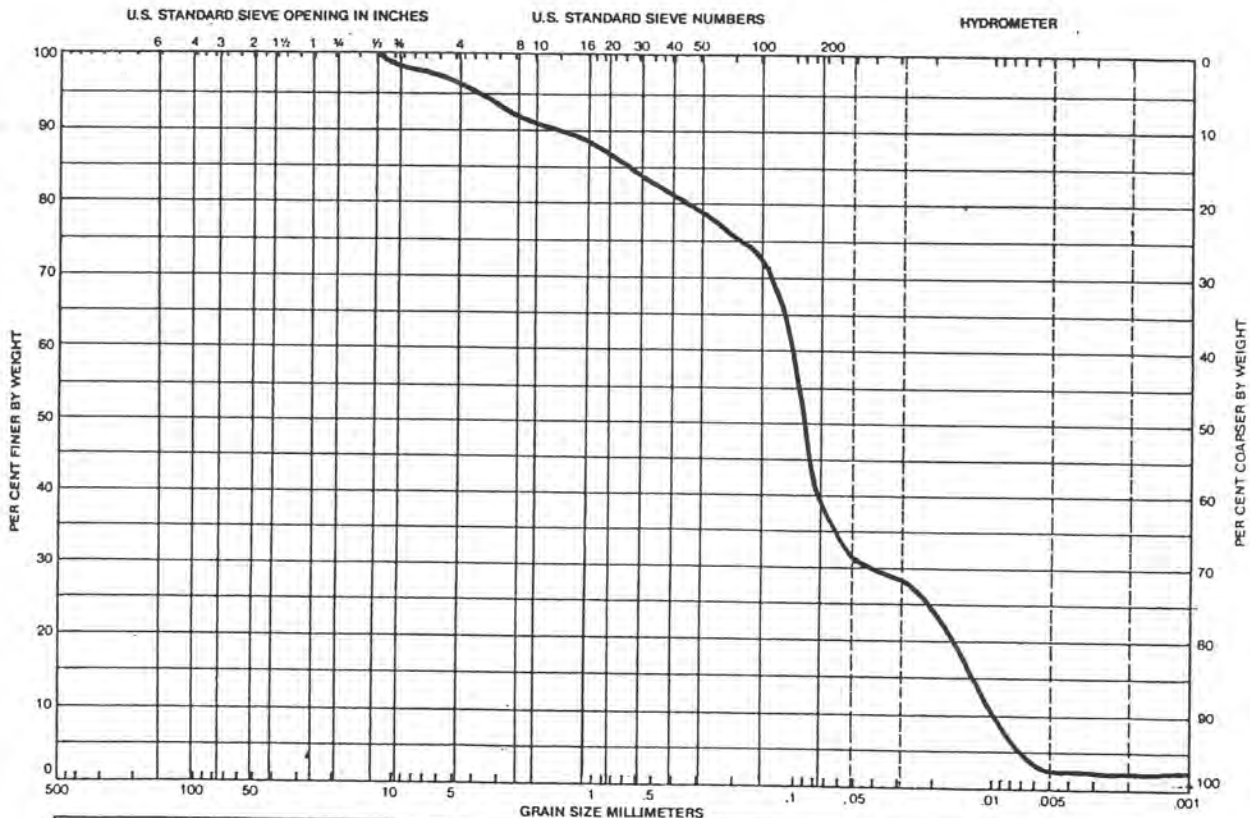


COBBLES	GRAVEL		SAND			SILT OR CLAY			
	COARSE	FINE	COARSE	MEDIUM	FINE				
CLASSIFICATION						SYMBOL	LI.	PL	PI
POORLY GRADED SAND WITH SILT						SP-SM			

PROJECT: AVILA BEACH WASTEWATER TREATMENT PLANT EXPANSION
 JOB NUMBER: NGS08167W01
 SAMPLE I.D.: Boring #1 @ 41-41.5'
 DATE: 3-Jun-92

PARTICLE SIZE ANALYSIS

Sieve size	% Retained (Cumulative)	% Passing (Cumulative)
1/2"	0	100
3/8"	2	98
#4	4	96
#8	8	92
#16	11	89
#30	16	84
#50	21	79
#100	28	72
#200	61	39
53 microns		31
28 microns		27
5 microns		2
2.5 microns		2
Colloids		2

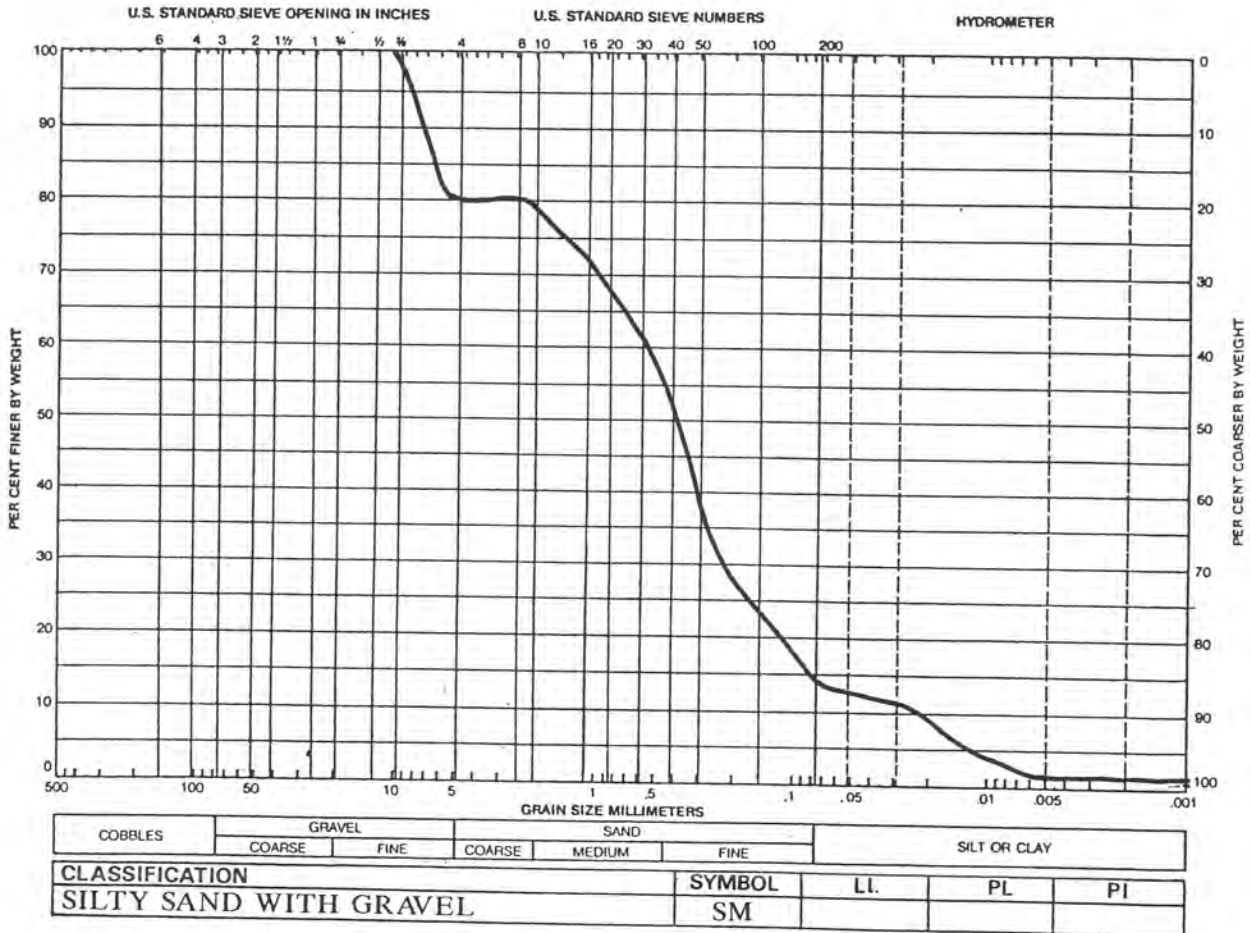


COBBLES	GRAVEL		SAND			SILT OR CLAY	
	COARSE	FINE	COARSE	MEDIUM	FINE		
CLASSIFICATION				SYMBOL	LL.	PL	PI
CLAYEY SAND				SC			

PROJECT: AVILA BEACH WASTEWATER TREATMENT PLANT EXPANSION
 JOB NUMBER: NGS08167W01
 SAMPLE I.D.: Boring #1 @ 51-51.5'
 DATE: 3-Jun-92

PARTICLE SIZE ANALYSIS

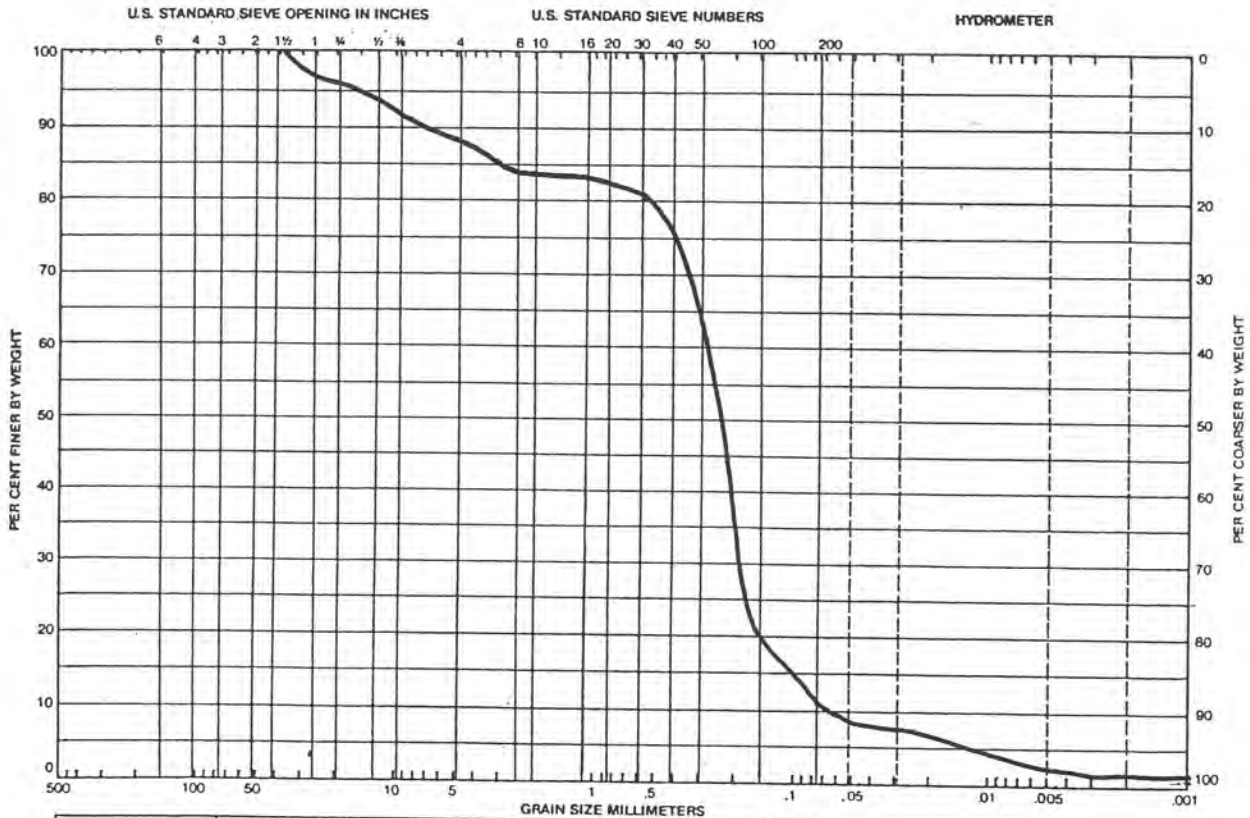
Sieve size	% Retained (Cumulative)	% Passing (Cumulative)
1/2"	0	100
3/8"	2	98
#4	20	80
#8	20	80
#16	28	72
#30	39	61
#50	62	38
#100	77	23
#200	86	14
53 microns		13
28 microns		11
5 microns		1
2.5 microns		1
Colloids		1



PROJECT: AVILA BEACH WASTEWATER TREATMENT PLANT EXPANSION
 JOB NUMBER: NGS08167W01
 SAMPLE I.D.: Boring #1 @ 61-61.5'
 DATE: 3-Jun-92

PARTICLE SIZE ANALYSIS

Sieve size	% Retained (Cumulative)	% Passing (Cumulative)
1.5"	0	100
1"	3	97
3/4"	4	96
1/2"	6	94
3/8"	8	92
#4	12	88
#8	16	84
#16	17	83
#30	19	81
#50	37	63
#100	80	20
#200	89	11
53 microns		9
28 microns		8
5 microns		2
2.5 microns		1
Colloids		1

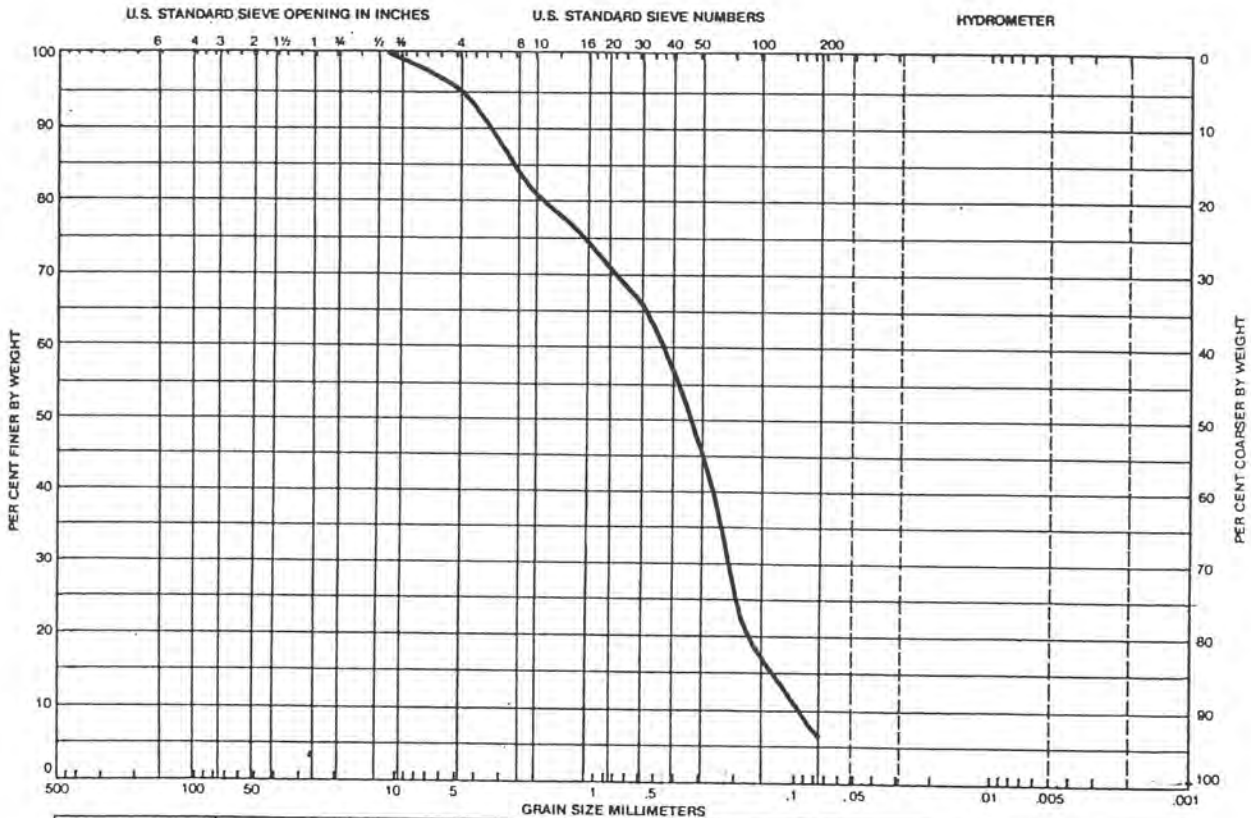


COBBLES	GRAVEL		SAND			SILT OR CLAY		
	COARSE	FINE	COARSE	MEDIUM	FINE			
CLASSIFICATION					SYMBOL	LL.	PL	PI
POORLY GRADED SAND WITH SILT					SP-SM			

PROJECT: AVILA BEACH WASTEWATER TREATMENT PLANT EXPANSION
 JOB NUMBER: NGS08167W01
 SAMPLE I.D.: Boring #1 @ 71-71.5'
 DATE: 3-Jun-92

PARTICLE SIZE ANALYSIS

Sieve size	% Retained (Cumulative)	% Passing (Cumulative)
1/2"	0	100
3/8"	1	99
#4	5	95
#8	16	84
#16	25	75
#30	34	66
#50	53	47
#100	83	17
#200	93	7



COBBLES	GRAVEL		SAND			SILT OR CLAY			
	COARSE	FINE	COARSE	MEDIUM	FINE				
CLASSIFICATION						SYMBOL	LI.	PL	PI
POORLY GRADED SAND WITH SILT						SP-SM			

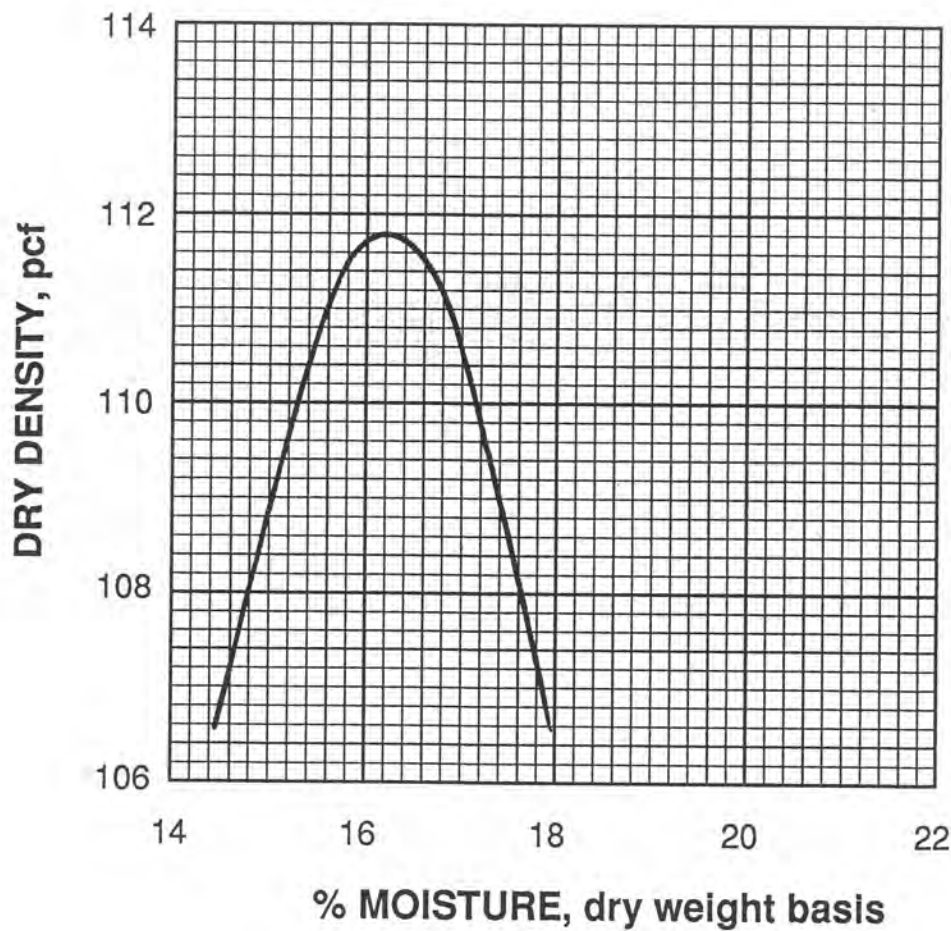
MAXIMUM DENSITY/OPTIMUM MOISTURE CURVE

ASTM D-1557 METHOD: A

PROJECT: AVILA BEACH WASTEWATER TREATMENT PLANT EXPANSION

DATE: 6/1/92

JOB NUMBER: NGS08167W01



SAMPLE I. D.: Boring # 1 @ 3-5'

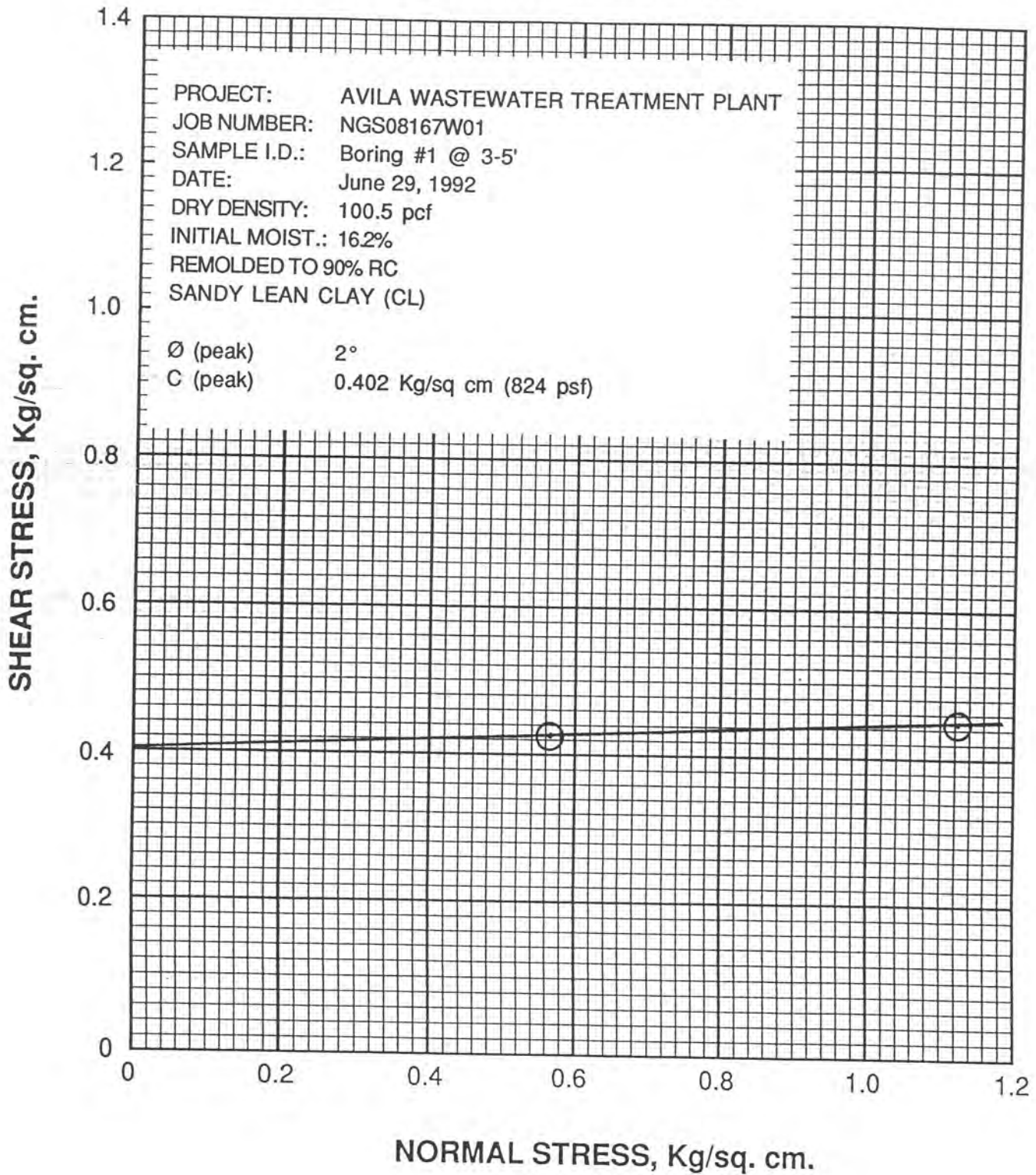
SOIL DESCRIPTION: DARK BROWN SANDY LEAN CLAY W/ GRAVEL(CL)

MAXIMUM DENSITY, pcf: 111.7

OPTIMUM MOISTURE, percent: 16.2

DIRECT SHEAR

SHEAR VS. NORMAL STRESS



UNCONFINED COMPRESSION ON COHESIVE SOIL

ASTM D2166

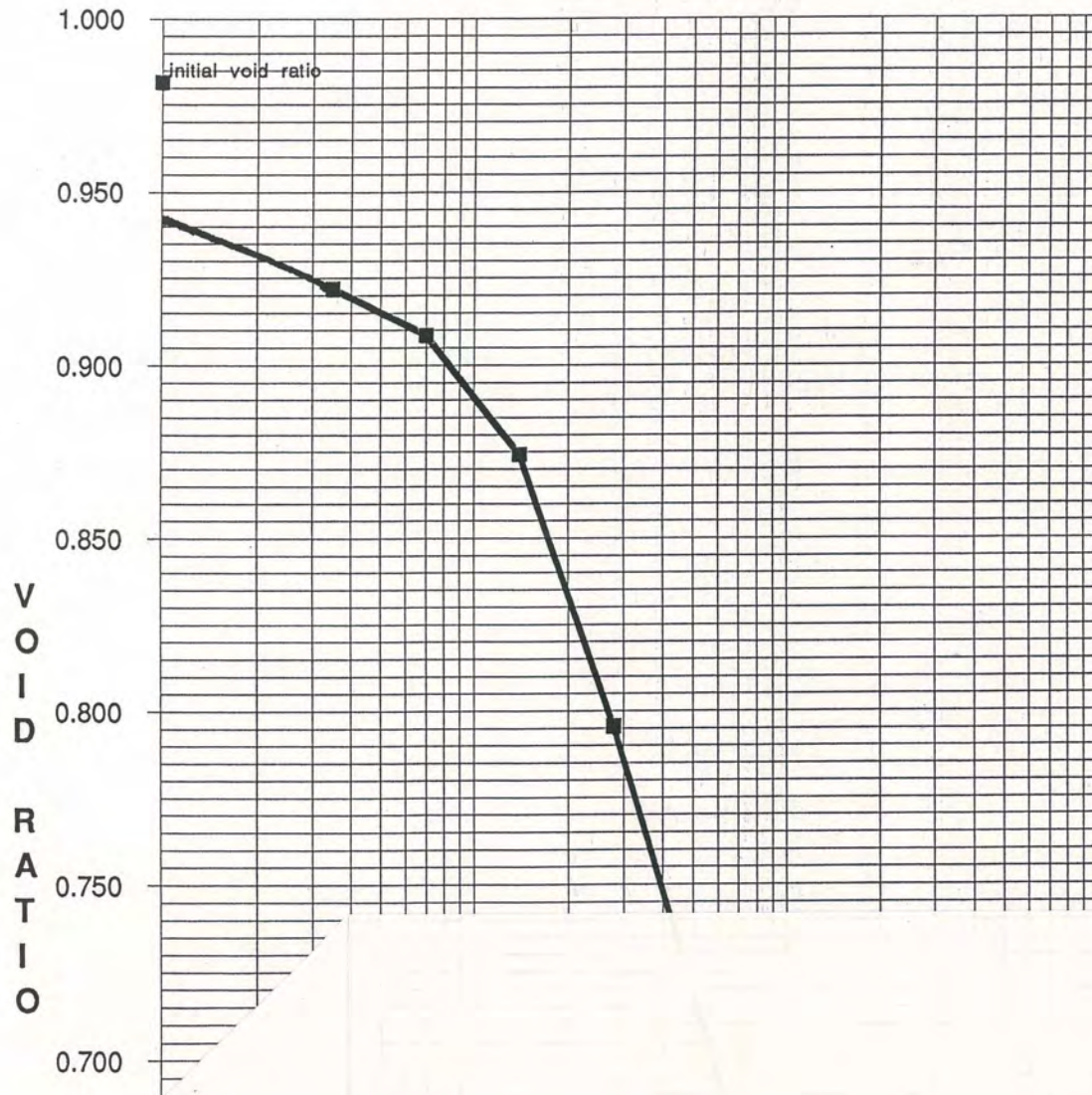
JOB NAME: AVILA BEACH WASTEWATER TREATMENT PLANT **JOB NO.:** NGS08167W01
SAMPLE I.D.: Boring #1 @ 6-6.5' **DATE:** 6/29/92
SOIL CLASSIFICATION: DARK BROWN SANDY LEAN CLAY (CL) **TESTED BY:** TR

UNDISTURBED: X **REMOVED:** N/A **RELATIVE COMPACTION:** N/A
LENGTH, inches: 3.00 **DIAMETER, inches:** 2.375 **HT/DIA RATIO:** 1.26
WET DENSITY, pcf: 114.1 **DRY DENSITY, pcf:** 87.8
MOISTURE: 30.0% **DEGREE OF SATURATION:** 89.9%
UNCONFINED COMPRESSIVE STRENGTH (psi): 12 **(psf):** 1,699

TIME (MINUTES)	DEFORM, in (X 1000)	AXIAL STRAIN	AREA (SQ. IN.)	APPLIED LOAD (LBS)	STRENGTH (PSI)	STRENGTH (PSF)
0.5	27	0.0090	4.42	10	2	326
1.0	52	0.0173	4.41	18	4	587
1.5	73	0.0243	4.41	25	6	817
2.0	95	0.0317	4.40	31	7	1,015
2.5	118	0.0393	4.39	35	8	1,148
3.0	142	0.0473	4.38	40	9	1,314
3.5	165	0.0550	4.38	41	9	1,349
4.0	188	0.0627	4.37	45	10	1,484
4.5	211	0.0703	4.36	46	11	1,519
5.0	235	0.0783	4.35	48	11	1,588
5.5	256	0.0853	4.34	50	12	1,657
6.0	279	0.0930	4.34	50	12	1,660
6.5	296	0.0987	4.33	50	12	1,662
7.0	324	0.1080	4.32	51	12	1,699
7.5	347	0.1157	4.31	50	12	1,669
8.0	371	0.1237	4.31	48	11	1,605
8.5	385	0.1283	4.30	50	12	1,674
9.0	417	0.1390	4.29	48	11	1,611
9.5	440	0.1467	4.28	46	11	1,546
10.0	462	0.1540	4.28	46	11	1,549
10.5	500	0.1667	4.26	46	11	1,554
11.0						
11.5						
12.0						
12.5						

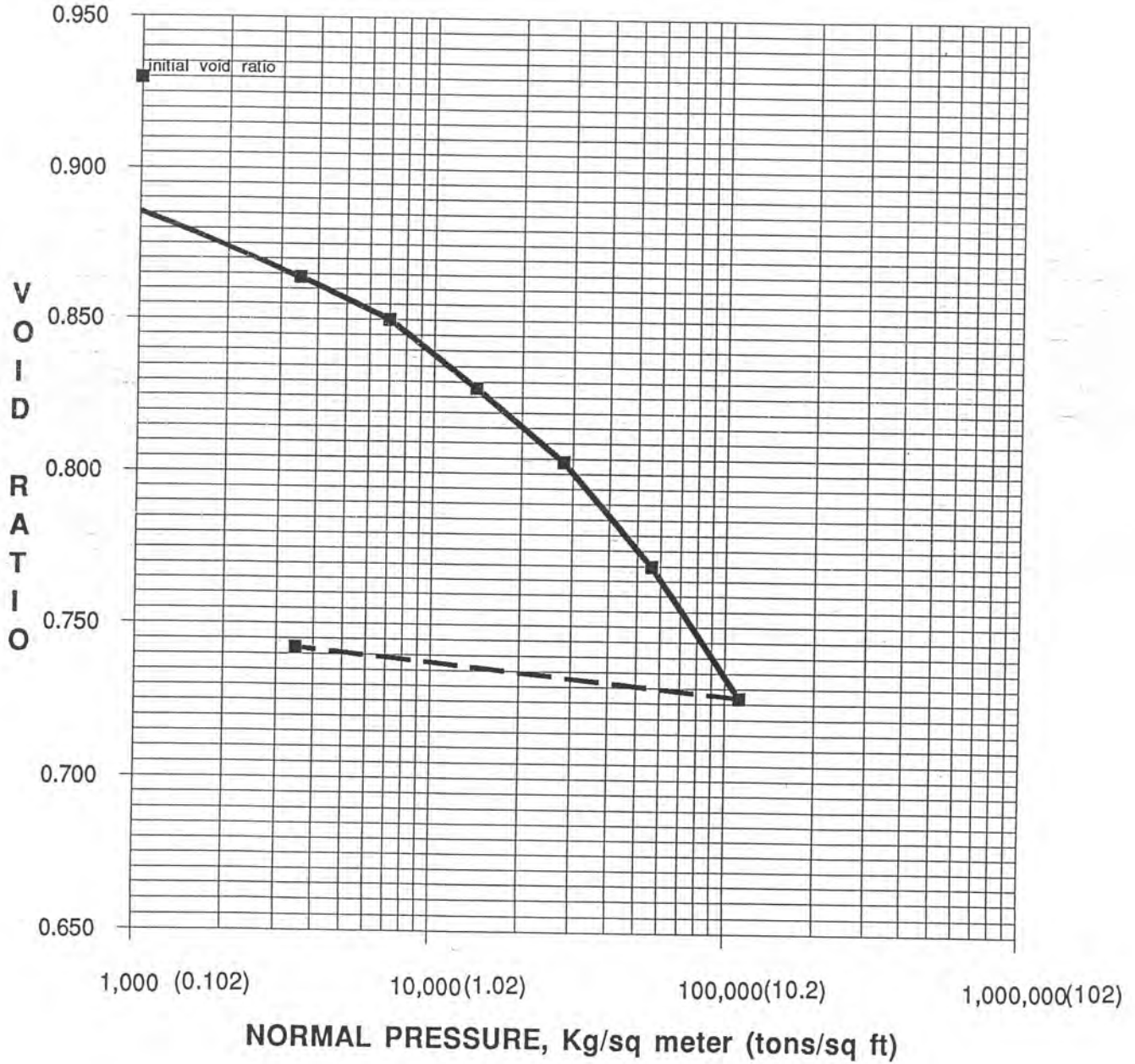
VOID RATIO vs. NORMAL PRESSURE DIAGRAM

AVILA BEACH WASTEWATER TREATMENT PLANT
Boring #1 @ 6-6.5'



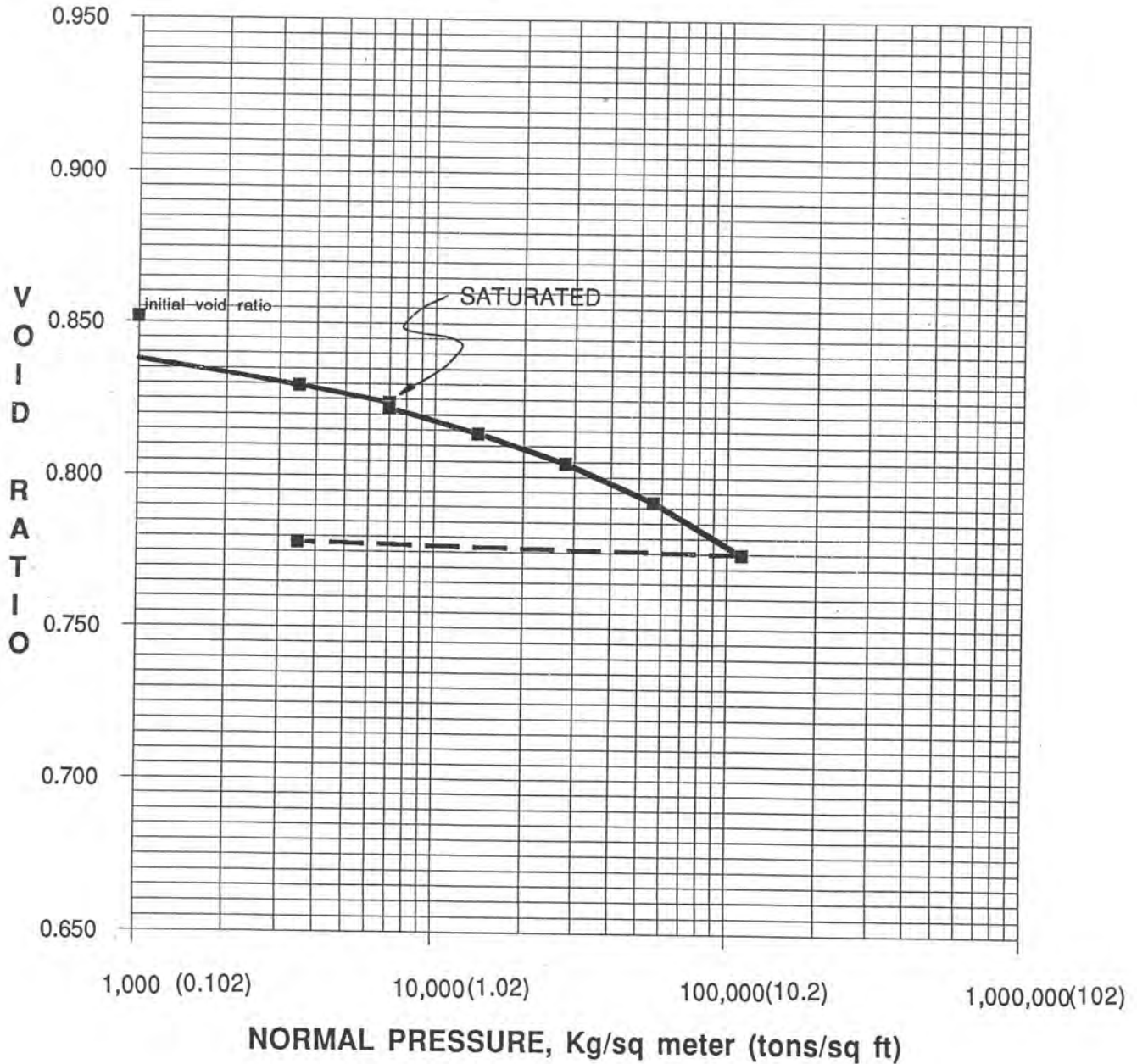
VOID RATIO vs. NORMAL PRESSURE DIAGRAM

AVILA BEACH WASTEWATER TREATMENT PLANT
Boring #1 @ 17.5-18'



VOID RATIO vs. NORMAL PRESSURE DIAGRAM

AVILA BEACH WASTEWATER TREATMENT PLANT
Boring #1 @ 21-21.5'





The Twining Laboratories, Inc.

Since 1898

Geotechnical and Environmental Engineering • Construction Inspection • Materials Testing • Analytical Chemistry

June 11, 1992

TL 492-0009-03

Earth Systems Consultants
4378 Santa Fe Road
San Luis Obispo, California 93401

Attn: Mr. Terry Reyes

Subject: Corrosivity Analysis and Evaluation
Avila Beach, W.W.T.P.

Dear Mr. Reyes:

This letter presents the corrosivity evaluation based on the analytical results of the soil samples tested. The risk of corrosion of construction materials relates to the potential for soil induced chemical reaction. The rate of deterioration depends on soil resistivity, texture, acidity, and chemical concentration.

1. Based on the ASTM Special Technical Publication 741 and our test results, the soils are severely corrosive to ferrous alloy pipes as indicated by a resistivity value of 724. Buried metal objects should be protected in accordance with manufacturer's recommendations based on the severe corrosive potential of the soils. The evaluation was limited to the effects of soils to metal subjects, corrosion due to other potential sources, such as stray currents and groundwater, were not evaluated.
2. Corrosion of concrete due to sulfate attack by soil is not anticipated based on a low sulfate concentration of 0.092 percent by dry weight determined for the soils. The ACI Manual of Concrete Practice, Section 201.22-12, recommends using a Type II cement for foundations placed in these soils.

The analytical results of the tests are enclosed in the following pages.

2527 Fresno Street • P.O. Box 1472
Fresno, California 93716
(209) 268-7021 • Fax (209) 268-7126

4230 Kiernan Avenue, Suite 105
Modesto, California 95356
(209) 545-1050 • Fax (209) 545-1147

9401 West Goshen Avenue
Visalia, California 93291
(209) 651-2190 • Fax (209) 651-2654

3701 Pegasus Drive, Suite 124
Bakersfield, California 93308
(805) 393-5088 • Fax (805) 393-4643

We appreciate the opportunity to be of service to Earth Systems Consultants. If you have any questions regarding this letter or if we can be of further assistance, please contact us at your convenience.

Sincerely,

THE TWINING LABORATORIES, INC.



David R. Ansolabehere
Project Engineer
Geotechnical Engineering Division



David S. See, RCE
Division Manager
Geotechnical Engineering Division



DRA/DSS/mcn
Enclosures

The Twining Laboratories, Inc.

Fresno Modesto Visalia Bakersfield
C-20 of 22



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REPORT DATE : June 10, 1992
EXAMINATION NO.: 692-2854.1

PROJECT MGR: D. See

CLIENT : Earth Systems Consultants
4378 Santa Fe Rd.
San Luis Obispo, CA 93401

ATTENTION : Terry Reyes

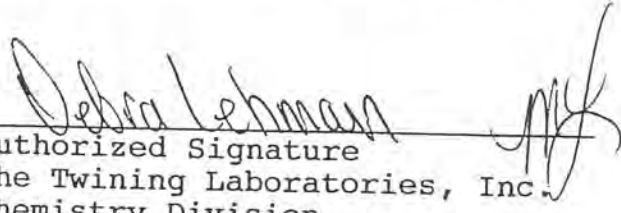
PROJECT NAME : Avila Beach WWTP
Project # NGS08167W01

DATE SAMPLED : 05-16-92 by Client
DATE RECEIVED: 05-27-92 at 1512 hrs. via UPS

The Twining Laboratories is accredited by the State of California Department of Health Services for the analysis of Drinking Water, Wastewater and Hazardous Waste under Certificate No. 1371.

In accordance with your instructions, the samples submitted were analyzed for the components specified. All samples analyzed were submitted in good condition. The analytical results are enclosed on the following pages.

Please contact us if you have any questions concerning the analyses or results. Thank you for letting us serve you.


Authorized Signature
The Twining Laboratories, Inc.
Chemistry Division

JJK:dab
lc:herewith

REPORT DATE : June 10, 1992
EXAMINATION NO.: 692-2854.1

PROJECT MGR: D. See
PAGE 1 of 1

CLIENT : Earth Systems Consultants

PROJECT NAME : Avila Beach WWTP

DATE SAMPLED : 05-16-92 by Client
DATE RECEIVED: 05-27-92 at 1512 hrs. via UPS
DATE PREPARED: 06-04-92
DATE ANALYZED: 06-08-92

ANALYZED BY : D. Carlton, D. Spenhoff
REVIEWED BY : J. Strutzel

SAMPLE TYPE : Soil
SAMPLE IDENTIFICATION: B1 @ 3-5'

	RESULT	UNITS	MDL	METHOD
<u>CORROSIVITY</u>				
pH	8.3	pH	0-14	150.1
Resistivity	724	ohms/cm ³	N/A	DOT424
Chloride (Cl)	0.051	% by weight	0.001	A1000M
Sulfate (SO ₄)	0.092	% by weight	0.01	A1000M

NOTES:

ohms/cm³: ohms per cubic centimeter @ 25°C
DOT : Department of Transportation
N/A : Not Applicable
MDL : Method Detection Limit
ND : None Detected

The Truening Laboratories, Inc.

Fresno Modesto Visalia Bakersfield

APPENDIX D - HISTORIC AERIAL PHOTOGRAPHS



Avila CSD WWTP

2850 Avila Beach Drive

San Luis Obispo, CA 93405

Inquiry Number: 5706656.1

July 05, 2019

The EDR Aerial Photo Decade Package



6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

07/05/19

Site Name:

Avila CSD WWTP
2850 Avila Beach Drive
San Luis Obispo, CA 93405
EDR Inquiry # 5706656.1

Client Name:

Yeh and Associates
391 Front Street, Suite D
Grover Beach, CA 93433
Contact: Jon Blanchard



Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

<u>Year</u>	<u>Scale</u>	<u>Details</u>	<u>Source</u>
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1994	1"=500'	Acquisition Date: May 13, 1994	USGS/DOQQ
1981	1"=500'	Flight Date: August 01, 1981	USDA
1976	1"=500'	Flight Date: June 28, 1976	USGS
1963	1"=500'	Flight Date: July 02, 1963	USGS
1960	1"=500'	Flight Date: April 02, 1960	USGS
1956	1"=500'	Flight Date: September 10, 1956	USDA
1949	1"=500'	Flight Date: April 03, 1949	USDA

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INQUIRY #: 5706656.1

YEAR: 2016

— = 500'





INQUIRY #: 5706656.1

YEAR: 2012

— = 500'





INQUIRY #: 5706656.1

YEAR: 2009

— = 500'





INQUIRY #: 5706656.1

YEAR: 2006

— = 500'





INQUIRY #: 5706656.1

YEAR: 1994

— = 500'





INQUIRY #: 5706656.1

YEAR: 1981

— = 500'





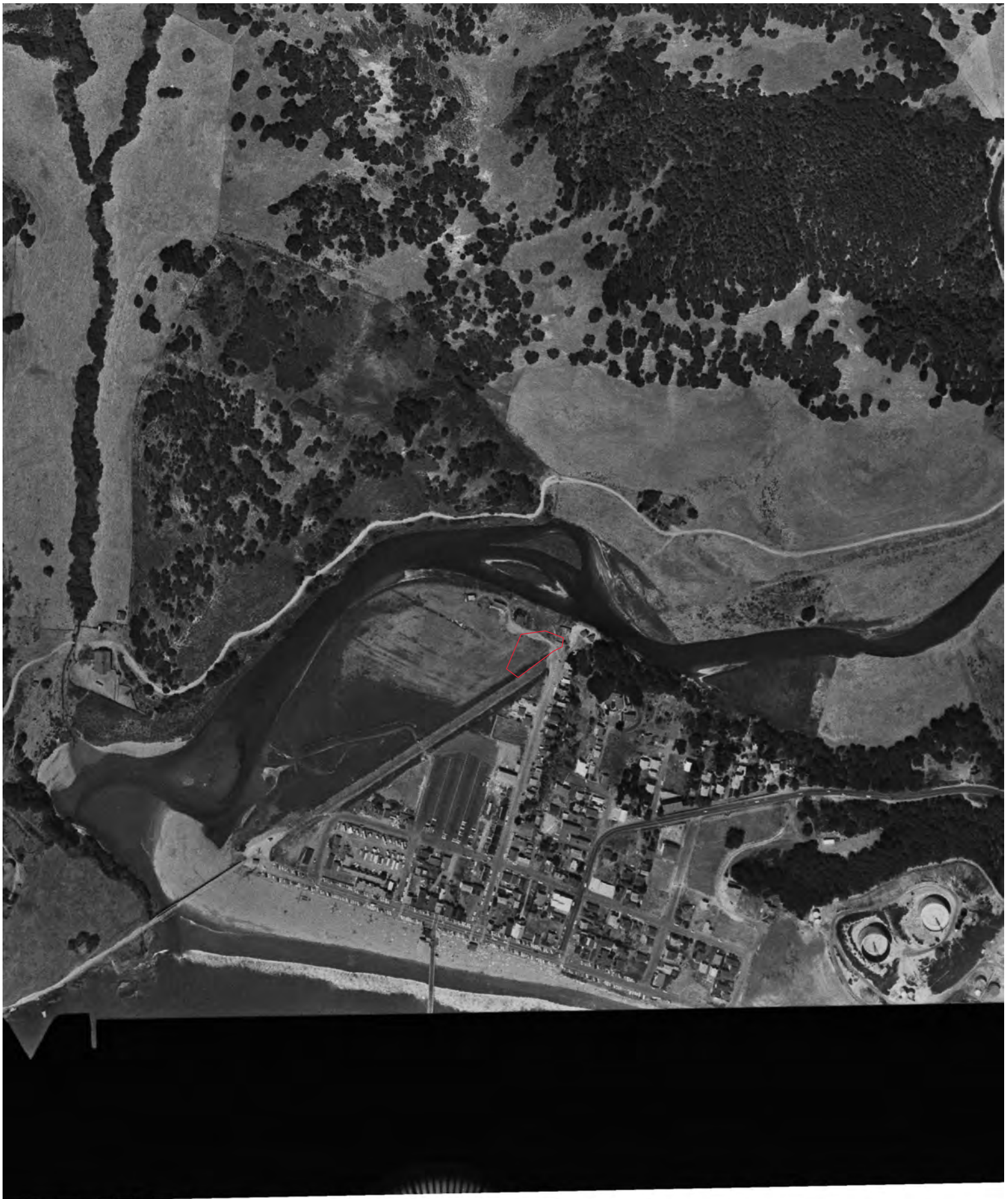
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YEAR: 1976

↑ N

EDR

— = 500'



INQUIRY #: 5706656.1

YEAR: 1963

— = 500'





INQUIRY #: 5706656.1
YEAR: 1960

↑ N
CEDR

— = 500'



INQUIRY #: 5706656.1

YEAR: 1956

— = 500'





INQUIRY #: 5706656.1

YEAR: 1949

— = 500'



-27-40

6651 14

